Long-Term Effects of a Sectoral Advancement Strategy

Costs, Benefits, and Impacts from the WorkAdvance Demonstration

Kelsey Schaberg
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BUILDING KNOWLEDGE TO IMPROVE SOCIAL POLICY

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The funding for this report was provided by the Robin Hood Foundation.

Dissemination of MDRC publications is supported by the following organizations and individuals that help finance MDRC's public policy outreach and expanding efforts to communicate the results and implications of our work to policymakers, practitioners, and others: The Annie E. Casey Foundation, Arnold Ventures, Charles and Lynn Schusterman Family Foundation, The Edna McConnell Clark Foundation, Ford Foundation, The George Gund Foundation, Daniel and Corinne Goldman, The Harry and Jeanette Weinberg Foundation, Inc., The JPB Foundation, The Joyce Foundation, The Kresge Foundation, and Sandler Foundation.

In addition, earnings from the MDRC Endowment help sustain our dissemination efforts. Contributors to the MDRC Endowment include Alcoa Foundation, The Ambrose Monell Foundation, Anheuser-Busch Foundation, Bristol-Myers Squibb Foundation, Charles Stewart Mott Foundation, Ford Foundation, The George Gund Foundation, The Grable Foundation, The Lizabeth and Frank Newman Charitable Foundation, The New York Times Company Foundation, Jan Nicholson, Paul H. O'Neill Charitable Foundation, John S. Reed, Sandler Foundation, and The Stupski Family Fund, as well as other individual contributors.

The findings and conclusions in this report do not necessarily represent the official positions or policies of the funders.

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Overview

This report summarizes the long-term findings of a rigorous random assignment evaluation of the WorkAdvance model, a sectoral training and advancement initiative. Launched in 2011, WorkAdvance goes beyond the previous generation of employment programs by introducing demand-driven skills training and a focus on jobs that have identifiable career pathways. The model is heavily influenced by the positive findings from the Sectoral Employment Impact Study completed in 2010, as well as prior research on job retention and career advancement strategies.

The WorkAdvance model was implemented between June 2011 and June 2013 by four providers — Per Scholas, St. Nicks Alliance, Madison Strategies Group, and Towards Employment — and a total of 2,564 individuals enrolled in the study. Several previous reports described the implementation, participation, cost, and interim impact findings of WorkAdvance and showed encouraging evidence for the WorkAdvance model. The impact findings presented in those reports covered the first three years of follow-up. While those findings showed earnings gains for some programs in some years, whether WorkAdvance could consistently increase earnings in the long term was still an open question.

This report presents the long-term economic impacts of WorkAdvance and covers a two-year period occurring between four and eight years after individuals entered the study. The economic outcomes are based on National Directory of New Hires data and include 2017 and 2018. The report also builds on a previous cost analysis and presents findings from a full benefit-cost analysis to examine whether the effects of WorkAdvance resulted in gains or losses from the perspective of WorkAdvance participants, the government, and society.

Key Findings

- The WorkAdvance program at Per Scholas increased average earnings in 2017 and 2018; there were no statistically significant effects on average earnings at the other three sites. There is evidence that some of the WorkAdvance programs increased the likelihood of individuals having earnings of at least $30,000 in some time periods. None of the WorkAdvance sites increased employment by a statistically significant amount in either long-term follow-up year.

- In the pooled sample from all four providers, WorkAdvance had no effect on employment but increased average earnings and the likelihood of individuals having high earnings.

- The overall pattern of economic impact findings suggests that the earnings-based impacts are driven by WorkAdvance group members having higher wages than control group members, rather than by being employed at a higher rate. This suggests WorkAdvance group members are advancing over time, as intended by the WorkAdvance model.

- The findings from the benefit-cost analysis are positive from the perspectives of the participants, the government, and society at all four sites.

Overall, the WorkAdvance results support the case for focusing on how sector programs can be improved. The long-term economic impacts show that sector programs *can* increase earnings in the longer term and *can* lead to advancement gains over time for low-income individuals, but not all sector programs will lead to increases in employment and earnings. Focusing future efforts on how to make the sectoral approach — in particular, the advancement-focused services — more consistently successful can help workforce providers strengthen sector-based programs. This is the final planned report for the WorkAdvance evaluation.

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Preface

Over the past decade — in the same period that the WorkAdvance study has been conducted — the workforce development field has increasingly adopted the sectoral approach to meet the needs of both low-income workers and employers. Sector strategies train individuals for quality jobs in specific industries and occupational clusters where there is strong local demand and the opportunity for career advancement. Although variations of sector strategies have been used since the 1980s, interest in the approach grew after the release of the results from the Sectoral Employment Impact Study (SEIS) in 2010. Findings from that study, which used a rigorous random assignment design, showed positive earnings gains over a two-year follow-up period for individuals in three mature sector programs.

After the release of that study's findings, more workforce service providers started adopting the sector approach. The WorkAdvance model and evaluation were developed starting in 2011. WorkAdvance combined the most promising aspects of the programs involved in the SEIS evaluation — including strong employer relationships, a stringent screening process, and the provision of individual, tailored services — with the best of what was known about advancement programs. The WorkAdvance evaluation sought to understand whether the overall approach could be a path to upward mobility for low-income individuals. Sector strategies also became a key component of the federal Workforce Innovation and Opportunity Act passed in 2014.

To date, several studies, including WorkAdvance, have shown that sector strategies can be effective at helping people complete sector-based vocational training, obtain credentials and certifications, and find initial jobs within the target sectors. Less evidence is available on what happens to people after they start working in a given sector and whether they are able to move into higher-paying jobs, either by gaining new skills on the job or by obtaining additional training and certifications. One exception is an evaluation of Project QUEST, which has released economic impact findings through follow-up Year 9 and has shown that earnings gains can be sustained through a longer follow-up period. The findings from the WorkAdvance evaluation presented in this report also add to that body of evidence and show that sector strategies can increase earnings in the longer term and lead to advancement gains over time for low-income individuals.

As sector strategies continue to be adopted by workforce providers, the challenge will be to ensure that the approach can be effectively and consistently implemented across a range of providers; in particular, making sure that advancement-focused services are targeted and robust enough to help participants move up career pathways. Developing actionable evidence about how these programs can consistently lead to economic gains in different contexts, particularly in the long term, will be crucial to their success as a key strategy for upward mobility in the United States.

Virginia Knox
President, MDRC

Acknowledgments

The WorkAdvance extended follow-up analysis and this brief are supported by funds provided by the Robin Hood Foundation. MDRC also received support from the U.S. Department of Health and Human Services to acquire the National Directory of New Hires data. WorkAdvance was originally implemented as part of the 2010 Social Innovation Fund grant to the Mayor's Fund to Advance New York City and the Mayor's Office for Economic Opportunity (NYC Opportunity).

The authors would like to thank the many individuals who provided feedback on the findings and the report: Plinio Ayala at Per Scholas; Michael Rochford, Larry Rothchild, and Nancy Lasher at St. Nicks Alliance; Jill Rizika at Towards Employment; Karen Pennington and Rachel Griffin at Madison Strategies Group; and David Berman from NYC Opportunity.

Several people provided help with securing the necessary data: Terry L. Adams at the Ohio Department of Job and Family Services; John Miley, Jane Stout, and Gina Antipov at the Oklahoma Employment Security Commission; and Jeffrey Sorensen, Brian Close, and Shannon Hesnor at the New York State Department of Labor. We also thank staff members from the U.S. Department of Health and Human Services and the Social Security Administration who worked to provide us with data from the National Directory of New Hires.

The authors would also like to thank several MDRC staff members who contributed to the brief. Frieda Molina was the project director and Stephanie Rubino oversaw the budget and proposal. Kali Aloisi and Sally Dai processed the data. Dan Bloom, Megan Millenky, and Johanna Walter helped secure access to the National Directory of New Hires data. Richard Hendra oversaw the analysis and offered invaluable guidance on all phases of the analysis and report. Barbara Goldman, Gayle Hamilton, Joshua Malbin, Frieda Molina, and James Riccio provided insightful comments on drafts of the brief. Daron Holman assisted with the benefit-cost analysis and led the report production and fact checking. Jill Kirschenbaum edited the brief and Ann Kottner prepared it for publication.

The Authors

Executive Summary

Many individuals with low incomes struggle to obtain and maintain jobs that pay enough to meet their needs and put them on a path to upward mobility. At the same time, employers often report difficulty finding workers with the required skills. WorkAdvance, a workforce development model, seeks to overcome these challenges through a "dual customer" approach that meets the needs of both job seekers and employers.

The WorkAdvance model was strongly influenced by prior research in two areas. First, it drew heavily on previous findings about sectoral strategies — strategies that train individuals for quality jobs in specific industries and occupational clusters where there is strong local demand and the opportunity for career advancement. The findings from one study in particular, the Sectoral Employment Impact Study (SEIS), influenced the design of the WorkAdvance model.[1] It showed positive earnings gains over a two-year follow-up period for individuals in three mature sector programs. Second, WorkAdvance drew from earlier research on job retention and career advancement strategies. Results in this area have been mixed, but WorkAdvance is based on the hypothesis that concrete postemployment support — such as coaching tied to specific career paths and proactive reemployment services when a participant loses a job — may help individuals not only maintain their sector-based employment but also advance within the sector and continue to increase their earnings over time.[2] WorkAdvance sought to build on the SEIS findings and learn whether sector programs with an explicit focus on career advancement could be a path to upward mobility for low-income individuals.

WorkAdvance Model and Evaluation

The essential theory behind WorkAdvance is that offering low-income individuals education and employment-related skills and experience in high-demand sectors will help them advance in the labor market. This theory informs the five key components of the WorkAdvance model:

1. **Intensive screening** of program applicants before enrollment for motivation and readiness, to ensure program providers select participants who can take advantage of the training and qualify for jobs in the target sector

2. Sector-appropriate **preemployment and career readiness services**, including an orientation to the sector, career advancement coaching, and limited support services

[1]Sheila Maguire, Joshua Freely, Carol Clymer, Maureen Conway, and Deena Schwartz., *Tuning in to Local Labor Markets: Findings from the Sectoral Employment Impact Study* (Philadelphia: Public/Private Ventures, 2010).

[2]Gayle Hamilton and Sue Scrivener, *Increasing Employment Stability and Earnings for Low-Wage Workers: Lessons from the Employment Retention and Advancement (ERA) Project* (New York: MDRC, 2012).

3. Sector-specific **occupational skills training** aligned with employer needs, leading to certifications that are in demand in the regional labor market

4. Sector-specific **job development and placement services** based on strong relationships with employers and intended to facilitate entry into positions that participants have been trained for and that offer genuine opportunities for continued skills development and career advancement

5. Postemployment **retention and advancement services**, including ongoing contact, coaching, skills training, and rapid reemployment help if needed

The WorkAdvance model was implemented by four providers — Per Scholas, St. Nicks Alliance, Madison Strategies Group, and Towards Employment — and the programs were evaluated using a randomized controlled trial design. (Table ES.1 provides an overview of the WorkAdvance providers.) A total of 2,564 individuals enrolled in the study between June 2011 and June 2013 and were assigned at random to either the program (WorkAdvance) group or the control group. Individuals in both research groups were tracked over time and their outcomes were compared to estimate the "impacts" of the programs.[3]

Table ES.1

WorkAdvance Provider Characteristics

	Per Scholas	St. Nicks Alliance	Madison Strategies Group	Towards Employment
Location	Bronx, NY	Brooklyn, NY	Tulsa, OK	Northeast Ohio
Target sector(s)	Information technology	Environmental remediation	Transportation, manufacturing	Health care, manufacturing
Sample size	690	479	697	698

Several previous reports described the implementation, participation, cost, and interim economic impact findings of WorkAdvance and showed encouraging evidence for the WorkAdvance model.[4] The impact findings presented in those reports covered the first three years of

[3]In randomized controlled trial evaluations, these "impacts" can be attributed to the program, since the program and control groups are statistically alike at study entry and the only difference between them is that one group received program services and the other did not.

[4]Betsy Tessler, Michael Bangser, Alexandra Pennington, Kelsey Schaberg, and Hannah Dalporto, *Meeting the Needs of Workers and Employers: Implementation of a Sector-Focused Career Advancement Model for Low-Skilled Adults* (New York: MDRC, 2014); Richard Hendra, David H. Greenberg, Gayle Hamilton, Ari Oppenheim, Alexandra Pennington, Kelsey Schaberg, and Betsy L. Tessler, *Encouraging Evidence on a Sector-Focused Advancement Strategy: Two-Year Impacts from the WorkAdvance Demonstration* (New York: MDRC, 2016); and Kelsey Schaberg, *Can Sector Strategies Promote Longer-Term Effects? Three-Year Imacts from the WorkAdvance Demonstration* (New York: MDRC, 2017).

follow-up. While those findings showed earnings gains for some programs in some years, whether WorkAdvance could consistently increase earnings in the long term was still an open question.

This report presents the long-term economic impacts of WorkAdvance and adds to the small body of rigorous evidence currently available on whether sector programs can increase employment and earnings for low-income individuals beyond the third year after they enter such programs. The impacts are based on data collected from the National Directory of New Hires (NDNH) and cover 2017 and 2018, adding an additional two years of follow-up data for all sample members.[5] Depending on when individuals entered the study, this two-year period occurred between four and eight years after they were randomly assigned. The analysis of the long-term data was done separately for each site.[6]

The report also presents findings from a full benefit-cost analysis that examines whether the effects of WorkAdvance resulted in gains or losses from the perspectives of WorkAdvance participants, the government, and society.

Key Findings

Analyses in this report yielded the following key findings:

- **The WorkAdvance program at Per Scholas increased average earnings in both 2017 and 2018. At the other three sites, there were positive but not statistically significant differences in average earnings. However, the WorkAdvance programs at two of the other sites, in addition to Per Scholas, did increase the percentage of the sample with relatively high earnings.**

Per Scholas's WorkAdvance program produced statistically significant impacts on average earnings in both follow-up years. For example, in 2018, WorkAdvance group members earned an average of $38,404, an increase of $6,281 (or almost 20 percent) over the control group average (Table ES.2).[7] Earnings gains of this size are rarely seen in random assignment studies

[5]The findings presented in previous WorkAdvance reports used state unemployment insurance wage data to measure employment and earnings for all sample members. However, additional unemployment insurance wage data were not available for Madison Strategies Group sample members, so this report primarily focuses on data available through NDNH.

[6]The effects of WorkAdvance were expected to strengthen as the programs gained more experience, and thus the economic impacts at each site were also analyzed by cohort — one of the study's two prespecified, confirmatory subgroups. Sample members who came into the study during the first half of the intake period — between June 2011 and September 2012 — are in the "early cohort," while the "late cohort" includes all remaining sample members, those who enrolled between October 2012 and June 2013. Findings from the cohort analysis are presented in the main report.

[7]The exhibits in the Executive Summary only show outcomes for 2018. This year was chosen because it was the latest year for which follow-up data were available. Outcomes for 2017 are discussed in the text and shown in the exhibits in the main report.

Table ES.2

Impacts on Employment and Earnings in 2018, by Site

	WorkAdvance Group	Control Group	Difference (Impact)		P-Value
Per Scholas					
Ever employed (%)	83.2	84.6	-1.4		0.624
Total earnings ($)	38,404	32,122	6,281	***	0.004
Earned $30,000 or more (%)	57.0	50.7	6.3	*	0.099
St. Nicks Alliance					
Ever employed (%)	77.7	79.7	-2.0		0.601
Total earnings ($)	26,670	23,822	2,849		0.208
Earned $30,000 or more (%)	41.4	32.0	9.3	**	0.033
Madison Strategies Group					
Ever employed (%)	74.1	78.6	-4.4		0.168
Total earnings ($)	21,248	20,461	787		0.603
Earned $30,000 or more (%)	33.6	27.8	5.8	*	0.092
Towards Employment					
Ever employed (%)	79.0	78.6	0.4		0.894
Total earnings ($)	19,742	18,338	1,404		0.275
Earned $30,000 or more (%)	28.9	23.8	5.1		0.117

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTE: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

of workforce programs and highlight the continued effectiveness of Per Scholas's WorkAdvance program.

At St. Nicks Alliance, Madison Strategies Group, and Towards Employment, WorkAdvance group members earned more than control group members in both years on average, but the differences are not statistically significant (Table ES.2).

Table ES.2 also shows that Per Scholas (by 6 percentage points), St. Nicks Alliance (by 9 percentage points), and Madison Strategies Group (by 6 percentage points) increased the likelihood of individuals having earnings of at least $30,000 in 2018. Madison Strategies Group also produced a statistically significant impact on this measure in 2017 (not shown).[8] Towards

[8]Previous reports looked at impacts on the likelihood of individuals having earnings of at least $20,000 per year. That threshold was chosen based on the distribution of earnings for the pooled sample. Because the earnings

Employment did not have a statistically significant effect on the likelihood of individuals having high earnings in either year, although more WorkAdvance group members than control group members had earnings of $30,000 or more in both years.[9]

- **None of the WorkAdvance sites increased overall employment by a statistically significant amount above the fairly high employment levels of the control groups in either 2017 or 2018.**

Across the sites, more than 78 percent of control group members worked in 2017 and 2018, setting a high bar for the WorkAdvance programs.[10] Table ES.2 shows that WorkAdvance group members and control group members worked at similar rates in 2018 at all four sites (a similar pattern is seen in 2017). The high employment rates among both research groups may reflect the low national unemployment rates during the follow-up years.

- **Pooling the samples from the four providers, WorkAdvance increased average earnings and the likelihood of individuals having high earnings in 2017 and 2018. WorkAdvance did not have a statistically significant effect on employment in either year for the pooled sample.**

The main WorkAdvance impact analysis was done at the site level. However, given the substantial variation in providers' organizational emphases and prior experience operating sector strategies, it is also useful to understand how a model like WorkAdvance might perform, on average, across a range of providers and contexts. Combining the sample from the four sites, WorkAdvance had no effect on employment in either 2017 or 2018 (employment rates were high for both research groups in both years). However, WorkAdvance did increase earnings by statistically significant amounts in both years for the pooled sample. In 2018, WorkAdvance increased earnings by $2,716 over the control group average (Table ES.3). Additionally, 40 percent of WorkAdvance group members had earnings of at least $30,000 that year, a statistically significant increase of 6 percentage points over the control group average.

While the earnings impacts for the pooled sample show the effect for a range of possible WorkAdvance providers, they do mask the variation in impacts across the sites. In other words, some of the pooled sample earnings impacts are being driven by the large earnings impacts at Per Scholas. However, an exploratory analysis of the impacts for the pooled sample from only St. Nicks Alliance, Madison Strategies Group, and Towards Employment showed that the

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outcomes presented in this report are longer term than those presented in previous reports, and individuals tend to have higher earnings over time, this threshold was increased to $30,000.

[9] Among the late cohort at Towards Employment, there was a statistically significant effect on the likelihood of individuals having earnings of $30,000 or more in 2017.

[10] The employment outcomes reflect work in any sector, not just the ones the WorkAdvance sites targeted. WorkAdvance was designed to increase employment in the targeted sectors and not necessarily overall employment.

Table ES.3

Impacts on Employment and Earnings in 2018 for the Pooled Sample

Outcome	WorkAdvance group	Control group	Difference (Impact)	P-Value
Ever worked (%)	78.8	80.2	-1.5	0.355
Total earnings ($)	26,419	23,703	2,716 ***	0.003
Earned $30,000 or more (%)	40.0	33.7	6.4 ***	0.001
Sample size	1,293	1,271		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTE: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

statistically significant earnings impacts remained in some long-term follow-up periods (not shown).[11] This suggests that the earnings impacts of WorkAdvance were not limited to Per Scholas.

- **The overall pattern of economic impacts suggests that WorkAdvance increased advancement: The earnings-based impacts are driven by WorkAdvance group members having higher wages than control group members, rather than by being employed at a higher rate. This indicates that some WorkAdvance group members were advancing over time, as intended by the WorkAdvance model.**

Because WorkAdvance increased average earnings (at Per Scholas *and* for the pooled sample) without increasing overall employment, it can be inferred that WorkAdvance led to wage gains.[12] This is a sign that some WorkAdvance group members were advancing over time, as the model intended. Further evidence of advancement is seen in the statistically significant impacts on the likelihood of individuals having earnings of at least $30,000 at three of the four sites.

[11]This analysis indicated that among the pooled sample from St. Nicks Alliance, Madison Strategies Group, and Towards Employment, WorkAdvance increased earnings by statistically significant amounts in Quarter 3, 2017 through Quarter 1, 2018; in Quarter 4, 2018; and in 2017 overall.

[12]The increases in earnings could also be driven by increases in hours worked. The NDNH data do not include information on hours worked, so it is not possible to test how much of the earnings impacts, if any, are attributable to hours worked. However, an analysis based on the Year 2 survey data showed that around half or more of WorkAdvance's impact on earnings at each site was attributable to hourly wages (with the rest attributable to hours worked).

- **The findings from the benefit-cost analysis are positive from the perspectives of WorkAdvance participants, the government, and society at all four sites.**

As a result of increases in earnings and fringe benefits, WorkAdvance group members made substantial financial gains of between $5,500 and $15,500 during the combined observation and projection period (which ranges from 5 years to 10 years across the sites),[13] even though they paid higher taxes and relinquished appreciable amounts of government transfer benefits (Table ES.4). Although the government incurred considerable costs in operating WorkAdvance, these costs were at least offset at all four sites (and substantially so at Per Scholas) by participants paying more in taxes and receiving less in government transfer benefits. Because participants were better off at all four sites and the government's budget also improved, the financial gains for society at all four sites were substantial. Various sensitivity tests, including Monte Carlo simulations, produced similar findings.[14]

Conclusion

WorkAdvance was an attempt to initially increase employment in promising sectors and eventually increase earnings and help low-income individuals advance along a career pathway. Previous findings from the evaluation, which covered the first three years of follow-up, showed initial increases in employment in the targeted sector at all sites and increases in earnings at some sites. Long-term effectiveness, however, is a key measure of WorkAdvance and similar programs, given that it takes time for individuals to complete training, find initial sector jobs, and eventually advance into higher-level jobs within that sector. This report provides more evidence on the long-term effectiveness of the WorkAdvance programs.

The findings show that the previous increases in employment seen at some of the sites faded in the long-term findings. None of the sites' WorkAdvance programs increased overall employment by a statistically significant amount in either 2017 or 2018. However, the long-term impact findings show evidence of earnings increases at some sites. Per Scholas's WorkAdvance program produced large impacts on average earnings in both 2017 and 2018. And three of the four WorkAdvance programs led to statistically significant increases in the likelihood of individuals having high earnings. Because there are increases in earnings and in high earnings without

[13]The observation period for Per Scholas and St. Nicks Alliance is 63 months and for Madison Strategies Group and Towards Employment, 62 months. The combined observation and projection period for Per Scholas is 7 years, and 10 years for St. Nicks Alliance. For Madison Strategies Group and Towards Employment, the benefits and costs were not projected beyond the 62-month observation period because it appears the positive earnings impacts disappeared after the observation period.

[14]Results from the Monte Carlo analysis suggest that it is difficult to know for certain whether there were net losses or net gains from the government's perspective at St. Nicks Alliance, Madison Strategies Group, and Towards Employment. Whatever the direction, they were probably small, suggesting that program operating costs were largely offset. See Chapter 3 of the main report for more information.

Table ES.4

Benefits and Costs by Accounting Perspective Over the Observation Period and for Two Sites Over the Observation and Projection Periods (in 2018 Dollars), by Site

Net financial gains and losses ($)	Participants	Government Budget	Society
Per Scholas			
Over the observation period	13,997	11,370	27,535
Over the observation and projection periods	15,456	13,387	31,387
St. Nicks Alliance			
Over the observation period	1,623	-4,130	-3,293
Over the observation and projection periods	9,387	3,660	13,742
Madison Strategies Group			
Over the observation period	11,192	1,615	13,114
Over the observation and projection periods	11,192	1,615	13,114
Towards Employment			
Over the observation period	5,505	265	5,820
Over the observation and projection periods	5,505	265	5,820

SOURCES: The sources and derivation of net program costs are described in Hendra et al. (2016). The sources and derivation of the remaining benefit and cost components are described in Appendix B.

NOTES: The observation period for Per Scholas and St. Nicks Alliance is 63 months and for Madison Strategies Group and Towards Employment is 62 months. The combined observation and projection period for Per Scholas is 7 years and for St. Nicks Alliance is 10 years. For Madison Strategies Group and Towards Employment, the benefits and costs were not projected beyond the observation period because it appears the positive impacts on earnings disappeared after the observation period.

All gains and losses include the monetized effects of WorkAdvance on nonmarket time and deadweight loss, are inflation-adjusted to 2018 dollars, and are discounted to 2018 present values.

commensurate increases in employment, there is evidence that WorkAdvance did lead to wage gains. This is a sign that WorkAdvance group members were advancing over time, as the model intended.

The findings from the benefit-cost analysis show large financial gains from the perspectives of WorkAdvance participants and society at large for all four sites. The size of these gains is exceptional when compared with benefit-cost findings from other evaluations of employment and training programs.

Overall, the WorkAdvance results reinforce other rigorous research that shows that sectoral programs *can* be quite effective; the results also support the case for investigating why

certain types of programs are successful and how they can be improved. The long-term economic impacts of WorkAdvance show that sector programs *can* increase earnings in the longer term and *can* lead to advancement gains over time for low-income individuals. At the same time, sector programs are difficult to design and implement well, and not all programs will lead to statistically significant increases in employment and earnings. Focusing future efforts on how to make the sectoral approach more consistently successful will help workforce providers effectively implement or strengthen such programs.

This is the final planned report for the WorkAdvance evaluation. Longer-term findings from several other evaluations of sector programs will be released in the next few years, which will provide more evidence on the effectiveness of sector strategies.

Chapter 1

Introduction

Many individuals with low incomes struggle to obtain and maintain jobs that pay enough to meet their needs and put them on a path to upward mobility. At the same time, some employers report difficulty finding workers with the required skills. WorkAdvance, a workforce development model, seeks to overcome these challenges through a "dual customer" approach that meets the needs of both job seekers and employers. The WorkAdvance model was strongly influenced by prior research in two areas: sector strategies, and job retention and career advancement services.

Sector strategies train individuals for quality jobs in specific industries and occupational clusters where there is strong local demand and the opportunity for career advancement. The findings from one study — the Sectoral Employment Impact Study (SEIS), completed by Public/Private Ventures in 2010[1] — motivated some of the core aspects of the WorkAdvance model. That study was the first rigorous test of sector strategies, and the findings showed positive earnings gains over a two-year follow-up period for individuals in three mature sector programs.[2] The encouraging findings from that study created significant interest in sector programs. There has been a proliferation of new programs in recent years, and sector strategies were a key component of the federal Workforce Innovation and Opportunity Act passed in 2014.

WorkAdvance also draws on lessons from efforts to improve job retention and career advancement of low-skilled workers after initial job placement. Retention and advancement programs have had mixed results, but much has been learned about what is likely to be effective and, equally important, ineffective. Particularly relevant for WorkAdvance is the hypothesis that concrete postemployment support — such as coaching tied to specific career paths and proactive reemployment services when a participant loses a job — could help individuals not only maintain their employment, but also continue to increase their earnings over time.[3]

WorkAdvance sought to build on the SEIS findings and learn whether sector programs with an explicit focus on career advancement could be a path to upward mobility for low-income individuals. The WorkAdvance model was implemented by four providers, and the programs were evaluated using a randomized controlled trial design. A total of 2,564 individuals enrolled in the study between June 2011 and June 2013 and were assigned at random to either the program

[1]Maguire et al. (2010).

[2]The three programs in the SEIS had all been operating for at least three years before the evaluation. This was not the case for the WorkAdvance providers.

[3]Hamilton and Scrivener (2012).

(WorkAdvance) group or the control group. Individuals in both research groups were tracked over time, and their outcomes were compared to estimate the "impacts" of the programs.[4]

Several previous reports described the implementation, participation, cost, and interim impact findings of WorkAdvance.[5] The impact findings presented in those reports covered the first three years of follow-up. While those findings showed earnings gains for some programs in some years, whether WorkAdvance could consistently increase earnings in the long term was still an open question.

Several other evaluations of sector programs, including a few ongoing evaluations, have released findings since the WorkAdvance evaluation started in 2011. Some of them have also found encouraging evidence for sector strategies. However, most of the currently available evidence is on the short- to medium-term effectiveness of these strategies (through no more than three years of follow-up). One exception is an evaluation of Project QUEST, which has released economic impact findings through follow-up Year 9. Findings from that evaluation show earnings gains for individuals in a health care-focused program in Years 4, 5, 6, and 9.[6] There are other ongoing evaluations that have released short-term findings to date. The Health Profession Opportunity Grants (HPOG) evaluation[7] is examining programs using a demand-driven training approach focused on the health care sector. The Pathways for Advancing Careers and Education (PACE) demonstration[8] is evaluating several programs using a sector-focused career pathways approach. Both will be releasing longer-term findings in the next few years.

This report presents the long-term economic impacts of WorkAdvance covering a two-year period occurring between four and eight years after individuals entered the study. It adds to the small body of rigorous evidence currently available on whether the sector approach can increase employment and earnings for low-income individuals beyond the third year after they enter such programs. The report also builds on a previous cost analysis and presents findings from a full benefit-cost analysis to examine whether the effects of WorkAdvance resulted in gains or losses from the perspective of participants, the government, and society.

WorkAdvance Model

The essential theory behind WorkAdvance is that education and employment-related skills and experience in high-demand sectors will eventually lead to advancement in the labor market. This theory informs the five key components of the WorkAdvance model (depicted in Figure 1.1):

[4]In randomized controlled trial evaluations, these "impacts" can be attributed to the program, since the program and control groups are statistically alike at study entry and the only difference between them is that one group received program services and the other did not.

[5]Tessler et al. (2014); Hendra et al. (2016); and Schaberg (2017).

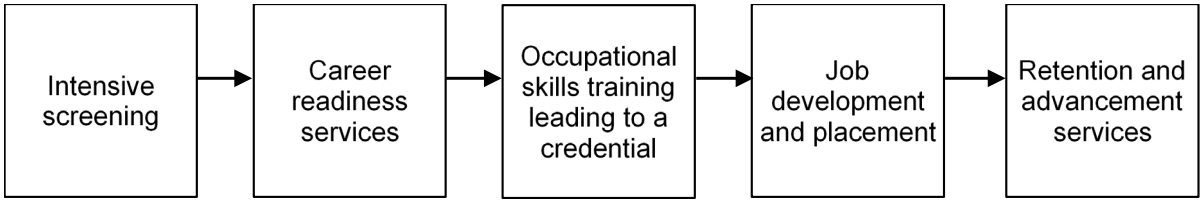
[6]Roder and Elliott (2019).

[7]Peck et al. (2018).

[8]Gardiner and Juras (2019).

Figure 1.1

WorkAdvance Model Components



1. **Intensive screening** of program applicants before enrollment for motivation and readiness to ensure that program providers select individuals who can take advantage of the training and be qualified for jobs in the target sector
2. Sector-appropriate **preemployment and career readiness services**, including an orientation to the sector, career advancement coaching, and limited support services
3. Sector-specific **occupational skills training** aligned with employer needs and leading to certifications that are in demand in the regional labor market
4. Sector-specific **job development and placement services** based on strong relationships with employers and intended to facilitate entry into positions that participants have been trained for and that are thought to offer genuine opportunities for continued skills development and career advancement
5. Postemployment **retention and advancement services** including ongoing contact, coaching, skills training, and rapid reemployment help if needed

Findings from Previous Reports

The WorkAdvance model was implemented by four providers specializing in specific sectors in which they have sought to develop relationships with employers and in-depth industry knowledge: Per Scholas (in New York City) targeted the information technology (IT) sector; St. Nicks Alliance (also in New York City) focused on environmental remediation and related occupations; Madison Strategies Group (in Tulsa, Oklahoma) focused on transportation and, later, manufacturing; and Towards Employment (in northeast Ohio) targeted health care and manufacturing.

Previous findings from the evaluation's implementation, participation, cost, and interim economic impact analyses all showed encouraging evidence for the WorkAdvance model. These analyses were done at the site level because of substantial variation in prior experience operating

sector strategies and organizational emphases across the four providers. Table 1.1 provides a summary of the key features and sample composition of each site.[9] WorkAdvance targeted unemployed and low-wage workers with a family income below 200 percent of the federal poverty level, but there was variation in the characteristics of individuals who ultimately enrolled in the study both across and within sites. The providers chose which sectors and occupations to target based on their own experience, local labor market demand, and the potential for advancement within the sector. Some of the providers shifted their specific training, curriculum, or credential offerings partway through the study period in response to employer needs and changes in their local labor market.

Implementation Analysis

One of the main findings from the implementation analysis was that it took time for the providers — especially those that had not operated a sector-focused program previously — to fully implement all the WorkAdvance model components. Because of this, individuals who entered the study later probably received a stronger set of services than individuals who came in earlier. It was hypothesized that because of this difference in the maturity of the programs and their services over time, the impacts for individuals who entered the study later would be larger than the impacts for individuals who entered the study earlier.

Another key piece of the implementation story was that two of the providers — Towards Employment and Madison Strategies Group — initially implemented a "placement first" track, in which some participants skipped occupational skills training and sought immediate employment,[10] while other participants followed the main "training first" track as outlined in Figure 1.1. About halfway through the study enrollment period, the placement-first track was phased out at both sites after preliminary evidence showed that individuals in that track were entering low-wage jobs and were not gaining the skills needed to advance. This change in the type of services participants received is another reason why the impacts were hypothesized to be stronger for late study enrollees than for early study enrollees at these two sites.

Cost Analysis

WorkAdvance services cost between $6,400 and $8,300 per participant (in 2018 dollars) across the four providers, and for three of the providers (excluding St. Nicks Alliance), the range was quite narrow — $6,400 to $6,800.[11] Roughly half of the providers' operating expenditures were devoted to providing preemployment activities and occupational skills training. These gross costs are simply the outlays required to operate the programs.

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[9]As MDRC uses it, "site" is short for "experimental site," a term that encompasses the program, the WorkAdvance group, the control group, and the local environment.

[10]The placement-first track was intended to be a less expensive but still effective route to advancement. The idea was that individuals would gain experience and sector-specific skills (through on-the-job training, for example) without going to formal training first. Another rationale for the track was that it would help the providers build relationships with employers sooner, because they were able to offer and deliver a more immediate service.

[11]In Hendra et al. (2016), the costs of WorkAdvance were reported in 2013 and 2014 dollars.

Table 1.1
WorkAdvance Providers and Sample Composition at Baseline

	Per Scholas	St. Nicks Alliance	Madison Strategies Group	Towards Employment
Provider characteristics				
Location	Bronx, NY	Brooklyn, NY	Tulsa, OK	Northeast Ohio
Target sector(s)	Information technology	Environmental remediation	Transportation, manufacturing	Health care, manufacturing
Approach	Training first	Training first	Training and placement first until fall 2012; then mostly training first	Training and placement first until fall 2012; then mostly training first
Sample composition				
Average age	31	35	35	35
Female (%)	13	15	16	59
Some college or more (%)	63	44	58	57
Currently employed (%)	13	11	27	27
Ever employed (%)	96	98	99	97
Received food stamps/SNAP (%)	17	42	35	55
Previously convicted of a crime (%)	10	20	40	25

SOURCES: Information from documentation supplied by providers and MDRC calculations from the WorkAdvance baseline information form.

Net cost figures are the extra costs society incurred by letting eligible individuals attend WorkAdvance rather than what they would have done otherwise, in the absence of the program. Because WorkAdvance encompasses activities that individuals targeted by the program might have engaged in on their own (as some of the control group members did), the net cost was about $3,750 per WorkAdvance group member for Per Scholas and in the range of $5,100 to $6,300 at the other three sites (these net costs are in 2018 dollars). This suggests that in the absence of WorkAdvance, very little would have been spent to provide training or other services to the individuals who were interested in such a program.

Participation Analysis

WorkAdvance group members were eligible to receive all the services provided in the WorkAdvance programs: career readiness, occupational skills training, job search, and postemployment services. Control group members, on the other hand, were not eligible to receive WorkAdvance services, although they were free to seek out other services on their own in their communities. The study's "treatment contrast" can be measured by comparing the rate of service receipt among WorkAdvance group members to the rate of service receipt among control group

members. The findings showed that WorkAdvance at all four sites produced large increases in participation, relative to the control group, in all the model components. Notably, WorkAdvance increased individuals' likelihood of completing occupational skills training in the targeted sector by 31 percentage points or more, compared with the control group rates at every site. It also increased the likelihood of individuals obtaining a credential in that sector by between 25 and 46 percentage points across the sites. This level of increase in service receipt is not often seen in workforce programs, since program enrollees often have barriers that prevent them from fully engaging in and completing services, especially in occupational skills training that can last for several months. These large participation increases present a good test of whether the services offered by WorkAdvance are effective in increasing economic outcomes for low-income individuals beyond what would have happened without the program.

Economic Impact Analysis

Previous reports presented the economic impacts of WorkAdvance based on a survey administered roughly two years after individuals entered the study (called the "Year 2 Survey") and based on administrative data through three years of follow-up.[12] In general, the previous impact findings varied across the sites.

All the sites increased employment in the targeted sector as measured by the Year 2 Survey. However, this was not a sufficient condition for impacts on overall employment, earnings, and advancement. Per Scholas produced large impacts on employment and earnings, as well as on several secondary outcomes, including measures of advancement, income, and life satisfaction. The economic impacts at the site grew stronger throughout the three-year follow-up period. St. Nicks Alliance did not produce any impacts on employment or earnings throughout most of the three-year follow-up period. Madison Strategies Group produced impacts on earnings among the late cohort in Years 2 and 3. Among the full site sample, the site increased earnings in Year 2, but the impact faded in Year 3. The site also increased wages above $15 per hour and produced impacts on several measures of employer-offered benefits (for example, an increase in the availability of health insurance and paid vacations). Towards Employment increased earnings among both the late cohort and the full site sample in Year 2, but the impacts faded among both samples by Year 3. The site produced positive impacts on some measures of nonfinancial advancement and work schedules.

Roadmap for the Report

This report builds on the previous WorkAdvance findings in a few ways. First, it extends the follow-up period for the economic impact analysis by two years. The long-term employment and earnings impacts of WorkAdvance, which cover a two-year period occurring between four and eight years after individuals entered the study, are based on data collected from the National Directory of New Hires. Findings are presented by WorkAdvance site, for the pooled sample

[12]The administrative data findings were based on state unemployment insurance wage data.

(combining sample members from all four sites), and for the study's two confirmatory subgroups: random assignment cohort and level of labor market attachment (Chapter 2).

The report also presents findings from a benefit-cost analysis of WorkAdvance. For each site, benefits and costs are presented to see whether, when viewed in aggregate, the WorkAdvance programs resulted in gains or losses. Benefits and costs are presented from the perspectives of WorkAdvance participants, the government, and society (Chapter 3).

Finally, the report summarizes the economic impact findings from the WorkAdvance evaluation — both in the long term and over the full follow-up period — and provides suggestions for what future research efforts in this area should focus on (Chapter 4).

In brief, the report shows that the long-term effects of WorkAdvance vary across the four providers. Per Scholas's WorkAdvance program increased average earnings by a large amount in the long term but had no effect on employment. WorkAdvance at St. Nicks Alliance did not have a statistically significant effect on employment or average earnings in the long term. There is some evidence the program increased the likelihood of individuals having high earnings ($30,000 or more).[13] Among both the late cohort and full sample at Madison Strategies Group, there were no statistically significant effects on employment or average earnings, but the program did increase the likelihood of individuals having high earnings among both samples. Similarly, WorkAdvance at Towards Employment had no statistically significant effects on employment or average earnings among the late cohort or full sample. There is some evidence that the program there increased the likelihood of having high earnings among the late cohort.

The report also shows that WorkAdvance resulted in financial gains from the perspectives of WorkAdvance participants, the government, and society at all four sites. Due to increases in earnings and fringe benefits, the gains for WorkAdvance participants ranged from $5,000 to $15,000 over a 5- to 10-year period across the sites. These gains occurred despite participants paying more in taxes and receiving less in government transfer benefit payments. The costs to the government of operating WorkAdvance were at least offset at every site — and at some sites, were more than offset — by the increases in tax payments made by and reductions in transfer benefits paid to WorkAdvance participants.[14] And because participants were better off at all four sites and the government at least broke even, the financial gains for society were also positive at all four sites. These positive benefit-cost findings are not often seen in evaluations of employment and training programs.

[13]Previous reports looked at impacts on the likelihood of individuals having earnings of at least $20,000 per year. That threshold was chosen based on the distribution of earnings for the pooled sample. Because the earnings outcomes presented in this report are longer term than the outcomes presented in previous reports, and individuals earnings tend to increase over time, the threshold was increased to $30,000 in this report.

[14]As discussed in Chapter 3, results from the Monte Carlo analysis suggest that it is difficult to know for certain whether there were net losses or net gains from the government's perspective at St. Nicks Alliance, Madison Strategies Group, and Towards Employment, although whatever the direction, they were probably small.

Chapter 2

Long-term Economic Impact Findings

Since the last report on WorkAdvance, additional administrative data on employment and earnings were collected from the National Directory of New Hires (NDNH). The findings presented in previous WorkAdvance reports used state unemployment insurance wage data to measure employment and earnings for all sample members. However, additional unemployment insurance wage data were not available for Madison Strategies Group sample members, and thus this report primarily focuses on data available through NDNH. See Box 2.1 and Appendix A for more information on the previous findings, as well as the longer-term findings based on state unemployment insurance wage data for sites where these data were available.

As with the previous reports, the analysis of the long-term data was done at the site level. Because the effects of WorkAdvance were expected to strengthen as the programs gained more experience, the economic impacts at each site were also analyzed by cohort — one of the study's two prespecified, confirmatory subgroups.[1] Sample members who came into the study during the first half of the intake period — between June 2011 and September 2012 — are in the "early cohort," while the "late cohort" includes all remaining sample members, those who enrolled between October 2012 and June 2013. Figure 2.1 shows the sample enrollment periods and sample sizes for the full sample, as well as for the early and late cohort samples, at each site.

The NDNH data cover 2017 and 2018, adding an additional two years of follow-up data for all sample members.[2] These calendar years correspond to different relative years of follow-up data for different sample members, depending on when they entered the study (see Figure 2.2).[3] For individuals who entered the study in the beginning of the sample enrollment period (in mid-2011), the NDNH data cover the first half of relative Year 6 to the first half of relative Year 8. For individuals who entered the study at the end of the enrollment period (in mid-2013), the NDNH data cover the first half of relative Year 4 to the first half of relative Year 6. In other words, the impact analysis in this report covers sample members' labor market outcomes during a two-year period that occurs between four and eight years after random assignment, depending on when participants entered the study.

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[1]In recent years, the program evaluation field has become more sensitive to the need to limit the number of subgroups analyzed in order to reduce the number of "false positives" that result when one makes too many statistical comparisons. In order to manage this risk, methodologists have recommended prespecification (meaning the subgroups are chosen before estimating any impacts) of a limited number of "confirmatory" subgroups that theory and experience suggest might moderate the impacts of a program (see Bloom and Michalopoulos, 2010). The other prespecified, confirmatory subgroup analysis is based on sample members' levels of attachment to the labor market at study entry. Findings from that analysis are presented in a later section.

[2]Only the eight most recent quarters of NDNH employment and earnings data are available at any given time. All previous quarters of data "roll off" and are not available for data matching or analysis.

[3]Relative years are based on each sample member's quarter of random assignment. For example, "Year 1" refers to the first four quarters following each sample member's quarter of random assignment.

Box 2.1

State Unemployment Insurance Wage Data

Previous WorkAdvance reports presented employment and earnings impacts based on state unemployment insurance wage data through Year 3.* For this report, the evaluation team was able to collect additional state unemployment insurance wage data from New York (covering sample members from Per Scholas and St. Nicks Alliance) and Ohio (covering sample members from Towards Employment) through Year 5. However, the evaluation team was not able to collect additional state unemployment insurance wage data from Oklahoma, so data are only available through Year 3 for sample members from Madison Strategies Group.

Impacts based on state unemployment insurance wage data are presented in Appendix Tables A.2 to A.5. In general, the findings tell a story that is similar to the NDNH-based findings:

- Per Scholas produced impacts on employment through Year 3 and on earnings through Year 5.
- St. Nicks Alliance had no economic effects in Years 1 through 3; starting in Year 4, the site produced larger increases in earnings, although the differences were not statistically significant.
- Madison Strategies Group increased earnings among the late cohort in Years 2 and 3 (it is unclear whether this pattern continued in later years). Among the full sample, the site increased earnings in Year 2, but the effect faded in Year 3.
- Towards Employment increased earnings by statistically significant amounts in Years 2 and 4 among the late cohort, although the effect faded again in Year 5. Among the full sample, the site increased earnings in Year 2, but the effect faded by Year 3.

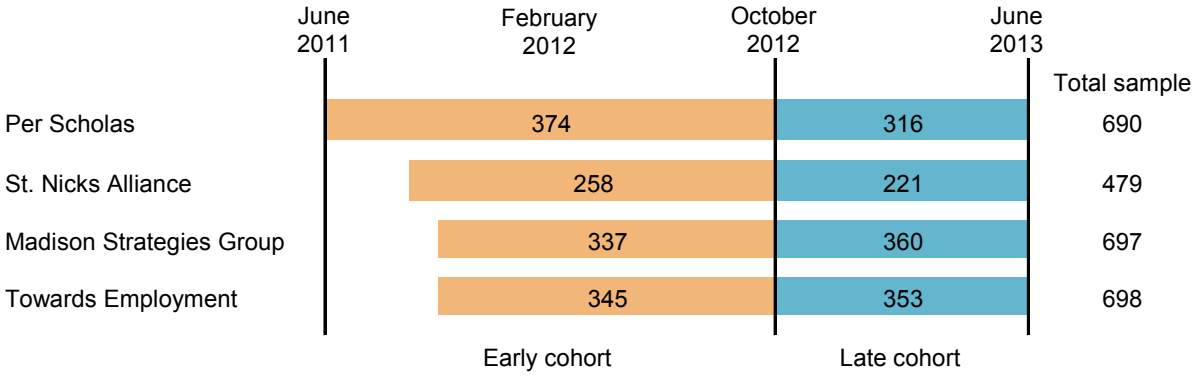
NOTES:

*Findings based on state unemployment insurance wage data are presented relative to each sample member's quarter of random assignment. For example, "Year 1" refers to the first four quarters following each sample member's quarter of random assignment.

Based on the model, it was hypothesized that the WorkAdvance programs would first increase employment, primarily in the targeted sector, and then increase earnings. The WorkAdvance providers sought to place individuals in jobs with opportunities for advancement, rather than in just any job. So, while control group members would probably find employment on their own (or with the help of other organizations in the community), the idea was that WorkAdvance group members would be more likely than control group members to obtain good jobs in the targeted sector. These jobs were also expected to have higher initial wages and more opportunities for individuals to continue developing the skills needed to move into more advanced positions (leading to increases in earnings over time) than the jobs obtained by control group members. Further, the advancement-focused services provided by WorkAdvance, including those provided

Figure 2.1

Study Enrollment Period and Sample Size, by Site and Analysis Sample

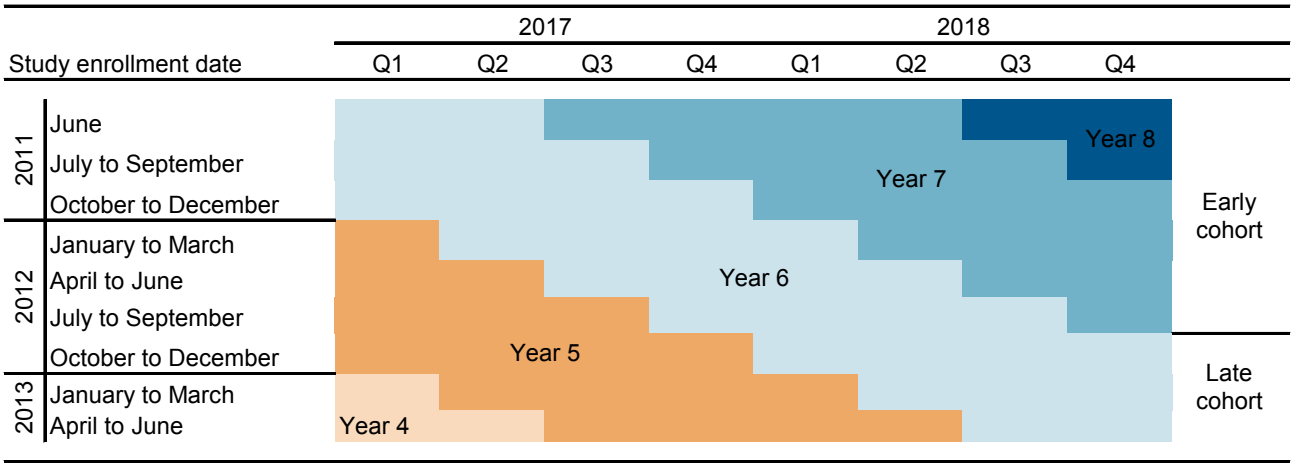


SOURCE: MDRC calculations from WorkAdvance baseline information form.

NOTE: The colored bars reference time periods. Per Scholas began study enrollment in June 2011, St. Nicks Alliance began study enrollment in September 2011, and Madison Strategies Group and Towards Employment began study enrollment in October 2011. The numbers within the colored bars indicate the sample sizes for the early and late cohorts at each site.

Figure 2.2

Comparison of Calendar Years Covered by National Directory of New Hires Data to Relative Years, by Quarter of Random Assignment and Cohort



SOURCE: MDRC calculations from WorkAdvance baseline information form.

NOTE: The NDNH data cover 2017 and 2018. This time period corresponds to different relative years depending on when individuals entered the study. For example, for individuals who entered the study at the end of the enrollment period (from April to June 2013), the NDNH data cover the first half of relative Year 4 to the first half of relative Year 6.

postemployment, were designed to help individuals plan for and navigate the next steps along a career pathway. The length of follow-up data available in this report — between Year 4 and Year 8 — allows for a test of whether the WorkAdvance programs led to these advancement gains, as measured by earnings.

In summary, this report's findings indicate that WorkAdvance's long-term economic impacts still vary across providers. There is no evidence that WorkAdvance increased employment in the long term at any of them, but there is evidence of earnings increases at some sites. Per Scholas's WorkAdvance program increased average earnings in both 2017 and 2018 and increased the likelihood of individuals having earnings of at least $30,000 in 2018. St. Nicks Alliance's WorkAdvance program did not have a statistically significant effect on average earnings in either year. However, the program increased the likelihood of individuals having earnings of at least $30,000 in 2018. Among both the late cohorts and full samples at Madison Strategies Group and Towards Employment, WorkAdvance produced no effects on average earnings in either long-term follow-up year. Madison Strategies Group's program, however, increased the likelihood of having high earnings in both years among the full sample and in 2017 among the late cohort. Among the late cohort at Towards Employment, WorkAdvance increased the likelihood of having high earnings in 2017. Because there are no impacts on employment across the sites, but there are some impacts on earnings, there is evidence that WorkAdvance group members were advancing into higher-wage jobs over time, a key goal of the WorkAdvance model.

The next section provides a summary of economic conditions during the study period and how those conditions may have interacted with the study's findings. The later sections provide an overview of the WorkAdvance providers and detail economic impacts for each one. Box 2.2 explains how to read the impact tables in this report.

Economic Conditions During the Study Period

WorkAdvance study enrollment started in mid-2011 and went through mid-2013, with individuals in the late cohort receiving services through mid-2015. This study period coincided with the slow recovery following the Great Recession of 2007 to 2009, when even relatively experienced and skilled workers struggled to find employment. The early part of the recovery was notable for its lack of job creation and earnings growth. This was compounded by the fact that the period up to 2007 was sometimes called the "jobless recovery" from the recession in the early 2000s. Thus, low-wage workers confronted an extended period of labor market stagnation.[4] Studies indicate that employers responded to this increased supply of unemployed workers by being especially selective about whom they hired, particularly in relation to recent work experience. Those who were out of the labor market for six months or longer were much less likely to receive calls for job interviews, even when they had extensive relevant experience.[5]

[4]Kolesnikova and Liu (2011).

[5]Ghayad (2013); Kroft, Lange, and Notowidigdo (2013).

Box 2.2

How to Read the Tables in This Report

Most tables in this report use a similar format, illustrated below. The table shows the employment and earnings outcomes for the WorkAdvance and control groups at Per Scholas. For example, the table shows that 85 percent of the site's WorkAdvance group members ever worked in 2017, compared with 83 percent of control group members.

Because study participants were assigned randomly to either the WorkAdvance group or the control group, the effects of WorkAdvance can be estimated by the difference in outcomes between the two groups. The "Difference" column in the table shows the WorkAdvance group's employment and earnings outcomes minus the control group's employment and earnings outcomes; in other words, WorkAdvance's *impact* on employment and earnings. For example, the impact on earnings in 2017 is calculated by subtracting $28,049 from $32,552, yielding $4,503.

The "P-value" column gives an indication of how unlikely it is that the impact arose by chance. The lower the p-value, the less likely it is that the impact arose by chance. Impacts are considered statistically significant if they have a p-value below 0.100, meaning there is less than a 10 percent chance that the impact arose by chance (or in other words, meaning there is less than a 10 percent chance that the true impact is zero or even negative). Statistically significant differences are marked with asterisks. The number of asterisks indicates whether the impact is statistically significant at the 1 percent, 5 percent, or 10 percent level (the lower the level, the more asterisks). For example, the p-value for the impact on earnings in 2017 is 0.027. This indicates that there is a 3 percent chance of observing an impact of at least $4,503 if Per Scholas's WorkAdvance program really had no true effect on earnings that year. Two asterisks indicate that this impact is statistically significant at the 5 percent level (this is also seen by the p-value being below the 0.050 threshold).

Employment and Earnings Impacts, Per Scholas

Outcome	WorkAdvance group	Control group	Difference (Impact)		P-value
Ever worked (%)					
2017	84.5	83.3	1.3		0.651
2018	83.2	84.6	-1.4		0.624
Total earnings ($)					
2017	32,552	28,049	4,503	**	0.027
2018	38,404	32,122	6,281	***	0.004

In recent years there have been increasing concerns about p-values and statistical significance being overinterpreted or used in isolation to interpret research findings. As noted in guidance provided by the American Statistical Association, "Statistical significance is not equivalent to scientific, human, or economic significance. Smaller p-values do not necessarily imply the presence of larger or more important effects, and larger p-values do not imply a lack of importance or even lack of effect."*

*Wasserstein and Lazar (2016).

These labor market conditions may have had a greater impact on individuals who entered the WorkAdvance study earlier — sooner after the end of the Great Recession — than those who entered later. Research has shown that there are large, negative effects on wages for college graduates who enter the labor market during an economic downturn, and those effects can persist for decades.[6] This may explain at least some of the overall pattern in the cohort findings: Across the sites, the 2017 and 2018 earnings levels for the control group, and in most cases, for the WorkAdvance group, were higher among the late cohort than among the early cohort. Individuals in the late cohort may have been able initially to obtain better jobs with higher wages than those in the early cohort, starting them off at a higher point and perhaps putting them on a better path toward upward mobility.

The economic outcomes presented in this report cover 2017 and 2018. The economy was fairly strong, especially relative to previous years, during this two-year period. By early 2017, the unemployment rate had returned to prerecession levels and it dropped even lower in 2018 (to 3.7 percent in September 2018, nationally).[7] With lower unemployment rates, it may have been easier for both WorkAdvance group and control group members to find employment.

Per Scholas

Per Scholas, a nonprofit organization that provides information technology training and employment services in New York City, came into the study with substantial experience operating a sector program. The organization had been operating most of the WorkAdvance model components, except for the advancement-focused and postemployment services, since 1998, and was able to adapt its curriculum and training offerings based on employer feedback. This experience gave Per Scholas a head start over some of the other providers who were newer to the model,[8] and its advantage is evident in the economic impact findings for the site. Box 2.3 provides an update on Per Scholas's program since the original WorkAdvance evaluation ended.

Per Scholas increased earnings by statistically significant amounts in both 2017 and 2018 (Table 2.1). In 2018, WorkAdvance group members earned an average of $38,404, an increase of $6,281 (or almost 20 percent) over the control group average.[9] Earnings gains of this size are rarely seen in random assignment studies of workforce programs and highlight the continued effectiveness of Per Scholas's WorkAdvance program.

[6]Kahn (2010).

[7]U.S. Bureau of Labor Statistics (2019a).

[8]Per Scholas had also previously participated in another randomized controlled trial, the SEIS.

[9]The employment and earnings levels of both the WorkAdvance group and the control group at Per Scholas are higher than those at the other three WorkAdvance sites.

Box 2.3

Where Are the WorkAdvance Providers Now?

Per Scholas

Since the original WorkAdvance evaluation ended in late 2014, Per Scholas has expanded its program nationwide and now operates training programs in eleven cities: Atlanta, Baltimore, Boston, Cincinnati, Columbus, OH, Dallas, the DC region, Detroit, New York, Newark, NJ, and Philadelphia. The organization has been focused on continuing to grow in terms of both the number of people it trains and the services it offers.

Per Scholas has stayed on top of trends in the information technology (IT) industry and the needs of the employers it works with. The organization has expanded its IT training curriculum and now offers training in other specialties, including cybersecurity and software engineering. To reach more students, the organization has also developed bridge programs for applicants who do not meet the program's required math and reading levels. These bridge programs provide support services, teach basic level education and technical skills, and serve as a pipeline into the main Per Scholas training.

As part of the WorkAdvance evaluation, Per Scholas added advancement-focused and postemployment services and has continued to develop them since the evaluation ended. For example, the organization now has students engage with employers earlier in the program — around three to four weeks after they start the training — so they can develop their social skills and get a glimpse of what they can expect after the program ends. Per Scholas also continues to track and reach out to students at regular intervals for two years after they graduate from the program.

Per Scholas is also innovating in the types of services it offers. The organization has started offering customized trainings that teach more advanced IT skills and are developed through a close partnership with and funded by employers. The idea is that this will serve as a talent pipeline for the employer. Per Scholas has also recently started exploring how they can use remote learning to reach more students and how they can develop an alumni leadership academy that further develops leadership skills in program graduates.

At the same time, Per Scholas's WorkAdvance program did not have a statistically significant effect on employment in either 2017 or 2018.[10] For example, in 2018, 83 percent of WorkAdvance group members ever worked compared with 85 percent of control group members (Table 2.1). Because the program increased earnings without increasing employment, it is likely that WorkAdvance group members are advancing into positions with higher wages over time

[10]NDNH data do not cover most independent contractors and, therefore, those workers would not be captured in the employment and earnings outcomes presented in this report. As of May 2017, around 7 percent of workers nationally were estimated to be independent contractors (U.S. Bureau of Labor Statistics, 2018b). Some industries, such as IT, may have higher rates of independent contractors than others.

Table 2.1

Per Scholas Impacts on Employment and Earnings in 2017 and 2018

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the full sample				
Ever worked (%)				
2017	84.5	83.3	1.3	0.651
2018	83.2	84.6	-1.4	0.624
Total earnings ($)				
2017	32,552	28,049	4,503 **	0.027
2018	38,404	32,122	6,281 ***	0.004
Earned $30,000 or more (%)				
2017	49.9	44.0	5.9	0.119
2018	57.0	50.7	6.3 *	0.099
Full site sample size	349	341		
Among the early cohort				
Ever worked (%)				
2017	86.3	81.0	5.3	0.173
2018	85.0	83.5	1.5	0.696
Total earnings ($)				
2017	33,961	26,799	7,162 **	0.011
2018	39,231	31,904	7,327 **	0.018
Earned $30,000 or more (%)				
2017	51.3	42.7	8.6	0.102
2018	56.6	50.3	6.3	0.224

(continued)

(and not just working more), one of the main goals of the WorkAdvance model.[11] There is further evidence of this in the program's impact on a measure of high earnings: In 2018, 57 percent of

[11]Looking at the difference in earnings across research groups among those employed also provides more evidence that the overall earnings impacts resulted from higher wages and not just higher rates of employment (this comparison is nonexperimental). Average earnings among employed individuals can be calculated by diving the average earnings for all individuals by the employment rate. In 2018, employed WorkAdvance group

Table 2.1 (continued)

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the late cohort				
Ever worked (%)				
2017	82.4	86.0	-3.6	0.389
2018	81.1	86.1	-5.1	0.232
Total earnings ($)				
2017	30,487	29,941	546	0.857
2018	37,145	32,668	4,478	0.152
Earned $30,000 or more (%)				
2017	47.6	46.0	1.6	0.774
2018	57.0	51.8	5.2	0.360
Early cohort sample size	189	185		
Late cohort sample size	160	156		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

The differences in impacts between cohort subgroups are not statistically significant.

Rounding may cause slight discrepancies in sums and differences.

WorkAdvance group members earned $30,000 or more, a statistically significant 6 percentage point increase over the control group average. The difference in the likelihood of having earnings of $30,000 or more in 2017 is not statistically significant.

Consistent with earlier findings, the cohort differences at Per Scholas remain large (especially in 2017), although the differences in impacts across cohorts are not statistically significant.[12] Per Scholas increased earnings by over $7,000 among the early cohort in 2017 and in 2018. The earnings differences among the late cohort were smaller and not statistically significant in either year. These findings contrast with initial expectations that the WorkAdvance programs would improve over time and, therefore, have stronger effects among the late cohort compared with the early cohort. The previous findings based on state unemployment insurance wage data also showed larger effects among the early cohort compared with the late cohort. At that time, it seemed like the pattern was due, at least in part, to the economy in New York City rebounding from the Great Recession during the study period. This hypothesis was based on the higher

members earned $46,158 ($38,404 / 0.832), on average, compared with average earnings of $37,969 for employed control group members ($32,122 / 0.846).

[12]See Hendra et al. (2016) and Schaberg (2017).

earnings levels for the control group in the late cohort compared with the earnings levels for those in the early cohort as seen in state unemployment insurance wage data. Earnings levels for the WorkAdvance group were similar across cohorts. This pattern of findings does not hold as strongly in the NDNH-based outcomes shown in Table 2.1, providing less evidence to support this hypothesis.[13]

St. Nicks Alliance

St. Nicks Alliance, a large, community-based organization in New York City, offers a range of services including workforce programs. The organization has operated a job training program in the site's targeted sector, environmental remediation, since 2001.[14] St. Nicks Alliance had difficulty fully implementing several aspects of the WorkAdvance model; it eventually added additional training in hazardous materials transportation and pest control in the face of decreased demand for environmental remediation technicians. Box 2.4 gives an overview of St. Nicks Alliance's program as of 2019, and highlights adaptations the organization has made to its training program since the WorkAdvance evaluation ended.

The WorkAdvance program at St. Nicks Alliance did not have a statistically significant effect on employment or average earnings in either 2017 or 2018 (Table 2.2). In 2018, 78 percent of WorkAdvance group members and 80 percent of control group members worked at some point. WorkAdvance group members earned an average of $26,670 that year compared with average earnings of $23,822 for the control group. The associated $2,849 — or 12 percent — increase in earnings is not statistically significant.[15] However, St. Nicks Alliance did increase the likelihood of individuals having earnings of at least $30,000 in 2018: That year, 41 percent of WorkAdvance group members and 32 percent of control group members earned $30,000 or more. This suggests that some WorkAdvance group members were advancing into higher-paying jobs.

The earnings differences presented in this report are larger than those seen in previous findings based on the state unemployment insurance wage data (see Appendix Table A.3). However, the sample size at St. Nicks Alliance was smaller than the sample sizes at the other three sites. Therefore, the impacts need to be larger at St. Nicks Alliance, relative to the other sites, in

[13]Previous WorkAdvance reports also explored several other possibilities for what might be driving this pattern of findings. An analysis of baseline data showed that there were some differences in participant characteristics across the cohorts, but changes in the composition of the sample did not appear to drive the pattern of outcomes. Additionally, an analysis of the participation data found that, if anything, training completion and credentialing differences were larger in the late cohort than in the early cohort.

[14]Jobs in the environmental remediation sector deal with the removal of pollutants and contaminants from the environment, including from water and soil.

[15]At least some of the difference in earnings appears to have been driven by WorkAdvance group members having higher wages than control group members, and not just working at a higher rate. Average earnings among employed individuals can be calculated by dividing the average earnings for all individuals by the employment rate. In 2018, employed WorkAdvance group members earned $34,324 ($26,670 / 0.777, on average, compared with average earnings of $29,889 for the control group ($23,822 / 0.797). This measure is nonexperimental.

Box 2.4

Where Are the WorkAdvance Providers Now? St. Nicks Alliance

After the WorkAdvance evaluation ended, St. Nicks Alliance resized its environmental remediation technician (ERT) training program to match the demand it was seeing from employers and participants and to coincide with employers' hiring cycles. Building on its experience, and with the support of two local developers as anchor employers, St. Nicks Alliance also developed a construction training program. An initial labor market study, which included employer and stakeholder interviews, indicated an overlap between the ERT training and the new construction training and showed that construction employers were looking for both credentialed ERT and construction laborer trainees. Building on its experience with the anchor employers, St. Nicks Alliance now works with over 100 local and regional construction firms who value the local, reliable, credentialed program graduates the organization provides. Since February 2016, St. Nicks Alliance has trained 262 participants in 17 cycles of construction training and achieved a 90 percent placement rate. Through its strong employer relationships, the organization has also been able to negotiate better jobs with higher wages and more benefits for its graduates.

St. Nicks Alliance has further adapted its training model to other sectors, including financial services, urban landscaping, information technology, and health care. The programs were all developed through partnerships with employers. For example, St. Nicks Alliance partnered with Bank of America to offer training in bilingual financial services and customer service. Bank of America staff members developed the curriculum, are actively involved in the training, and teach over half of the classes, and the bank has committed to hiring half of the training graduates.

In June 2016, St. Nicks Alliance developed a business council that brings together employers on a quarterly basis. They discuss the current state and needs of the sectors they work in and how the trainings offered by the organization could be adjusted, and provide suggestions to St. Nicks Alliance staff members on how to strengthen the program. The organization adds new members and sectors to the business council as its programming expands. One idea that came out of these meetings and has since been adopted by St. Nicks Alliance is a young adult mentorship program.

Building on the experience of WorkAdvance, St. Nicks Alliance has continued to strengthen its alumni services. Program graduates come back to the organization quarterly to network with one another, learn about next steps they can take in their careers, obtain industry recertification, and connect with St. Nicks Alliance's employer partners. St. Nicks Alliance is also exploring whether to offer advanced training opportunities, after input from the business council and employer partners.

order to be statistically significant (see the minimum detectable effects calculated in the power analysis done as part of the original study in Appendix Table A.1).

The findings for the early and late cohorts tell a similar story: The earnings differences among both cohorts are positive but not statistically significant in 2017 and 2018 (Table 2.2). For example, among the late cohort, WorkAdvance group members earned an average of $28,607 in 2018 compared with average earnings of $26,333 for control group members. Again, it is hard to detect statistically significant impacts with the sample sizes of the early and late cohorts at St. Nicks Alliance.

Table 2.2

St. Nicks Alliance Impacts on Employment and Earnings in 2017 and 2018

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the full sample				
Ever worked (%)				
2017	79.8	81.4	-1.5	0.673
2018	77.7	79.7	-2.0	0.601
Total earnings ($)				
2017	24,543	22,586	1,957	0.386
2018	26,670	23,822	2,849	0.208
Earned $30,000 or more (%)				
2017	36.0	29.1	6.9	0.103
2018	41.4	32.0	9.3 **	0.033
Full site sample size	242	237		
Among the early cohort				
Ever worked (%)				
2017	72.9	78.9	-6.1	0.255
2018	74.0	79.4	-5.3	0.308
Total earnings ($)				
2017	23,555	21,791	1,764	0.589
2018	24,430	22,262	2,168	0.483
Earned $30,000 or more (%)				
2017	37.2	29.6	7.6	0.208
2018	39.1	27.7	11.4 *	0.055

(continued)

Madison Strategies Group

Madison Strategies Group is a nonprofit organization that provides workforce development services in Tulsa, Oklahoma.[16] Its WorkAdvance program initially targeted the transportation sector, but the provider later added a focus on the manufacturing sector after it became clear that someone

[16]Madison Strategies Group is now often known as Tulsa Community WorkAdvance.

Table 2.2 (continued)

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the late cohort				
Ever worked (%)				
2017	87.1	84.8	2.3	0.634
2018	80.9	81.1	-0.1	0.983
Total earnings ($)				
2017	25,210	24,028	1,181	0.714
2018	28,607	26,333	2,274	0.509
Earned $30,000 or more (%)				
2017	33.3	29.9	3.5	0.570
2018	42.9	38.4	4.5	0.500
Early cohort sample size	127	131		
Late cohort sample size	115	106		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.
The differences in impacts between cohort subgroups are not statistically significant.
Rounding may cause slight discrepancies in sums and differences.

who is trained to manufacture transportation-related parts has the requisite skills to work in manufacturing more generally. The organization was new to Tulsa at the beginning of the study,[17] and it took some time for it to establish relationships with training providers and employers and to fully implement the WorkAdvance model components. (Box 2.5 describes Madison Strategies Group's program as of 2019). This initial start-up period, as well as the organization's use of the placement-first track in the early part of the study period, meant that early enrollees probably experienced a less mature program than late enrollees. For these reasons, the late cohort findings may better represent the effects of Madison Strategies Group's WorkAdvance program.

Madison Strategies Group did not increase employment by a statistically significant amount among the late cohort in 2017 or 2018 (Table 2.3). In 2018, 74 percent of WorkAdvance group members were ever employed compared with 79 percent of control group members. The impacts on average earnings among the late cohort are not statistically significant in either year.

[17]Madison Strategies Group is a nonprofit spinoff of Grant Associates, a for-profit workforce development company with sector program experience in New York City. Madison Strategies Group was able to take some institutional knowledge from its parent organization.

Box 2.5

Where Are the WorkAdvance Providers Now?

Madison Strategies Group

When the WorkAdvance evaluation started in 2011, Madison Strategies Group was a new organization in Tulsa, Oklahoma, and had to ramp up its services quickly. Since the evaluation ended, the organization has continued to offer services based on the WorkAdvance model, but it has focused its efforts on figuring out how to adapt those services to make the program even stronger. The organization now has a much larger presence in its community, and based on its achievements, has become a leader in the local workforce field.

Madison Strategies Group continues to operate training programs in the manufacturing and transportation sectors, but it has changed some of the specific trainings it offers based on the types of jobs available to graduates. For example, the organization now offers training to obtain a Commercial Driver's License Class B (instead of a Commercial Driver's License Class A) because there are more opportunities to obtain good jobs with higher wages. Madison Strategies Group also offers training in other sectors that have more economic mobility, including accounting, information technology, logistics, and health care.

Madison Strategies Group has also focused on its recruitment and intake process. The organization overhauled its interview questions, developed a point scale, and found new assessments to use for each training track. These adaptations have helped staff members to better identify which applicants will benefit the most from the program services.

Madison Strategies Group has also launched two new initiatives that build on the success of the WorkAdvance model. First, the organization is piloting a public housing-based program that is funded through a Choice Neighborhood grant. This program draws on aspects of the WorkAdvance model to deliver job readiness and employment services, including workshops and individualized coaching, to individuals living in a specific neighborhood. The services are designed to increase job skills and employment. Additionally, the organization has started a program aimed at 18- to 24-year-olds called "NextUp." Participants receive a set of support services over several months in addition to their occupational skills training. They work with a coach on personal issues such as how to set up a bank account, and with a career advisor on professional issues such as how to get through the occupational skills training.

In 2018, WorkAdvance group members in the late cohort earned $23,616, on average, compared with average earnings of $22,060 for the control group. Among the early cohort, the earnings differences are also positive, though smaller, and statistically insignificant (the differences in impacts across cohorts are not statistically significant). However, Madison Strategies Group did increase the likelihood of having high earnings ($30,000 or more) among the late cohort in 2017. That year, 38 percent of WorkAdvance group members earned at least $30,000, a statistically significant increase of 12 percentage points over the control group average. This suggests that some WorkAdvance group members were advancing into higher-paying jobs that year.

Table 2.3

Madison Strategies Group Impacts on Employment and Earnings in 2017 and 2018

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the full sample				
Ever worked (%)				
2017	77.2	78.6	-1.3	0.663
2018	74.1	78.6	-4.4	0.168
Total earnings ($)				
2017	19,739	17,958	1,780	0.177
2018	21,248	20,461	787	0.603
Earned $30,000 or more (%)				
2017	32.5	21.0	11.5 ***	0.001
2018	33.6	27.8	5.8 *	0.092
Full site sample size	353	344		
Among the early cohort				
Ever worked (%)				
2017	71.9	76.0	-4.1	0.394
2018	71.3	73.6	-2.4	0.626
Total earnings ($)				
2017	17,855	15,873	1,983	0.287
2018	18,869	18,614	254	0.903
Earned $30,000 or more (%)				
2017	27.7	16.0	11.7 ***	0.008
2018	27.6	24.0	3.6	0.449

(continued)

Among the full sample, WorkAdvance group members earned more, on average, than control group members: in 2017, $1,780 (or about 10 percent) more; and in 2018, $787 more. However, neither difference is statistically significant (Table 2.3). In both years, Madison Strategies Group increased the likelihood of earning at least $30,000 by a statistically significant amount. For example, in 2018, 34 percent of WorkAdvance group members earned $30,000 or more compared with 28 percent of control group members.

Table 2.3 (continued)

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the late cohort				
Ever worked (%)				
2017	82.7	80.7	2.0	0.617
2018	77.2	82.8	-5.5	0.201
Total earnings ($)				
2017	21,713	19,695	2,018	0.283
2018	23,616	22,060	1,556	0.482
Earned $30,000 or more (%)				
2017	37.5	25.3	12.2 **	0.011
2018	39.4	31.2	8.2	0.105
Early cohort sample size	173	164		
Late cohort sample size	180	180		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

The differences in impacts between cohort subgroups are not statistically significant.

Rounding may cause slight discrepancies in sums and differences.

There were no statistically significant differences in employment rates in either year among the full sample. In 2017, 77 percent of WorkAdvance group members and 79 percent of control group members were employed at some point. Furthermore, 32 percent of WorkAdvance group members and 37 percent of control group members were hired at a new job that year (see Appendix Table A.7), indicating a high rate of job change among both research groups.[18] It should be noted that previous findings from the survey data showed Madison Strategies Group's program had positive impacts on several work-related measures — for example, the availability of employer-provided benefits — that cannot be measured in the administrative records data. It is possible that these impacts persisted in the long term.

Towards Employment

Towards Employment is an established community-based organization in northeast Ohio that provides a range of employment services. It targeted both the health care and manufacturing sectors. Before it implemented the WorkAdvance model, the organization focused more on work

[18]These job changes could be related to sample members advancing into better jobs or to sample members losing their jobs and needing to find new ones.

readiness than on technical training but had experience with programs targeted at entry-level jobs in the health care sector. The evaluation required Towards Employment to add career advancement services, deepen its expertise within the health care sector, and branch out and develop relationships with new training providers and employers within a new sector, manufacturing.[19] Towards Employment adjusted the specific training and credentials it offered in both targeted sectors throughout the study period based on employer needs. (See Box 2.6 for an update on changes Towards Employment made to its program after the evaluation period.) Given these changes, as well as the organization's use of the placement-first track early on, it was hypothesized that the effects of WorkAdvance would be stronger for the late cohort than for the early cohort.

WorkAdvance group members and control group members in the late cohort worked and earned similar amounts in 2017 and 2018 (Table 2.4). For example, in 2018, WorkAdvance group members earned $22,100, on average, and control group members earned $22,086, on average.[20] Among the early cohort, the earnings differences are larger but not statistically significant. The estimated differences in impacts across the cohort subgroups are not statistically significant. This finding goes against the hypothesis that the effects would be stronger for the late cohort than for the early cohort, as well as previous findings based on the state unemployment insurance wage data that showed statistically significant earnings effects among the late cohort in some years (see Appendix Table A.5). Among the late cohort, there is a statistically significant effect on the likelihood of having earnings of $30,000 or more in 2017: That year, 33 percent of WorkAdvance group members earned at least that much compared with 25 percent of control group members.

Towards Employment did not have a statistically significant effect on employment or earnings in 2017 or 2018 among the full sample (Table 2.4). In 2018, WorkAdvance group members earned around $1,400 — or 8 percent — more, on average, than control group members. That year, 79 percent of both WorkAdvance group members and control group members were employed.[21] Previous findings from the Year 2 survey data showed Towards Employment's WorkAdvance program had positive impacts on some work-related measures, including work schedules and job types, that cannot be measured in the administrative records data. It is possible that these impacts persisted in the long term.

[19]Two other implementation factors were unique to Towards Employment's program: (1) The organization initially oversaw a second program location that was ultimately not included in the analysis, and (2) it managed partnerships with other service providers, educational institutions, trade organizations, and labor market intermediaries that delivered various components of the model, an arrangement that is probably typical of many sector programs. See Tessler et al. (2014) and Hendra et al. (2016) for more details.

[20]Towards Employment's WorkAdvance program increased average earnings in 2017 by a statistically significant amount among the late cohort based on state unemployment insurance wage data (Appendix Table A.5).

[21]Appendix Table A.6 shows impacts on employment and earnings by random assignment sector at Towards Employment. These impacts are based on state unemployment insurance wage data. Among sample members randomly assigned in the manufacturing sector, WorkAdvance increased employment in Year 2 by a statistically significant amount. In Year 4, the estimated impact on earnings is statistically significant among sample members randomly assigned in the health care sector.

Box 2.6

Where Are the WorkAdvance Providers Now?

Towards Employment

Since the original WorkAdvance evaluation ended, Towards Employment has adapted its manufacturing and health care trainings in response to shifts in the local labor market. With lower unemployment rates, staff members say employers are more willing to partner with them to address current skills gaps. Staff members also say job seekers are less likely to go to training, choosing to enter the labor market instead. In response, Towards Employment has started working more directly with employers on "earn and learn" opportunities for new and current employees and is exploring how to use incentives to get more individuals into its trainings.

In the health care sector, the organization has continued to grow its partnership with University Hospitals (UH). Towards Employment refers program graduates to open positions in the hospital system, provides retention and advancement services to those who were hired, and has introduced internal "pathways programs" to help current employees advance to higher-level positions. The strong relationship with UH has allowed Towards Employment to be nimble — quickly adapting its focus and services as the employer's needs change. As of fall 2019, Towards Employment had placed more than 350 individuals in jobs with UH, has helped more than 80 individuals already working there advance into higher wage positions, and has seen a 90 percent one-year retention rate.

Towards Employment has expanded and refined its programming to work with new populations — for example, individuals being released from prison — and to reach other industries, such as the construction and culinary trades. One innovative approach adopted by the organization: Towards Employment operated its own social enterprise bakery and café for four years to provide transitional jobs and training for individuals in its culinary training program.

Towards Employment has also placed an increased emphasis on long-term, advancement-focused career coaching in its program model. The organization offers two years of career pathways support to participants, including one year after participants have found jobs. Participants work with a coach to map out a career plan that includes goals and the strategies to achieve them. Towards Employment has also continued to work with people who were part of the original WorkAdvance evaluation. Many of these individuals continue to reach out to the organization to share their successes and to ask for guidance on how they can advance to the next stage of their careers.

Pooled Sample

While the main WorkAdvance impact analysis was done at the site level, given the substantial variation among the providers, it is useful to understand how a model like WorkAdvance might perform *overall*, across providers. Table 2.5 shows the impacts of WorkAdvance for the pooled sample, combining sample members from all four WorkAdvance sites.

WorkAdvance had no effect on employment in either 2017 or 2018. In 2018, 79 percent of WorkAdvance group members and 80 percent of control group members were employed at

Table 2.4

Towards Employment Impacts on Employment and Earnings in 2017 and 2018

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the full sample				
Ever worked (%)				
2017	82.5	80.8	1.7	0.541
2018	79.0	78.6	0.4	0.894
Total earnings ($)				
2017	19,006	17,477	1,529	0.197
2018	19,742	18,338	1,404	0.275
Earned $30,000 or more (%)				
2017	26.7	21.5	5.2	0.100
2018	28.9	23.8	5.1	0.117
Full site sample size	349	349		
Among the early cohort				
Ever worked (%)				
2017	77.8	75.4	2.4	0.588
2018	75.6	72.8	2.8	0.541
Total earnings ($)				
2017	16,461	14,182	2,279	0.148
2018	17,172	14,726	2,446	0.139
Earned $30,000 or more (%)				
2017	20.1	18.2	1.9	0.650
2018	22.0	18.7	3.3	0.445

(continued)

some point. However, WorkAdvance did increase earnings by statistically significant amounts in both years: by $2,392 in 2017 and by $2,716 in 2018. Because there are earnings increases without commensurate increases in employment for the pooled sample, there is evidence that WorkAdvance did lead to some wage gains. This is a sign that WorkAdvance group members were advancing over time, as the model intended. Further evidence of advancement is seen in the statistically significant impacts on the likelihood of individuals having earnings of at least $30,000 in both 2017 and 2018.

Table 2.4 (continued)

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the late cohort				
Ever worked (%)				
2017	86.9	86.4	0.5	0.894
2018	81.8	84.9	-3.1	0.441
Total earnings ($)				
2017	21,354	20,882	472	0.791
2018	22,100	22,086	14	0.994
Earned $30,000 or more (%)				
2017	32.8	24.8	8.1 *	0.093
2018	35.3	29.2	6.1	0.216
Early cohort sample size	168	177		
Late cohort sample size	181	172		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

The differences in impacts between cohort subgroups are not statistically significant.

Rounding may cause slight discrepancies in sums and differences.

While the earnings impacts are statistically significant and show the impact for a range of possible WorkAdvance providers, they do mask the variation in impacts across the sites discussed in the previous section. In other words, some of the pooled sample earnings impacts are being driven by the large earnings impacts at Per Scholas. However, an exploratory analysis looking at the impacts among the pooled sample from St. Nicks Alliance, Madison Strategies Group, and Towards Employment showed statistically significant earnings increases in some quarters (not shown).[22] This suggests that the earnings impacts of WorkAdvance were not limited to Per Scholas. It should also be noted that because the site-specific sample sizes are smaller relative to the pooled sample size, the site-specific impacts need to be larger to be statistically significant (a power analysis from the original study is presented in Appendix Table A.1).

[22]This analysis indicated that among the pooled samples at St. Nicks Alliance, Madison Strategies Group, and Towards Employment, WorkAdvance increased earnings by statistically significant amounts in Quarter 3, 2017 through Quarter 1, 2018; in Quarter 4, 2018; and in 2017 overall.

Table 2.5

Impacts on Employment and Earnings in 2017 and 2018 for the Pooled Sample

Outcome	WorkAdvance group	Control group	Difference (Impact)	P-Value
Ever worked (%)				
2017	81.2	80.9	0.4	0.816
2018	78.8	80.2	-1.5	0.355
Total earnings ($)				
2017	23,844	21,452	2,392 ***	0.005
2018	26,419	23,703	2,716 ***	0.003
Earned $30,000 or more (%)				
2017	36.1	28.9	7.2 ***	0.000
2018	40.0	33.7	6.4 ***	0.001
Sample size	1,293	1,271		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTE: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.
Rounding may cause slight discrepancies in sums and differences.

Labor Market Attachment Subgroup

Among the individuals who enrolled in the WorkAdvance study, there is considerable variation in terms of demographics, education and work experience, and other characteristics. At the start of the study, it was an open question whether WorkAdvance would work better for some individuals than for others and whether the program should target a more well-defined group. To help answer this, the second prespecified confirmatory subgroup analysis was based on sample members' levels of attachment to the labor market at the time they entered the study.[23] The labor market attachment subgroup analysis was done at the pooled sample level — combining sample members from all four WorkAdvance providers — due to small site sample sizes.

[23]In previous reports, impacts for several exploratory subgroups, including age, race, prior education, prior earnings, and prior conviction or incarceration status, were also analyzed using state unemployment insurance wage data. The overall impression from those analyses was that the impacts of WorkAdvance did not vary greatly across many subgroups. Some subgroups experienced larger impacts than others, but in most cases the variation in impacts across subgroups was not statistically significant. It is unclear whether those findings would hold for the NDNH impacts presented in this report. It was not possible to repeat these subgroup analyses with the long-term data due to restrictions on access to the NDNH data.

The labor market attachment subgroup analysis split the sample into three groups: (1) the fully attached, those who were employed or who had been out of work for less than one month at study entry; (2) the semiattached, those who had been out of work for between one and six months at study entry; and (3) the long-term unemployed, those who had never worked or who had been out of work for seven or more months at study entry. Based on previous studies, it was hypothesized that WorkAdvance would be most effective for individuals in the semiattached group who had some connection to the labor market.[24] The rationale was that these individuals are often at a "tipping point" in their employment trajectories and therefore might be more sensitive to the intervention. The WorkAdvance services could help them get back into the workforce, which was not an issue for the fully attached group,[25] yet they would not have too many barriers to overcome, as the long-term unemployed might, in order to benefit from the program. The long-term unemployed group was also relevant to policy, given that WorkAdvance was implemented in the wake of the Great Recession and there was significant concern about the probability of this group reentering the labor market.

There were no statistically significant effects on employment in any subgroup in 2017 or 2018. The difference in employment impacts across subgroups was also not statistically significant. However, the difference in earnings impacts in 2018 across subgroups *was* statistically significant. In that year, WorkAdvance increased earnings among the semiattached by $4,745 and among the long-term unemployed by $3,235; the earnings impact among the fully attached group was not statistically significant (Table 2.6). Among the semiattached, there was also a large and statistically significant impact of more than $4,200 on earnings in 2017.[26] In that year, semiattached WorkAdvance group members earned $25,645, on average, compared with average earnings of $21,392 for semiattached control group members.

As might be expected, both the employment and earnings levels were higher for both research groups among the semiattached group than among the long-term unemployed group. Nonetheless, it is encouraging to see that WorkAdvance was able to help the long-term unemployed reenter the labor market and increase their earnings, relative to what would have happened in the absence of the program.

These findings on their own suggest that WorkAdvance can increase earnings for the semiattached and long-term unemployed groups, but not necessarily that WorkAdvance works better for those groups. Some of the impacts among those groups were likely driven by the site-specific impacts, as were the lack of impacts among the fully attached group. A similar pattern of

[24]The Employment Retention and Advancement evaluation and other prior welfare-to-work studies showed an "inverted U" subgroup pattern. See Hendra et al. (2010).

[25]The WorkAdvance model was designed to help individuals who were already employed by offering advancement-focused services. The postemployment services envisioned by the model were to be more robust than the services offered to participants postplacement in previous evaluations.

[26]The results are consistent with the pattern of findings seen in other studies. See, for example, Hendra et al. (2010).

Table 2.6

Impacts on Employment and Earnings in 2017 and 2018 for Subgroups Defined by Baseline Labor Market Attachment, Among the Pooled Sample

	Fully attached			Semiattached			Long-term unemployed			
Outcome	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	Sig.
Ever worked (%)										
2017	87.7	89.6	-1.9	82.4	80.7	1.6	75.8	75.2	0.6	
2018	84.9	87.5	-2.6	80.7	81.5	-0.9	73.0	74.1	-1.1	
Total earnings ($)										
2017	25,456	25,362	94	25,645	21,392	4,252 ***	20,872	19,098	1,774	
2018	26,557	27,696	-1,139	28,965	24,220	4,745 ***	23,787	20,552	3,235 **	††
Sample size	308	356		456	449		529	463		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTES: WA = WorkAdvance; C = Control.

The fully attached group consists of sample members who at baseline were working or had been unemployed for less than one month. The semiattached group consists of sample members who had been unemployed for one to six months at baseline. The long-term unemployed group consists of sample members who had never been employed or who had been unemployed for seven or more months at baseline.

Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

findings for the labor market attachment subgroups was seen previously in the impacts based on state unemployment insurance wage data. An analysis of those findings showed the impacts among the semiattached and long-term unemployed groups were partly due to the site-specific impacts.[27] The findings do support the idea that sector programs are not "one size fits all." Some groups of participants may need different services than others, and programs may need to change their service offerings to meet the needs of individual participants.

[27]The analysis used a regression that controlled for the program site. The findings showed that the stronger effects among both the semiattached and the long-term unemployed were eliminated when controlling for site. See Hendra et al. (2016) and Schaberg (2017) for more information. It was not possible to recreate this analysis with the NDNH data.

Chapter 3

Benefit-Cost Analysis of WorkAdvance

This section examines whether the various effects of each of the four WorkAdvance programs, when viewed in aggregate, resulted in financial gains or losses. These gains and losses are reported from three perspectives: those of persons assigned to the WorkAdvance group ("participants"); the government;[1] and society as a whole, which combines the first two perspectives and also includes any benefits and costs that accrue to members of the control group and persons not involved in the study ("nonparticipants").

Several aspects of the benefit-cost analysis are consistent with the economic impact analysis presented in the previous section. For example, all the findings from the benefit-cost analysis are reported on a per-participant basis. Moreover, all of the persons assigned to the WorkAdvance group, both those for whom the program had effects and those for whom it did not, were included in the benefits and costs estimate.

There are also important differences between the benefit-cost study and the impact analysis. For instance, unlike the impact analysis, the benefits and costs for Madison Strategies Group and Towards Employment are based on only the late cohort, while those for Per Scholas and St. Nicks Alliance are based on the full sample. Thus, persons in the first two sites who might have entered the "placement first" track, rather than the "training first" track, are excluded from the analysis and the results are therefore applicable to a "purer" version of WorkAdvance. In addition, the benefit-cost study takes a broader look at WorkAdvance than the impact study — for example, by incorporating the costs of running the programs and the programs' effects on taxes, transfer payments, and the receipt of fringe benefits. In addition, the benefit-cost study uses estimates of benefits and costs regardless of their level of statistical significance. However, after reporting the findings from the study, statistical significance and other sources of uncertainty concerning them are examined through sensitivity analyses.

Conducting the Benefit-Cost Study

To conduct the benefit-cost analyses, it was first necessary to determine the costs of operating each of the four WorkAdvance programs. A cost study to do this was conducted previously and the findings are summarized earlier in this report. The starting point for the cost study was financial reports that the sites were required to submit over the life of the program. Details about how the cost study was done and additional findings from it can be found in Chapter 4 of the report on WorkAdvance's two-year impacts.[2]

[1]Much of the cost of operating the WorkAdvance demonstration was paid for by foundations. Nonetheless, the benefit-cost analysis treats WorkAdvance under the assumption that it was entirely funded by the government as likely would be the case were the program to became permanent.

[2]Hendra et al. (2016).

Appendix B provides details on how each of the remaining program benefits and costs were estimated. As indicated there, the earnings impacts used in the benefit-cost analysis are based on both state unemployment insurance wage data and National Directory of New Hires data. WorkAdvance's estimated impacts on earnings feed into the measurement of many of the other benefits and costs used in the analysis. For example, impacts on earnings engender changes in fringe benefits, tax payment amounts, work-related expenditures, and time available outside of work (sometimes called nonmarket or leisure time, which is of value to most people). In addition, paying for WorkAdvance requires additional taxes. Reductions in transfer payments received by program participants, on the other hand, such as food stamps/Supplemental Nutrition Assistance Program (SNAP) and housing assistance, as well as increases in tax payments paid by participants, means that taxes paid by others can be reduced. These changes in tax receipts and transfer payments, in turn, increase or decrease inefficiencies in the economy (for example, by influencing decisions affecting how much to work or invest), inefficiencies that economists call "deadweight loss." As explained in Appendix B, impacts on these items are estimated by using information from various external sources to determine how these benefits and costs change as earnings change. For example, an increase in fringe benefits attributable to a dollar increase in earnings is derived from an externally obtained multiplier that incorporates data collected by the U.S. Bureau of Labor Statistics, as well as data collected in the WorkAdvance Year 2 survey.

As many benefits and costs as possible were estimated in dollars. Summing these items indicates whether the financial gains due to WorkAdvance exceeded the financial losses. However, it was not possible to measure all the possible benefits and costs resulting from WorkAdvance in dollars. For example, by working more, participants in WorkAdvance may have filled job openings that otherwise would have been taken by nonparticipants. Also, as a result of participants receiving increased earnings, their spouses and partners may have been able to work less. Appendix C considers half a dozen potential benefits and costs that could not be measured in dollars and whether, if they could be measured, they would substantially affect the findings based on the benefits and costs that are estimated in dollars, concluding that they probably would not.

Some of the benefits and costs considered in this section do not directly affect society as a whole. For example, an increase of a dollar in income tax payments paid by participants or a dollar reduction in SNAP benefits received by participants is offset by a dollar improvement in the government's fiscal position. However, by reducing the taxes that persons who did not participate in WorkAdvance must pay, this improvement results in a reduction in deadweight loss, which does affect society as a whole because it is not offset by a cost occurring elsewhere. Moreover, a reduction in SNAP benefits that reduces SNAP's administrative cost is not offset by a cost to participants and, hence, benefits society as a whole.

The effects of WorkAdvance are unlikely to suddenly end when the period for which earnings data were collected ends. MDRC projected benefits and costs until the tenth year after random assignment or until it appeared that program impacts on earnings fell to zero, whichever

occurred first.[3] Thus, it is assumed that once WorkAdvance increased earnings, it would not subsequently reduce earnings. As discussed in Appendix B, it appears that positive impacts on earnings were likely to continue at St. Nicks Alliance for more than ten years but to disappear after five and a half years at Madison Strategies Group and Towards Employment and after seven years at Per Scholas.

Because WorkAdvance's benefits and costs were received or incurred in different years, and those accruing later are of less value than those accruing earlier, a discount rate of 3.5 percent was used to convert all benefits and costs to their value in 2018.[4] This allows monetary values accrued in different years to be appropriately compared and summed. To further this comparison, MDRC also adjusted all the monetary estimates used in the analysis to 2018 prices using the Consumer Price Index (CPI).

Findings from the Analysis of Benefits and Costs

Like the impact estimates, the findings from the benefit-cost analysis are reported separately for each site. As will be seen, they are generally positive and substantial for all the sites; indeed, they are considerably larger than is typically the case for employment and training programs. For example, the net gains for society as a whole were almost $6,000 at Towards Employment, more than $13,000 each at St. Nicks Alliance and Madison Strategies Group, and $31,000 at Per Scholas. The net gains were also large for participants, ranging from over $5,000 to over $15,000, with Per Scholas again at the top end of the range. Although it paid substantially to operate WorkAdvance, the government did no worse than break even at one site (Towards Employment) and received positive returns on its investment at the other three sites, especially at Per Scholas.[5] It appears unlikely that these gains would be strongly affected if those benefits and costs that could not be measured in dollars could be included in the net gain estimates.

[3]The period over which earnings data were collected is called "the observation period" and the period over which earnings are projected is called "the projection period." As indicated above, determining whether impacts on earnings are positive during the observation period depends on the values of the impact estimates, not on whether those estimates are statistically significant.

[4]The need for a discount rate reflects the idea that most people would rather have a sum of money available today than have to wait several years for the same sum. There is considerable uncertainty and controversy over the appropriate discount rate to use in benefit-cost studies of social programs. Boardman, Greenberg, Vining, and Weimer (2018) suggest 3.5 percent, with 2.0 percent and 5.5 percent used to conduct sensitivity analyses. The estimated net gains for WorkAdvance that are reported below are relatively insensitive to these alternative rates, typically changing by less than 10 percent. This is because these net gains are computed over a rather short period of no more than 10 years.

[5]As will be discussed later in this chapter, results from a Monte Carlo analysis suggest that it is difficult to know for certain whether there were net losses or net gains from the government's perspective at St. Nicks Alliance, Madison Strategies Group, and Towards Employment. Nonetheless, whatever the direction, they were probably small.

Per Scholas

Table 3.1 presents findings from the benefit-cost analysis of Per Scholas. The table reports benefits and costs from the three perspectives mentioned above: WorkAdvance participants, the government's budget, and society as a whole. Benefits have positive signs in the table and costs have negative signs. Because they are more speculative than the other individual estimates (see Appendix B), the estimates of the cost of the loss of time outside of work and the gains resulting from reductions in deadweight loss are excluded from the top panel of the table, but they are discussed below and are incorporated into the net financial gain estimates appearing in the bottom panel. In addition, the table is limited to the period during which the data used in the analysis were actually collected (that is, the observation period), which lasted for five and three-quarters years at Per Scholas. Results projected beyond the observation period, which are more speculative than those limited to the observation period, are discussed below and are also reported in Table 3.2.

As Table 3.1 shows, the key benefit from the participants' perspective is their gain in pretax earnings. Because participants are part of society, pretax earnings are also the key benefit from the societal perspective. WorkAdvance participants enjoyed a large increase in earnings, so their fringe benefits also increased. These gains for participants and society were partially offset by work-related expenditures (mostly transportation). In addition, participants had to pay more income, payroll, and sales taxes. These increases in tax payments by participants accrue dollar-for-dollar to the government's budget. Thus, they do not affect society as a whole. As might be expected, most transfer payments (that is, Temporary Assistance for Needy Families, SNAP, housing assistance, and unemployment insurance) received by WorkAdvance participants at Per Scholas declined. The exception was Supplemental Security Income/Social Security Disability Insurance payments. Like tax payments, the changes in transfer payments were offset dollar-for-dollar by changes in the government's budget. Hence, there was again no effect on society as a whole. There was a small decrease in the cost of administering transfer benefits, however, which benefited both the government and society. As shown in Table 3.1, the most important cost to the government was the expense of operating WorkAdvance.

When the individual benefits and costs listed in Table 3.1 are summed but nonmarket time and deadweight loss are not included, they indicate that the total gains from WorkAdvance were positive and quite substantial from all three perspectives at Per Scholas. Because WorkAdvance improved the government's budgetary position and therefore, fewer taxes had to be collected from persons who did not participate in the program, the program reduced inefficiencies in the economy. Thus, deadweight loss is estimated to fall by $2,167. This reduction only affects net gains from the societal perspective because the effect results from reductions in taxes paid by nonparticipants. Because the earnings increases enjoyed by program participants resulted, in part, from increased hours of work, participants had fewer hours available outside of work. The value of this loss is estimated to be $4,539. This loss would have been even larger, but, as suggested by the earnings threshold measure discussed earlier and by an analysis in Appendix B, much of the earnings increase is due to advancement and higher wage rates, rather than more time spent at

Table 3.1

Benefits and Costs for Per Scholas by Accounting Perspective Over the 63-Month Observation Period (in 2018 dollars)

Benefits and costs ($)	Participants	Government Budget	Society
Pretax earnings of participants	28,661	0	28,661
Fringe benefits	7,159	0	7,159
Payroll taxes	-4,707	4,707	0
Income taxes	-4,928	4,928	0
Sales taxes	-840	840	0
Work-related expenditures	-2,163	0	-2,163
TANF	-1,291	1,291	0
SNAP	-2,500	2,500	0
SSI/SSDI	1,177	-1,177	0
Housing assistance	-1,677	1,677	0
UI	-355	355	0
Administrative cost of transfer programs	0	709	709
Net program costs	0	-4,459	-4,459
Net financial gains or losses without nonmarket time and deadweight loss	18,536	11,370	29,906
Nonmarket time	-4,539	0	-4,539
Deadweight loss	0	0	2,167
Net financial gains or losses with nonmarket time and deadweight loss	13,997	11,370	27,535

SOURCES: The sources and derivation of net program costs are described in Hendra et al. (2016). The sources and derivation of the remaining benefit and cost components are described in Appendix B.

NOTES: All benefits and costs are in dollars per participant over five years and are inflation-adjusted to 2018 dollars and discounted to 2018 present values.
Rounding may cause slight discrepancies in calculating sums.
TANF = Temporary Assistance for Needy Families, SNAP = Supplemental Nutrition Assistance Program, SSI = Supplemental Security Income, SSDI = Social Security Disability Insurance, UI = Unemployment Insurance
Rounding may cause slight discrepancies in sums and differences.

work. Taken together, the estimates of changes in deadweight loss and time outside of work reduce estimated net gains from the participant perspective from $18,536 to $13,997 and net gains from the societal perspective from $29,906 to $27,535. Net gains from the perspective of the government's budget are unaffected.

Table 3.2

Benefits and Costs by Accounting Perspective Over the Observation Period and for Two Sites Over the Observation and Projection Periods (in 2018 Dollars), by Site

Net financial gains and losses ($)	Participants	Government Budget	Society
Per Scholas			
Over the observation period	13,997	11,370	27,535
Over the observation and projection periods	15,456	13,387	31,387
St. Nicks Alliance			
Over the observation period	1,623	-4,130	-3,293
Over the observation and projection periods	9,387	3,660	13,742
Madison Strategies Group			
Over the observation period	11,192	1,615	13,114
Over the observation and projection periods	11,192	1,615	13,114
Towards Employment			
Over the observation period	5,505	265	5,820
Over the observation and projection periods	5,505	265	5,820

SOURCES: The sources and derivation of net program costs are described in Hendra et al. (2016). The sources and derivation of the remaining benefit and cost components are described in Appendix B.

NOTES: The observation period for Per Scholas and St. Nicks Alliance is 63 months and for Madison Strategies Group and Towards Employment is 62 months. The combined observation and projection period for Per Scholas is 7 years and for St. Nicks Alliance is 10 years. For Madison Strategies Group and Towards Employment, the benefits and costs were not projected beyond the observation period because it appears the positive impacts on earnings disappeared after the observation period.

All gains and losses include the monetized effects of WorkAdvance on nonmarket time and deadweight loss, are inflation-adjusted to 2018 dollars, and are discounted to 2018 present values.

Using the approach described in Appendix B, it was estimated that WorkAdvance at Per Scholas produced positive effects on earnings for a total of seven years (that is, for five quarters beyond the observation period). Taking account of these additional five quarters, and also of the loss of nonwork time and improvement in deadweight loss, it is projected that the net gains at Per Scholas were $15,456 for participants, $13,387 from the government budgetary perspective, and $31,387 for society as a whole (see Table 3.2). These net gains are larger than those engendered by the other three WorkAdvance programs examined in this report. Indeed, as discussed later, they are exceptionally large as compared with those resulting from most employment and training programs.

As mentioned above, half a dozen benefits and costs that could not be estimated in dollars are considered in Appendix C. Three of them appear, if anything, potentially likely to add to the substantial gains reported in Table 3.1, though very modestly. Two potential effects of WorkAdvance at Per Scholas that could not be measured would probably reduce the net gains appearing in Table 3.1 if they could be estimated in dollars. However, for reasons discussed in Appendix C, the potential size of the first of these effects — the possibility that because the earnings of participants were larger, their spouses and partners worked less — is probably very modest. The second effect — the possibility that competition from WorkAdvance participants causes nonparticipants to earn less than they otherwise would — is potentially more important, but as discussed in Appendix C, seems unlikely to greatly weaken the positive findings appearing in Table 3.1. Certainly, they are very unlikely to become negative.

St. Nicks Alliance

The benefit-cost findings for St. Nicks Alliance appear in Table 3.3. This table is very similar to Table 3.1 for Per Scholas — program effects on time available outside of work and on deadweight loss are omitted and the table pertains only to the observation period. Although participants appear to have enjoyed modest net gains during the five-and-three-quarter-year observation period, the cost of operating WorkAdvance at St. Nicks Alliance was larger than increases in tax payments and reductions in transfer payments, and as a result, the government's budgetary position diminished, and society was worse off. These bottom-line figures look even worse when deadweight loss, which increased because the government's budgetary position was worse, and the loss of time outside of work are considered (see Table 3.2).

The picture changes considerably when the benefits and costs are projected beyond the observation period. Looking at a 10-year period (that is, a projection of four and a quarter years beyond the observation period) and including deadweight loss and the value of time outside of work, the net gain of participants increases from $1,623 to $9,387, the previously negative change in the government's budgetary position becomes positive at $3,660, and the loss to society becomes a gain of $13,742 (see Table 3.2). These rather dramatic results occur because, unlike the other three sites, earnings impacts at St. Nicks Alliance were still increasing at the end of the observation period, albeit modestly, and this is reflected in the projections. These projections are of course, subject to error. That is why the projection period was limited to a little over four years. However, even if the projections are limited to only a year and a half beyond the observation period, and hence are presumably less subject to error, net benefits at the St. Nicks Alliance site are still positive from the societal perspective. As in the case of Per Scholas, the analysis in Appendix C suggests that these positive results for St. Nicks Alliance are unlikely to diminish substantially if the benefits and costs that are not estimated in dollars were somehow incorporated into the net gain estimates.

Table 3.3

Benefits and Costs for St. Nicks Alliance by Accounting Perspective Over the 63-Month Observation Period (in 2018 dollars)

Benefits and costs ($)	Participants	Government Budget	Society
Pretax earnings of participants	5,197	0	5,197
Fringe benefits	1,298	0	1,298
Payroll taxes	-853	853	0
Income taxes	-894	894	0
Sales taxes	-99	99	0
Work-related expenditures	-392	0	-392
TANF	545	-545	0
SNAP	-634	634	0
SSI/SSDI	-1,307	1,307	0
Housing assistance	-1,012	1,012	0
UI	950	-950	0
Administrative cost of transfer programs	0	93	93
Net program costs	0	-7,527	-7,527
Net financial gains or losses without nonmarket time and deadweight loss	2,799	-4,130	-1,331
Nonmarket time	-1,176	0	-1,176
Deadweight loss	0	0	-786
Net financial gains or losses with nonmarket time and deadweight loss	1,623	-4,130	-3,293

SOURCES: The sources and derivation of net program costs are described in Hendra et al. (2016). The sources and derivation of the remaining benefit and cost components are described in Appendix B.

NOTES: All benefits and costs are in dollars per participant over five years and are inflation-adjusted to 2018 dollars and discounted to 2018 present values.

TANF = Temporary Assistance for Needy Families, SNAP = Supplemental Nutrition Assistance Program, SSI = Supplemental Security Income, SSDI = Social Security Disability Insurance, UI = Unemployment Insurance

Rounding may cause slight discrepancies in sums and differences.

Madison Strategies Group

The benefit-cost findings for the Madison Strategies Group are shown in Table 3.4. These findings are largely driven by the large impact of nearly $20,000 on pretax earnings during the observation period. However, as discussed in Appendix B, it appeared that the earnings impact did not extend beyond the site's five-and-a-half-year observation period. Thus, projections beyond this period were unnecessary.

Table 3.4

Benefits and Costs for Madison Strategies Group by Accounting Perspective Over the 62-Month Observation Period (in 2018 dollars)

Benefits and costs ($)	Participants	Government Budget	Society
Pretax earnings of participants	19,808	0	19,808
Fringe benefits	4,948	0	4,948
Payroll taxes	-3,253	3,253	0
Income taxes	-3,137	3,137	0
Sales taxes	-824	824	0
Work-related expenditures	-1,495	0	-1,495
TANF	13	-13	0
SNAP	-468	468	0
SSI/SSDI	-523	523	0
Housing assistance	773	-773	0
UI	-168	168	0
Administrative cost of transfer programs	0	60	60
Net program costs	0	-6,032	-6,032
Net financial gains or losses without nonmarket time and deadweight loss	15,673	1,615	17,289
Nonmarket time	-4,482	0	-4,482
Deadweight loss	0	0	307
Net financial gains or losses with nonmarket time and deadweight loss	11,192	1,615	13,114

SOURCES: The sources and derivation of net program costs are described in Hendra et al. (2016). The sources and derivation of the remaining benefit and cost components are described in Appendix B.

NOTES: All benefits and costs are in dollars per participant over five years and are inflation-adjusted to 2018 dollars and discounted to 2018 present values.

TANF = Temporary Assistance for Needy Families, SNAP = Supplemental Nutrition Assistance Program, SSI = Supplemental Security Income, SSDI = Social Security Disability Insurance, UI = Unemployment Insurance

Rounding may cause slight discrepancies in sums and differences.

Because of the large impact on pretax earnings, the fringe benefits received by participants increased. However, their work-related expenditures and tax payments also increased, but not by nearly enough to offset their increases in earnings and fringe benefits. WorkAdvance's effects on transfer payments appear to be very modest at Madison Strategies Group. Thus, program participants enjoyed substantial net gains, as did society as a whole. The increases in tax payments were sufficient to offset the cost of operating WorkAdvance at Madison Strategies

Group, resulting in a modest improvement in the government's budgetary position. Because the program's effect on the government's budgetary position was modest, deadweight loss was estimated to decline by only $307. However, there appears to have been a large loss in time outside of work, which decreased the net gain of participants from $15,673 to $11,192. Once again, it appears that if the value of the benefits and costs that could not be measured in dollars could be incorporated into the net gain estimates, the positive findings for Madison Strategies Group would be unlikely to become negative. Because the unemployment rate remained low throughout the observation period in Tulsa, where Madison Strategies Group is located, any losses of earnings by nonparticipants would be expected to be especially small.

Towards Employment

Table 3.5 presents the benefit-cost findings for Towards Employment. Like Madison Strategies Group, Towards Employment did not seem to have effects on pretax earnings that extended beyond the five-and-a-half-year observation period at that site. Thus, projections were not made for WorkAdvance at the Towards Employment site. Moreover, the impact on pretax earnings at the site was smaller than at Madison Strategies Group or Per Scholas. As a result, the bottom-line net gains for participants and society that appear in Table 3.5 are also smaller, although still positive and substantial. However, the increase in pretax earnings only generated sufficient increases in tax revenues and decreases in transfer payments to roughly offset WorkAdvance's operating costs of nearly $6,000 per participant. Thus, the government's budget was essentially unaffected.[6] Given this, the program's effect on deadweight loss at Towards Employment was negligible, but the estimate of the value of the loss of time outside the workplace is substantial. As is the case for the other three sites, the analysis in Appendix C suggests that if it were possible to include the nonmonetized benefits and costs, it is unlikely that the positive net gains shown in Table 3.5 would diminish by a substantial amount, and it is even more unlikely that they would become negative.

Overall

The bottom-line net gain findings for the four sites are summarized in Table 3.2, which includes the cost of lost nonwork time and deadweight loss. The table reports the bottom-line

[6]As described in Appendix B, the assumptions needed to estimate the program's impact on government transfer benefits are especially tenuous. As a result, these estimates are potentially subject to error, possibly causing the estimated net financial gains of the government to be substantially overstated. To illustrate the implication of this, if the impact on government transfer benefits was zero, net financial benefits from the government's perspective at the Towards Employment site would become negative and those at the St. Nicks Alliance site would fall to near zero. Net financial gains from the participant perspective, however, would increase by the corresponding amount and, consequently, net financial gains from the societal perspective would be unchanged. Of course, given the positive impacts of WorkAdvance on employment and earnings at all four sites, it seems likely that the program did cause some reduction in the use of government transfer benefits, although possibly by less than the estimated amounts.

Table 3.5

Benefits and Costs for Towards Employment by Accounting Perspective Over the 62-Month Observation Period (in 2018 dollars)

Benefits and costs ($)	Participants	Government Budget	Society
Pretax earnings of participants	12,638	0	12,638
Fringe benefits	3,157	0	3,157
Payroll taxes	-2,075	2,075	0
Income taxes	-1,773	1,773	0
Sales taxes	-398	398	0
Work-related expenditures	-954	0	-954
TANF	-872	872	0
SNAP	-1,028	1,028	0
SSI/SSDI	-886	886	0
Housing assistance	1,370	-1,370	0
UI	-242	242	0
Administrative cost of transfer programs	0	266	266
Net program costs	0	-5,905	-5,905
Net financial gains or losses without nonmarket time and deadweight loss	8,936	265	9,201
Nonmarket time	-3,431	0	-3,431
Deadweight loss	0	0	50
Net financial gains or losses with nonmarket time and deadweight loss	5,505	265	5,820

SOURCES: The sources and derivation of net program costs are described in Hendra et al. (2016). The sources and derivation of the remaining benefit and cost components are described in Appendix B.

NOTES: All benefits and costs are in dollars per participant over five years and are inflation-adjusted to 2018 dollars and discounted to 2018 present values.

TANF = Temporary Assistance for Needy Families, SNAP = Supplemental Nutrition Assistance Program, SSI = Supplemental Security Income, SSDI = Social Security Disability Insurance, UI = Unemployment Insurance

Rounding may cause slight discrepancies in sums and differences.

findings for the observation period alone and for the combined observation and projection periods. As previously indicated, the findings for the combined periods are based on benefits and costs that accrued over five and a half years for Towards Employment and Madison Strategies Group, seven years for Per Scholas, and ten years for St Nicks Alliance.

Focusing on the findings that combine the observation and projection periods, the results indicate that because of increases in earnings and fringe benefits, WorkAdvance participants, on

average, made very substantial gains of more than $5,000 to more than $15,000 even though they paid higher taxes and, at some sites, relinquished appreciable amounts of government transfer benefits. As Tables 3.1 and 3.3-3.5 indicate, the net gains are even greater if the cost of lost non-work time is ignored. Although considerable costs were incurred in operating WorkAdvance, these costs were offset at one site, and more than offset at the other three sites, by increases in tax payments received from participants and reductions in transfer benefits paid to participants. However, the net gains for the government's budget at Madison Strategies Group were small and those at Towards Employment were negligible.[7] For every dollar the government invested in program operating costs, its return was $4 at Per Scholas, $1.49 at St. Nicks Alliance, $1.27 at Madison Strategies Group, and $1.04 at Towards Employment. Because participants were better off at all four sites and the government's budget also improved at three sites, the gains for society as a whole from all four programs were substantial: nearly $6,000 at Towards Employment; over $13,000 at St. Nicks Alliance and Madison Strategies Group; and $31,000 at Per Scholas if the costs of losses in nonmarket time and the change in deadweight loss are included, and even larger if these items are ignored. These findings and the estimates of program operating costs imply that for every dollar of costs needed to operate WorkAdvance, society reaped eight dollars at the Per Scholas site, around three dollars at the St. Nicks Alliance and Madison Strategies Group sites, and two dollars at Towards Employment. It appears likely that the findings summarized in this paragraph would still hold up even if the estimates of net gains included those benefits and costs that could not be measured in dollars.

These net gain estimates are exceptional. Benefit-cost findings for employment and training programs for the disadvantaged seldom find net gains of more than a few thousand dollars, and finding net losses is not infrequent.[8]

Accounting for Sampling Variation Through Monte Carlo Analysis

Just as the impact estimates presented earlier in this report are subject to uncertainty due to sampling variation (see Box 2.2), the estimates of the benefits and costs of WorkAdvance are also subject to uncertainty resulting from sampling variation. In other words, if different samples of individuals had been assigned to the WorkAdvance and control groups, the impact estimates upon which the benefits and costs are based may have differed. This shows up in the extent to which

[7]As previously indicated, program operating costs are treated in the benefit-cost analysis *as if* they were paid for by the government, although a large share of operating costs was actually paid for by foundations.

[8]For example, a random assignment benefit-cost study of the Job Training Partnership Act found net gains of $3,024 for adult men and $3,875 for adult women, but net losses from the government perspective of $1,935 and $2,760, respectively, resulting in net gains for society of $1,084 and $1,114, respectively. The findings for youth were negative from all three perspectives (Orr et al. 1996). A random assignment benefit-cost study of the Job Corps found net losses for society of $12,755 when estimated for all program participants, but net gains for society of $20,870 when the analysis was limited to participants ages 20 to 24 (Schochet, Burghardt, and McConnell (2006). A meta-analysis of random-assignment benefit-cost studies of welfare-to-work programs with 50 observations found that the median gain from the perspectives of participants, the government, and society, were $283, $123, and $640, respectively (Greenberg and Cebulla, 2008). All the values in this footnote have been converted to 2018 prices using the Consumer Price Index.

the impacts estimates are statistically significant. To address this uncertainty, MDRC conducted a Monte Carlo analysis of the impact estimates upon which the benefit-cost analysis depends. As discussed earlier and in Appendix B, the impact estimates of earnings are an especially crucial ingredient in the benefit-cost estimates. The Monte Carlo analysis recognizes that the earnings impact point estimate is the best available indicator of the program's true impact, but it is not the only estimate. The true impact could be larger or smaller than the point estimate. If those alternative estimates typically show a positive impact, this would add some assurance that the true impact of the program is indeed positive (even if the point estimate impact is not statistically significant). For the WorkAdvance study, the Monte Carlo analysis involved randomly drawing 2,000 impact estimates from among all possible estimates within the normal distribution implied by the standard errors of the impact estimates.[9]

To understand the procedure followed in the Monte Carlo analysis, consider how the 2,000 random draws are done for one of the estimates of the positive impact of WorkAdvance on earnings. The standard error of the impact estimate implies that each random draw would vary along a normal (bell-shaped) curve. In a graph of that curve, the X-axis would represent all the possible dollar amounts resulting from the 2,000 random draws and the Y-axis would represent the probability that a particular dollar amount would result from a given random draw. The sum of the probabilities would be 100 percent. The highest point on the curve would be the original point estimate of the earnings impact. Thus, it would have the highest probability of being randomly drawn. Given the bell shape of the curve, as one moves away from the highest point, the probabilities shrink. Thus, near the ends of the curve, the probabilities are smaller than they are in the middle of the curve. They can still be drawn, but they will be drawn less often than dollar values nearer the highest point.

As previously indicated, the Monte Carlo analysis randomly draws 2,000 values of the earnings impacts. The values drawn depend on the shape and location of the curve, and this, in turn, is determined by the size of the original impact estimate and its standard error. Because the normal curve is symmetrical on each side of its highest point, the average of the 2,000 random draws should be very close to the value of the original impact estimate. Because of the bell shape of the normal curve, there will be more draws near the original point estimate than near the tails of the curve. The larger the standard errors relative to the original impact estimate (that is, the lower the level of statistical significance), the more likely it is that the normal curve overlaps zero and the more draws there will be that are below zero, implying a higher probability that the true

[9]This was not done for the estimates of WorkAdvance's operating costs because their standard errors are unknown. Instead, identical estimates of operating costs are used in each of the 2,000 draws. It was done for two other sets of impact estimates used in the analysis: program impacts on earnings and an impact measure that was computed by summing the estimated individual program impacts on various government transfer benefits. Once an earnings impact and a transfer payment impact were randomly drawn, these values were used to compute the remaining benefits and costs (for example, fringe benefits, tax payments, and the administrative costs of government transfers) by using the methods described in Appendix B. It is possible that the impacts on earnings and on transfer payments are correlated. Because they were estimated from different data sets, however, it was not possible to account for this in the Monte Carlo analysis. Thus, the two sets of impacts are necessarily treated as if they are independent. At least one study author found that his Monte Carlo findings were insensitive to this assumption (Jerome, 2012).

impact is not positive. Seen from the opposite point of view, the greater the proportion of possible impact estimates (that is, the greater the proportion of the 2,000 draws) that are positive, the more confidence one can have that the true impact is positive.

Each draw of the various benefit and cost impacts provides the information needed to conduct a benefit-cost analysis. In essence, with 2,000 draws, 2,000 separate benefit-cost analyses can be conducted. In performing the Monte Carlo analysis, once the random draws were made, total net gains (or losses) from the participant, government, and social perspectives were computed 2,000 times, once for each set of draws. The means of the resulting 2,000 estimates of net gains (or losses) and their standard deviations were then computed. The size of the standard deviations relative to their means indicates the uncertainty pertaining to the means. The proportion of the net gain (or loss) estimates that are positive indicate the probability that the WorkAdvance program in a given site was cost-beneficial (that is, the probability that a net gain rather than a net loss occurred) and the proportion that are negative is a measure of the probability that it was not.

Results from the Monte Carlo analyses of each site from each of the three perspectives appear in Table 3.6. The top panel pertains to all the estimated benefits and costs, including those projected beyond the observation period, while the bottom panel is limited to only benefits and costs estimated for the observation period. The findings in the two panels for the Madison Strategies Group and Towards Employment sites are identical because no projections were made for these sites. The top row in each panel shows the base case estimates of net gains (including the estimates of deadweight loss and the value of lost nonwork time) for each site that were reported above, while the remaining rows were obtained from the Monte Carlo analysis. As expected, the table indicates that the original estimates of net gains and those derived by averaging the net gains over the 2,000 estimates from random draws are very similar. Of greater importance, except for Per Scholas from all three perspectives and Madison Strategies Group from the participant perspective, the standard deviations of the estimates of the average net gains are fairly large relative to the averages themselves. Consequently, other than these four average net gains, the averages are not statistically significant at the 95 percent confidence level, implying that the true net gains could be considerably larger or smaller. Indeed, it is even possible that they are negative (that is, that net losses occurred). For the most part, this imprecision in or uncertainty about the averages is due to the rather small samples on which they are based.

Even in the face of these relatively large standard deviations, however, the top panel of Table 3.6 implies that the probability that there were positive net gains is typically considerably larger than the probability that there were net losses. For example, at all four sites, the probability of positive net gains was over 80 percent from the participant perspective and at least 75 percent from the perspective of society as a whole. These probabilities were nearly 100 percent at the Per Scholas site. As the bottom panel of Table 3.6 suggests, except for the St. Nicks Alliance site, these results also hold up when based on only benefits and costs that are estimated for the observation period alone. Thus, when viewed from the participant and societal perspectives, it is quite likely (although not certain) that WorkAdvance produced net gains at three of the four sites. Ignoring possible benefits at St. Nicks Alliance after the end of the observation period, Table 3.6

Table 3.6

Summary Statistics from the Monte Carlo Analysis of WorkAdvance by Accounting Perspective
Net Financial Gains or Losses (in 2018 Dollars), by Site

	Per Scholas			St. Nicks Alliance			Madison Strategies Group			Towards Employment		
		Government			Government			Government			Government	
	Participants	budget	Society	Participants	budget	Society	Participants	budget	Society	Participants	budget	Society
Results that include projections beyond the observation period												
Base case ($)	15,456	13,387	31,387	9,387	3,660	13,742	11,192	1,615	13,114	5,505	265	5,820
Average net gains from 2,000 sampling draws ($)	15,120	13,311	30,959	9,449	3,648	13,790	11,180	1,711	13,216	5,321	424	5,825
Standard deviation of net gains from 2,000 sampling draws ($)	7,159	4,871	11,692	7,190	5,178	12,112	6,134	4,107	10,602	6,040	4,926	8,708
Probability of net gains (%)	98.1	99.6	99.6	91.0	76.7	87.1	96.8	66.2	89.3	81.6	53.2	75.1
Probability of net losses (%)	1.9	0.5	0.5	9.1	23.4	13.0	3.3	33.8	10.7	18.5	46.8	24.9
Results for the observation period												
Base case ($)	13,997	11,370	27,535	1,623	-4,130	-3,293	11,192	1,615	13,114	5,505	265	5,820
Average net gains from 2,000 sampling draws ($)	13,997	11,405	27,569	1,708	-4,115	-3,188	11,180	1,711	13,216	5,321	424	5,825
Standard deviation of net gains from 2,000 sampling draws ($)	6,381	4,363	10,264	1,472	98	1,588	6,134	4,107	10,602	6,040	4,926	8,708

(continued)

Table 3.6 (continued)

	Per Scholas			St. Nicks Alliance			Madison Strategies Group			Towards Employment		
		Government			Government			Government			Government	
	Participants	budget	Society	Participants	budget	Society	Participants	budget	Society	Participants	budget	Society
Probability of net gains (%)	98.3	99.3	99.5	60.5	18.7	37.2	96.6	65.6	89.1	82.8	50.8	74.4
Probability of net losses (%)	1.8	0.8	0.6	39.5	81.3	62.8	3.4	34.4	10.9	17.3	49.3	25.6

SOURCES: The sources and derivation of net program costs are described in Hendra et al. (2016). The sources and derivation of the remaining benefit and cost components are described in Appendix B.

NOTES: All benefits and costs are in dollars per participant over five years and are inflation-adjusted to 2018 dollars and discounted to 2018 present values.
The length of the observation period for the Per Scholas and St. Nicks Alliance sites is 63 months and the observation period for the Madison Strategies Group and the Towards Employment sites is 62 months.
Rounding may cause slight discrepancies in sums and differences.

implies that there is nearly a 40 percent probability that there were net losses for participants at the site and more than a 60 percent probability that there were net losses from the societal perspective. However, since it seems likely that at least some benefits and costs for St. Nicks Alliance did occur after the end of the observation period, the probabilities of net losses are probably lower than 40 and 60 percent, respectively, and perhaps much lower.

Although WorkAdvance's impact on the government's fiscal position was almost surely positive at Per Scholas, it is difficult to draw firm conclusions from the Monte Carlo analysis about whether there were net gains or losses from the government's perspective in the other three sites. For example, unless the government reaped fairly large gains after the observation period ended at St. Nicks Alliance, which is far from certain, the government's budgetary position may have worsened as a result of running WorkAdvance at that site. There is almost a 35 percent probability that there were net losses in the government's budget for the program at the Madison Strategies Group site and the probability that there were net losses in the government's budgetary position for the program at the Towards Employment site is almost as high as the probability that there were positive net gains. Still, it is unlikely that the government's budget suffered large losses relative to the gains for participants at these two sites. Only about an eighth of the draws for Madison Strategies Group and a quarter of the draws for Towards Employment imply net losses in the government's budget of more than $3,000. In contrast, over nine-tenths of the draws for Madison Strategies Group and two-thirds of the draws for Towards Employment imply that the net gains for program participants in these sites were greater than $3,000.

Chapter 4

Conclusion

The findings presented in this report contribute to the growing body of evidence on the effectiveness of sector programs. Specifically, these findings offer some of the first rigorous evidence of how effective these programs are at promoting upward mobility in the long term (between Years 4 and 8 after individuals enter programs) and of the benefits and costs of operating such programs.

WorkAdvance was an attempt to initially increase employment and eventually to increase earnings and help participants advance along a career pathway. This report shows that the previous increases in employment seen at some of the sites faded in the long term; none of the sites increased employment by a statistically significant amount in either 2017 or 2018. However, the long-term impact findings show evidence of earnings increases at some sites and for some samples. Per Scholas produced large impacts on average earnings in both 2017 and 2018 and an impact on the likelihood of individuals having high earnings in 2018. St. Nicks Alliance did not produce statistically significant impacts on average earnings in either year. However, the site increased the likelihood of individuals having high earnings in 2018. There were no statistically significant impacts on average earnings among the late cohorts or full samples at Madison Strategies Group and Towards Employment in either year. However, both sites increased the likelihood of individuals having high earnings: at Madison Strategies Group, among the late cohort in 2017 and among the full sample in both years; and at Towards Employment, among the late cohort in 2017. The pattern of findings suggests that the earnings-based impacts are driven by WorkAdvance group members having higher wages than control group members (rather than by being employed at a higher rate),[1] and that therefore, they likely advanced in their careers over time.

Among the pooled sample, WorkAdvance increased earnings by statistically significant amounts in both years. These impacts are driven in part by the earnings impacts at Per Scholas, but the impacts do not seem to be limited to only that site (there were earnings impacts in some quarters and years among the pooled sample from the other three sites). Additionally, WorkAdvance was successful in helping the semiattached and long-term unemployed groups reenter the labor market and increase their earnings. The earnings impacts among the semiattached group are quite large.

The findings from the benefit-cost analysis are positive from the perspectives of WorkAdvance participants, the government, and society at all four sites. Thanks to increases in earnings and fringe benefits, WorkAdvance group members made very substantial financial gains of

[1]The increases in earnings could also be driven by increases in hours worked. The National Directory of New Hires data do not include information on hours worked, so it is not possible to test how much of the earnings impacts, if any, are attributable to hours worked. However, an analysis based on the Year 2 survey data showed that around half or more of WorkAdvance's impact on earnings at each site was attributable to hourly wages, with the rest attributable to hours worked.

between $5,500 and $15,500 over the observation and projection period (which ranges from 5 years to 10 years), even though they paid higher taxes and gave up appreciable amounts of government transfer benefits. And although the government incurred considerable costs in operating WorkAdvance, these costs were at least offset at all four sites by participants paying more in taxes and receiving less in government transfer benefits.[2] Because participants were better off at all four sites and the government's budget also improved, the financial gain for society as a whole from all four programs was substantial. These positive benefit-cost findings are not often seen in evaluations of employment and training programs.

Overall, the WorkAdvance results support the case for focusing on how sector programs can be improved. The long-term economic impacts of WorkAdvance — as well as findings from other evaluations of sector programs[3] — show that sector programs *can* increase earnings in the longer term and *can* lead to advancement gains over time for low-income individuals. At the same time, sector programs can be hard to implement well and not all programs will lead to statistically significant increases in employment and earnings. Therefore, it seems prudent to focus future efforts on how to make the sectoral approach more consistently successful so that workforce providers can implement new sector-based programs or continue to strengthen their current ones. In particular, future effects should reflect and gather evidence on how programs can continue to refine their advancement-focused services, including those offered to participants after they have obtained employment, in order to better support participants as they move up career pathways.

This is the final planned report for the WorkAdvance evaluation. Longer-term findings from several other evaluations of sector programs will be released in the next few years, which will provide more evidence on the effectiveness of sector strategies.

[2]As discussed in Chapter 3, results from the Monte Carlo analysis suggest that it is difficult to know for certain whether there were net losses or net gains from the government's perspective at St. Nicks Alliance, Madison Strategies Group, and Towards Employment, although whatever the direction, they were probably small.

[3]Roder and Elliott (2019).

Appendix A

Additional Economic Impact Analyses

This appendix presents findings from the original WorkAdvance study's power analysis, offers additional findings from the economic impact analysis based on state unemployment insurance wage data and National Directory of New Hires (NDNH) data, and describes the similarities and differences between the two sources of employment and earnings data.

Power Analysis

Appendix Table A.1 shows the minimum detectable effects (MDEs) calculated during the power analysis done for the original WorkAdvance evaluation.[1] MDEs are a key measure of statistical power. Conventionally, an MDE is the smallest true effect that has an 80 percent chance of being statistically significant at the 10 percent level. MDEs are commonly expressed in effect size units (specifically, in terms of standard deviations) to permit comparisons across outcomes with different units. This expression of an MDE is referred to as a minimum detectable effect size (MDES). A common rule of thumb is to ensure studies have sufficient power to detect impacts at or below an MDES of 0.2, which is a common threshold for a "small" effect size.[2]

As shown in Appendix Table A.1, the MDESs at the four WorkAdvance providers are between 0.167 (at Towards Employment) and 0.204 (at St. Nicks Alliance). These are all below or close to the 0.2 threshold. Assuming 50 percent of the control group was employed (that is, the standard deviation is 0.5),[3] these MDESs translate into MDEs of between 8.4 and 10.2 for percentage measures.

Differences Between State Unemployment Insurance Data and NDNH Data

There are a few differences between state unemployment insurance wage data and NDNH data in terms of coverage.[4] For example, state unemployment insurance wage data only contain employment and earnings records for employers in that state, while NDNH data contain employment and earnings records for employers in all 50 states. In the case of WorkAdvance, this may lead to differences in reporting for the providers that are located close to state borders, such as Per Scholas and St. Nicks Alliance (both are located in New York but are close to New Jersey and Connecticut), if many sample members are working in a state other than the state in which the provider is located. Additionally, while both data sources include workers who are

[1]Hendra et al. (2016).

[2]The 0.2 rule of thumb comes from Cohen. Cohen defined an effect size of 0.2 as "small," 0.5 as "medium," and 0.8 as "large." Lipsey, another prominent researcher, sets the threshold lower. To Lipsey, an effect size of 0.15 or lower is small. See Cohen (1992) and Hill, Bloom, Black, and Lipsey (2007).

[3]This assumption is the worst-case scenario. The point of maximum variance for a percentage measure is 0.5 (a control group level of 50 percent). At that point, an MDES of 0.2 translates into an MDE of 10 percentage points. The further the variance is from 0.5, the smaller the MDE. For example, if the control group level for a measure is 20 percent, the MDE for a study powered at 80 percent would be 8 percentage points.

[4]See Czajka, Patnaik, and Negoita (2018) for more information on using state unemployment insurance wage and NDNH data as sources of earnings data in research evaluations.

covered by unemployment insurance, the NDNH data also include federal workers and, from some states, workers who are self-employed.

State Unemployment Insurance Data Impacts, by Site

Previous WorkAdvance reports presented employment and earnings impacts based on state unemployment insurance wage and benefits data through Year 3. For this report, the evaluation team was able to collect additional state unemployment insurance wage data from New York (covering sample members from Per Scholas and St. Nicks Alliance) and Ohio (covering sample members from Towards Employment) through Year 5. However, the evaluation team was not able to collect additional state unemployment insurance wage data from Oklahoma, so data are only available through Year 3 for sample members from Madison Strategies Group. Appendix Tables A.2 through A.5 present impacts for each site based on the state unemployment insurance wage data.

State Unemployment Insurance Data Impacts on Employment and Earnings in the Targeted Sector

The state unemployment insurance wage data from Ohio and Oklahoma included North American Industry Classification System (NAICS) codes that are linked to employers and define the sector in which the employer operates. These codes were not available in the state unemployment insurance wage data from New York or in the NDNH data. Appendix Figure A.1 shows impacts on employment in the targeted sector by site and random assignment sector.

The top graph in Appendix Figure A.1 shows impacts on unemployment insurance-covered employment in the targeted sectors — transportation and manufacturing — at Madison Strategies Group. Beginning in the quarter of random assignment, employment in the targeted sectors increased for both research groups, but WorkAdvance group members were significantly more likely than control group members to be employed in the targeted sectors through Quarter 12.

The bottom two graphs in Appendix Figure A.1 show that at Towards Employment, the impacts on working in the manufacturing sector (among those who initially targeted the manufacturing sector) are larger and more consistent than the impacts on working in the health care sector (among those who initially targeted the health care sector). WorkAdvance increased employment in the manufacturing sector (among sample members randomly assigned into the manufacturing sector program) from Quarter 3 to Quarter 10, from Quarter 13 to Quarter 16, and from Quarter 19 to Quarter 21. The percentage of Towards Employment sample members working in the health care sector (among those randomly assigned into the health care sector program) was fairly consistent across research groups throughout most of the follow-up period. The fact that as many control group members as WorkAdvance group members found jobs in health care suggests that it was easier for individuals who were not eligible to receive WorkAdvance services to obtain jobs in the health care sector — either on their own or by getting training and support somewhere else in the community — than to obtain jobs in the manufacturing sector.

Appendix Table A.1

Minimum Detectable Effects, by Site

Sample	Sample Size	R-squared[a]	MDES	MDE[b]			
				Employment (%)		Annual earnings ($)	
				SD = 0.4	SD = 0.5	SD = 8,000	SD = 14,000
Per Scholas	690	0.183	0.171	6.8	8.6	1,368	2,394
St. Nicks Alliance	479	0.193	0.204	8.2	10.2	1,632	2,856
Madison Strategies Group	697	0.142	0.175	7.0	8.8	1,400	2,450
Towards Employment	698	0.219	0.167	6.7	8.4	1,336	2,338

SOURCE: MDRC calculations using PowerUP! tool.

NOTES: MDE = minimum detectable effect; MDES = minimum detectable effect size; SD = standard deviation.
[a]R-squared values are from the models for unemployment insurance earnings in Quarter 10.
[b]MDEs are for a two-tailed test at the 10 percent significance level with 80 percent power.

Appendix Table A.2

Per Scholas Impacts on Employment and Earnings in Years 1 to 5

	WorkAdvance Group	Control Group	Difference (Impact)		P-Value
Among the full sample					
Year 1 earnings ($)	8,868	8,718	150		0.846
Year 2 earnings ($)	18,218	14,474	3,744	***	0.002
Year 3 earnings ($)	23,095	17,711	5,384	***	0.000
Ever employed in Year 4 (%)	76.4	72.8	3.6		0.280
Year 4 earnings ($)	25,527	20,624	4,903	***	0.005
Ever employed in Year 5 (%)	73.3	73.4	-0.1		0.980
Year 5 earnings ($)	27,897	24,439	3,458	*	0.078
Total earnings Years 1 to 5 ($)	103,604	85,966	17,639	***	0.003
Full site sample size	349	341			
Among the early cohort[a]					
Year 4 earnings ($)	25,145	18,368	6,777	***	0.004
Year 5 earnings ($)	28,926	22,153	6,773	***	0.007
Among the late cohort[a]					
Year 4 earnings ($)	25,458	23,835	1,623		0.556
Year 5 earnings ($)	26,339	27,501	-1,162		0.714
Early cohort sample size	189	185			
Late cohort sample size	160	156			

SOURCE: MDRC calculations from unemployment insurance administrative records provided by the New York State Department of Labor.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

[a]The difference between cohort subgroups for Year 4 earnings is not statistically significant, and for Year 5 is statistically significant at the 10 percent level (indicated by gray shading).

Rounding may cause slight discrepancies in sums and differences

Appendix Table A.3

St. Nicks Alliance Impacts on Employment and Earnings in Years 1 to 5

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the full sample				
Year 1 earnings ($)	9,395	9,648	-253	0.802
Year 2 earnings ($)	14,420	14,229	191	0.892
Year 3 earnings ($)	16,787	17,260	-473	0.771
Ever employed in Year 4 (%)	69.8	70.5	-0.7	0.871
Year 4 earnings ($)	19,393	18,175	1,217	0.517
Ever employed in Year 5 (%)	70.1	70.3	-0.2	0.961
Year 5 earnings ($)	20,960	19,078	1,882	0.363
Total earnings				
Years 1 to 5 ($)	80,956	78,390	2,566	0.704
Full site sample size	242	237		
Among the early cohort[a]				
Year 4 earnings ($)	17,037	16,918	120	0.961
Year 5 earnings ($)	19,140	19,291	-150	0.956
Among the late cohort[a]				
Year 4 earnings ($)	22,059	19,660	2,399	0.419
Year 5 earnings ($)	22,879	18,913	3,966	0.220
Early cohort sample size	127	131		
Late cohort sample size	115	106		

SOURCE: MDRC calculations from unemployment insurance administrative records provided by the New York State Department of Labor.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

[a]The difference between cohort subgroups is not statistically significant for either measure.

Rounding may cause slight discrepancies in sums and differences.

Appendix Table A.4

Madison Strategies Group Impacts on Employment and Earnings in Years 1 to 3

	WorkAdvance Group	Control Group	Impact	P-Value
Among the full sample				
Year 1 earnings ($)	13,261	12,933	328	0.682
Year 2 earnings ($)	16,640	14,822	1,818 *	0.085
Year 3 earnings ($)	16,197	14,826	1,371	0.225
Ever employed in Year 4 (%)	N/A	N/A	N/A	
Year 4 earnings ($)				
Ever employed in Year 5 (%)	N/A	N/A	N/A	
Year 5 earnings ($)	N/A	N/A	N/A	
Total earnings				
Years 1 to 3 ($)	46,098	42,581	3,517	0.177
Full site sample size	353	344		
Among the early cohort				
Year 4 earnings ($)	N/A	N/A	N/A	
Year 5 earnings ($)	N/A	N/A	N/A	
Among the late cohort				
Year 4 earnings ($)	N/A	N/A	N/A	
Year 5 earnings ($)	N/A	N/A	N/A	
Early cohort sample size	173	164		
Late cohort sample size	180	180		

SOURCE: MDRC calculations from unemployment insurance administrative records provided by the Oklahoma Employment Security Commission.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

State-based unemployment insurance administrative records are not available for Years 4 and 5.

Rounding may cause slight discrepancies in sums and differences.

Appendix Table A.5

Towards Employment Impacts on Employment and Earnings in Years 1 to 5

	WorkAdvance Group	Control Group	Difference (Impact)	P-Value
Among the full sample				
Year 1 earnings ($)	9,495	9,483	12	0.984
Year 2 earnings ($)	13,230	11,603	1,627 *	0.053
Year 3 earnings ($)	14,202	13,360	843	0.367
Ever employed in Year 4 (%)	79.2	76.4	2.9	0.346
Year 4 earnings ($)	16,173	15,321	852	0.422
Ever employed in Year 5 (%)	78.2	75.7	2.5	0.428
Year 5 earnings ($)	17,213	16,368	845	0.454
Total earnings				
Years 1 to 5 ($)	70,314	66,134	4,180	0.271
Full site sample size	349	349		
Among the early cohort[a]				
Year 4 earnings ($)	12,671	13,375	-704	0.619
Year 5 earnings ($)	14,342	13,610	732	0.615
Among the late cohort[a]				
Year 4 earnings ($)	19,743	16,987	2,756 *	0.090
Year 5 earnings ($)	20,327	18,732	1,595	0.367
Early cohort sample size	168	177		
Late cohort sample size	181	172		

SOURCE: MDRC calculations from unemployment insurance administrative records provided by the Ohio Department of Jobs and Family Services.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

[a]The difference between cohort subgroups is not statistically significant for either measure.

Rounding may cause slight discrepancies in sums and differences.

Appendix Table A.6

Impacts on Employment and Earnings, by Random Assignment Sector, at Towards Employment

	Health Care				Manufacturing			
			Difference				Difference	
Outcome	WA	C	(Impact)	Sig.	WA	C	(Impact)	Sig.
Year 1								
Ever employed (%)	82.1	80.4	1.7		84.2	78.2	6.0	
Earnings ($)	8,228	8,218	9		10,597	10,948	-351	
Year 2								
Ever employed (%)	75.8	74.1	1.7		82.1	73.4	8.6	**
Earnings ($)	11,488	10,522	966		14,771	12,902	1,869	
Year 3								
Ever employed (%)	80.0	75.1	4.9		79.9	78.6	1.4	
Earnings ($)	13,125	11,794	1,331		15,208	15,044	163	
Year 4								
Ever employed (%)	82.4	80.6	1.8		75.5	72.6	2.9	
Earnings ($)	15,397	13,211	2,186	*	16,990	17,462	-472	
Year 5								
Ever employed (%)	79.1	78.8	0.3		77.3	72.5	4.8	
Earnings ($)	15,889	14,019	1,870		18,529	18,798	-269	
Sample size (total = 698)	173	178			176	171		

SOURCES: MDRC calculations from unemployment insurance administrative records from the Ohio Department of Jobs and Family Services.

NOTES: WA = WorkAdvance (program) group; C = Control group.

A two-tailed t-test was applied to the differences between outcomes for the program and control groups. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent. There were no statistically significant impacts across subgroups.

Sample sizes may vary because of missing values.

Rounding may cause slight discrepancies in sums and differences.

Appendix Table A.7

Impacts on Employment and Earnings in 2017 and 2018, by Site

	Per Scholas			St. Nicks Alliance			Madison Strategies Group			Towards Employment		
Outcome	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)
Employed (%)												
Quarter 1, 2017	72.3	70.9	1.3	67.3	65.5	1.8	69.4	67.5	1.9	73.4	72.8	0.6
Quarter 2, 2017	75.6	71.0	4.6	63.3	67.8	-4.5	67.2	67.1	0.1	73.4	70.5	2.9
Quarter 3, 2017	73.3	72.8	0.4	65.4	65.7	-0.4	66.2	67.5	-1.3	74.5	71.6	2.8
Quarter 4, 2017	75.1	75.6	-0.5	68.2	65.0	3.2	66.2	69.3	-3.2	73.3	70.2	3.1
Quarter 1, 2018	74.8	76.3	-1.5	65.7	64.6	1.1	65.4	68.9	-3.5	70.3	69.2	1.1
Quarter 2, 2018	77.2	76.4	0.8	67.0	67.9	-0.9	65.9	67.9	-2.0	70.8	69.9	1.0
Quarter 3, 2018	79.7	77.4	2.2	65.0	68.2	-3.2	65.7	70.4	-4.7	70.2	72.5	-2.3
Quarter 4, 2018	73.4	74.5	-1.1	69.1	67.8	1.3	65.8	66.2	-0.5	70.0	71.0	-1.0
Worked out of state												
2017	14.0	12.9	1.1	15.4	13.9	1.5	16.3	15.3	1.0	5.2	6.9	-1.7
2018	16.0	14.4	1.6	15.2	13.6	1.6	17.1	14.7	2.5	6.4	5.4	1.0
Hired at a new job												
2017	18.3	18.2	0.1	22.2	25.5	-3.3	32.2	37.3	-5.1	34.2	34.8	-0.6
2018	20.5	20.7	-0.2	24.2	27.2	-3.0	38.9	40.9	-2.0	41.5	39.3	2.1

(continued)

Appendix Table A.7 (continued)

Outcome	Per Scholas			St. Nicks Alliance			Madison Strategies Group			Towards Employment		
	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)
Earnings ($)												
Quarter 1, 2017	7,728	6,499	1,229 **	5,933	5,539	394	4,833	4,290	543	4,362	4,224	137
Quarter 2, 2017	7,981	6,827	1,154 **	5,863	5,859	4	4,869	4,327	542	4,682	4,369	313
Quarter 3, 2017	8,000	7,143	857	6,185	5,449	736	4,932	4,526	406	4,636	4,341	295
Quarter 4, 2017	8,842	7,579	1,264 **	6,563	5,739	823	5,105	4,816	289	5,326	4,543	783 **
Quarter 1, 2018	8,872	7,540	1,333 **	6,244	5,632	612	5,007	4,818	189	4,799	4,253	547
Quarter 2, 2018	9,776	8,141	1,635 ***	6,587	5,824	763	5,261	5,170	92	4,842	4,585	258
Quarter 3, 2018	9,799	8,067	1,731 ***	6,485	5,974	511	5,373	5,195	179	4,849	4,595	254
Quarter 4, 2018	9,957	8,374	1,583 **	7,355	6,392	963	5,606	5,278	328	5,251	4,906	345
Sample size	349	341		242	237		353	344		349	349	

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTES: WA = WorkAdvance; C = Control.
Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.
Rounding may cause slight discrepancies in sums and differences.

Appendix Table A.8

Impacts on Employment and Earnings in 2017 and 2018 by Random Assignment Cohort, by Site

Outcome	Early cohort WorkAdvance group	Early cohort Control group	Early cohort Difference (Impact)	Late cohort WorkAdvance group	Late cohort Control group	Late cohort Difference (Impact)	Sig.
Per Scholas							
Employment (%)							
Quarter 1, 2017	75.1	67.6	7.4	68.7	75.0	-6.3	†
Quarter 2, 2017	78.2	68.2	10.1 **	72.5	74.4	-1.9	†
Quarter 3, 2017	73.6	69.1	4.5	72.8	77.2	-4.4	
Quarter 4, 2017	75.6	72.0	3.7	74.3	80.2	-5.9	
Quarter 1, 2018	76.2	71.4	4.8	73.1	82.0	-8.9 *	††
Quarter 2, 2018	79.3	74.1	5.2	74.6	79.3	-4.8	
Quarter 3, 2018	80.9	78.4	2.5	78.0	76.5	1.5	
Quarter 4, 2018	72.9	75.8	-2.9	73.9	73.0	0.9	
Earnings ($)							
Quarter 1, 2017	8,224	6,387	1,837 **	7,036	6,742	294	
Quarter 2, 2017	8,513	6,498	2,015 ***	7,236	7,337	-101	†
Quarter 3, 2017	8,107	6,678	1,429 *	7,739	7,832	-94	
Quarter 4, 2017	9,117	7,236	1,881 **	8,476	8,029	447	
Quarter 1, 2018	8,908	7,261	1,647 **	8,782	7,919	863	
Quarter 2, 2018	9,971	7,977	1,994 **	9,513	8,370	1,143	
Quarter 3, 2018	10,119	8,005	2,114 **	9,367	8,196	1,171	
Quarter 4, 2018	10,233	8,662	1,572 *	9,483	8,183	1,300	
Sample size	189	185		160	156		
St. Nicks Alliance							
Employment (%)							
Quarter 1, 2017	58.1	63.6	-5.5	77.4	68.0	9.4	†
Quarter 2, 2017	58.2	68.0	-9.9	68.1	68.6	-0.6	
Quarter 3, 2017	62.0	62.8	-0.9	68.7	69.8	-1.1	
Quarter 4, 2017	65.2	62.8	2.4	70.9	68.4	2.5	
Quarter 1, 2018	61.9	62.9	-1.0	68.9	67.7	1.2	
Quarter 2, 2018	61.4	66.4	-5.0	72.2	70.8	1.4	
Quarter 3, 2018	59.9	66.4	-6.5	69.8	71.5	-1.7	
Quarter 4, 2018	62.2	69.5	-7.3	76.6	66.0	10.6 *	††

(continued)

Appendix Table A.8 (continued)

Outcome	Early cohort WorkAdvance group	Early cohort Control group	Early cohort Difference (Impact)	Late cohort WorkAdvance group	Late cohort Control group	Late cohort Difference (Impact)	Sig.
Earnings ($)							
Quarter 1, 2017	5,643	5,258	385	6,139	6,010	129	
Quarter 2, 2017	5,504	5,867	-363	6,157	5,961	195	
Quarter 3, 2017	6,213	5,228	985	6,084	5,797	287	
Quarter 4, 2017	6,196	5,439	757	6,830	6,260	570	
Quarter 1, 2018	5,698	5,023	674	6,751	6,487	264	
Quarter 2, 2018	6,001	5,312	688	7,098	6,605	493	
Quarter 3, 2018	5,832	5,571	261	7,044	6,647	398	
Quarter 4, 2018	6,900	6,356	544	7,713	6,595	1,119	
Sample size	127	131		115	106		
Madison Strategies Group							
Employment (%)							
Quarter 1, 2017	66.3	62.4	3.8	72.7	71.7	1.0	
Quarter 2, 2017	62.7	64.4	-1.7	72.0	69.1	2.9	
Quarter 3, 2017	62.0	63.9	-1.9	71.0	70.1	0.8	
Quarter 4, 2017	62.9	67.2	-4.2	69.9	70.7	-0.9	
Quarter 1, 2018	60.7	65.9	-5.2	70.7	71.0	-0.3	
Quarter 2, 2018	63.0	62.3	0.7	69.2	72.5	-3.3	
Quarter 3, 2018	63.5	65.9	-2.4	68.1	74.2	-6.1	
Quarter 4, 2018	64.3	61.4	2.9	67.5	70.3	-2.8	
Earnings ($)							
Quarter 1, 2017	4,400	3,609	792	5,238	4,922	316	
Quarter 2, 2017	4,464	3,774	690	5,287	4,801	486	
Quarter 3, 2017	4,396	4,008	388	5,520	4,925	595	
Quarter 4, 2017	4,594	4,482	112	5,669	5,048	621	
Quarter 1, 2018	4,539	4,426	113	5,497	5,137	360	
Quarter 2, 2018	4,688	4,754	-66	5,831	5,529	302	
Quarter 3, 2018	4,772	4,639	133	5,958	5,694	264	
Quarter 4, 2018	4,870	4,796	74	6,330	5,700	630	
Sample size	173	164		180	180		

(continued)

Appendix Table A.8 (continued)

Outcome	Early cohort WorkAdvance group	Early cohort Control group	Early cohort Difference (Impact)		Late cohort WorkAdvance group	Late cohort Control group	Late cohort Difference (Impact)	Sig.
Towards Employment								
Employment (%)								
Quarter 1, 2017	68.1	65.9	2.2		78.2	80.0	-1.8	
Quarter 2, 2017	69.1	63.2	5.9		77.6	77.7	-0.1	
Quarter 3, 2017	70.0	66.9	3.0		78.9	76.3	2.6	
Quarter 4, 2017	68.0	63.1	4.9		78.0	77.8	0.3	
Quarter 1, 2018	66.5	61.7	4.8		73.8	77.0	-3.1	
Quarter 2, 2018	66.3	63.0	3.3		74.8	77.1	-2.4	
Quarter 3, 2018	67.0	67.5	-0.5		73.0	77.8	-4.9	
Quarter 4, 2018	66.0	66.2	-0.2		73.8	75.9	-2.1	
Earnings ($)								
Quarter 1, 2017	3,492	3,438	55		5,176	5,026	150	
Quarter 2, 2017	4,066	3,500	566		5,251	5,266	-15	
Quarter 3, 2017	4,146	3,557	589		5,078	5,160	-82	
Quarter 4, 2017	4,756	3,687	1,069	**	5,850	5,430	419	
Quarter 1, 2018	4,337	3,358	979	**	5,220	5,181	39	
Quarter 2, 2018	4,357	3,569	788	*	5,283	5,640	-357	†
Quarter 3, 2018	4,231	3,622	610		5,397	5,625	-228	
Quarter 4, 2018	4,246	4,176	69		6,200	5,641	559	
Sample size	168	177			181	172		

SOURCE: MDRC calculations from National Directory of New Hires data.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.
Differences across subgroups were tested for statistical significance. Statistical significance levels (Sig.) are indicated as follows: ††† = 1 percent; †† = 5 percent; † = 10 percent.
Rounding may cause slight discrepancies in sums and differences.

Appendix Table A.9

Impacts on Unemployment Insurance Benefits in 2017 and 2018, by Site

	Per Scholas			St. Nicks Alliance			Madison Strategies Group			Towards Employment		
Outcome	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)
Received UI benefits (%)												
Quarter 1, 2017	0.6	0.5	0.1	1.7	0.4	1.3	2.5	5.3	-2.8 *	1.7	2.6	-1.0
Quarter 2, 2017	7.3	5.4	1.9	7.9	4.6	3.4	3.1	4.1	-0.9	2.0	2.0	-0.1
Quarter 3, 2017	7.1	4.2	2.9	10.3	5.9	4.4 *	2.6	3.7	-1.0	1.7	0.8	0.9
Quarter 4, 2017	6.6	3.5	3.1 *	7.0	6.3	0.7	3.0	4.8	-1.9	3.0	1.8	1.2
Quarter 1, 2018	5.7	4.7	1.0	8.0	4.9	3.1	2.6	3.4	-0.8	2.5	3.0	-0.5
Quarter 2, 2018	4.5	2.4	2.1	6.0	4.9	1.1	2.6	1.4	1.2	2.4	1.6	0.8
Quarter 3, 2018	4.2	3.4	0.8	6.1	3.5	2.6	1.3	1.8	-0.5	2.4	1.0	1.4
Quarter 4, 2018	2.8	5.1	-2.3	5.5	5.8	-0.2	2.2	3.3	-1.0	2.4	1.9	0.6
Received UI benefits in 2017	10.8	8.0	2.8	13.3	10.5	2.9	6.8	9.6	-2.7	5.3	5.0	0.3
Received UI benefits in 2018	9.6	8.4	1.2	12.4	12.3	0.1	5.7	6.1	-0.4	5.6	4.7	1.0
Amount of UI benefits ($)												
Quarter 1, 2017	12	48	-36	33	6	27	72	106	-34	17	47	-30
Quarter 2, 2017	172	151	20	141	95	46	77	86	-10	42	36	6
Quarter 3, 2017	263	97	166 **	149	122	27	69	108	-39	37	25	11
Quarter 4, 2017	185	92	92	179	138	41	66	100	-34	45	43	2
Quarter 1, 2018	131	105	27	128	73	55	56	78	-22	38	43	-5
Quarter 2, 2018	128	80	48	113	69	44	51	14	36	35	25	9
Quarter 3, 2018	104	99	6	137	79	57	20	46	-26	36	12	24
Quarter 4, 2018	91	125	-34	64	132	-69	38	79	-40	47	36	11

(continued)

Appendix Table A.9 (continued)

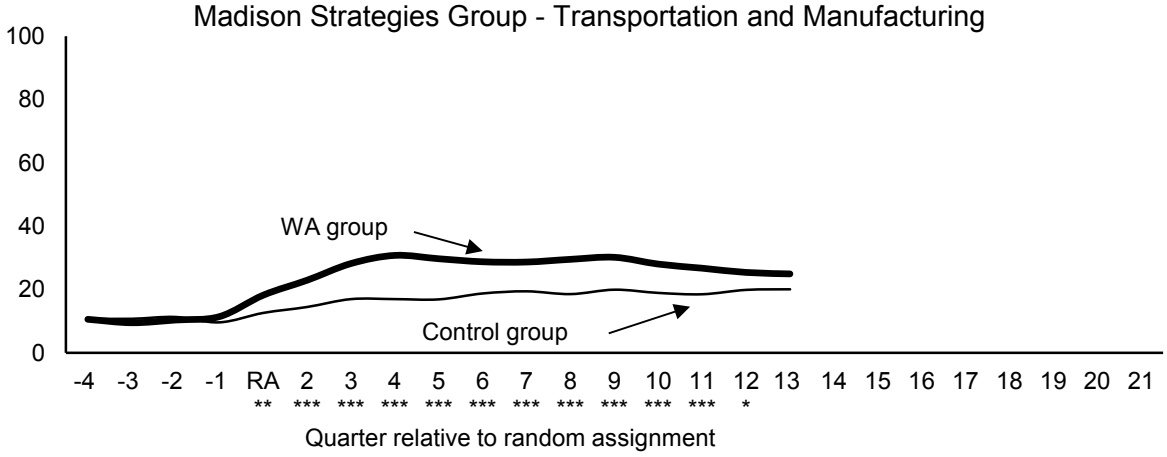
Outcome	Per Scholas			St. Nicks Alliance			Madison Strategies Group			Towards Employment		
	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)	WA group	C group	Difference (Impact)
UI benefit amount in 2017	631	388	243	501	361	140	284	401	-117	141	151	-11
UI benefit amount in 2018	454	408	47	441	354	87	165	217	-52	155	116	39
Sample size	349	341		242	237		353	344		349	349	

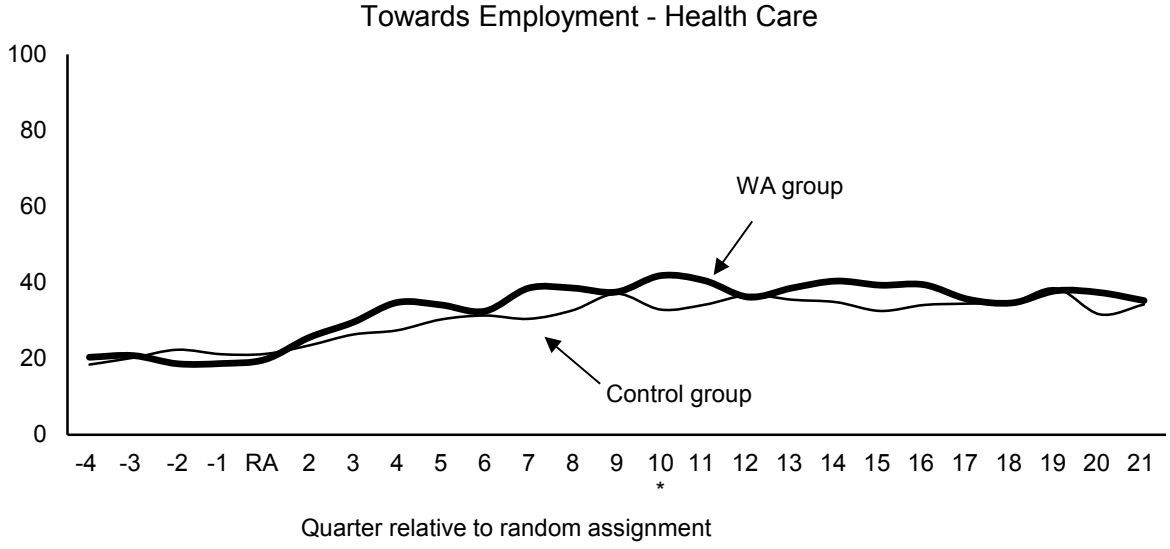
SOURCE: MDRC calculations from National Directory of New Hires data.

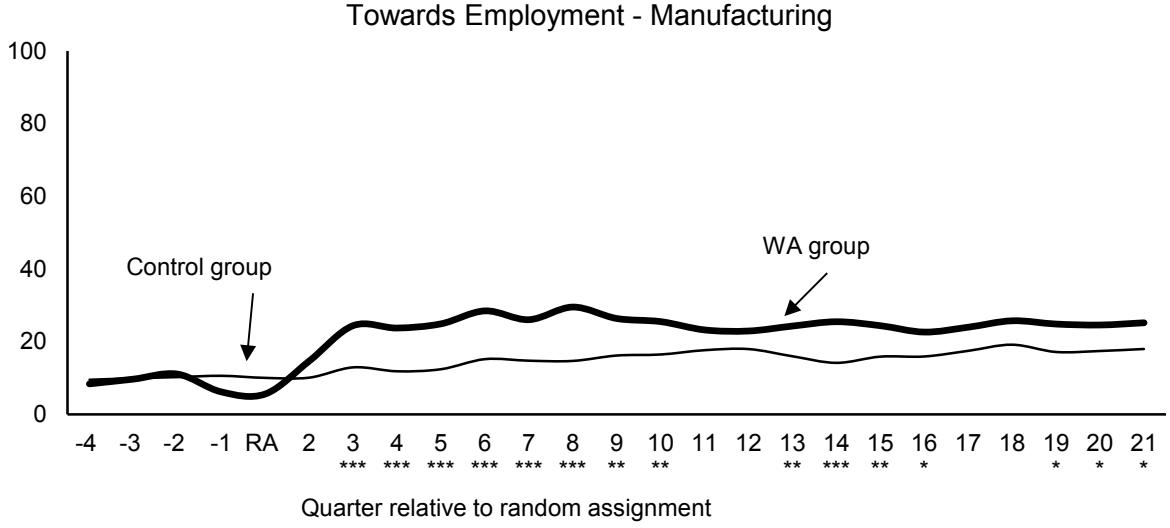
NOTES: WA = WorkAdvance; C = Control; UI = Unemployment Insurance.
Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.
Rounding may cause slight discrepancies in sums and differences.

Appendix Figure A.1

Impacts on Percentage Employed in an Unemployment Insurance-Covered Job in the Targeted Sector by Relative Quarter, Site, and Random Assignment Sector







(continued)

Appendix Figure A.1 (continued)

SOURCES: MDRC calculations from unemployment insurance (UI) administrative records provided by Ohio Department of Job and Family Services for Towards Employment sample members and Oklahoma Employment Security Commission for Madison Strategies Group sample members.

NOTES: RA = random assignment; WA group = WorkAdvance (program) group.

Sectors are defined by the North American Industry Classification System (NAICS) and are linked to employers. NAICS codes are not available in the UI records provided for sample members at Per Scholas and St. Nicks Alliance.

Transportation includes NAICS codes starting with 48-49, manufacturing includes NAICS codes starting with 31-33, and health care includes NAICS codes starting with 62.

Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Appendix B

Estimating Benefits and Costs

This Appendix describes how each of the measures of benefits and costs that were used in the benefit-cost analysis presented in the main text (other than program operating costs) were constructed. The source of the estimates of expenditures on program costs is discussed in the main text.

Impact on Pretax Earnings

The annual impacts of the four WorkAdvance programs on pretax earnings is the key component of the benefit-cost analysis. These impacts were estimated for a five-and-three-quarter-year observation period for the full samples in Per Scholas and St. Nicks Alliance, and for a five-and-two-quarter-year observation period for the late cohorts in Towards Employment and Madison Strategies Group. State unemployment insurance administrative data were used for the first three years for Madison Strategies Group and for the first five years for the remaining three sites, with administrative data from the National Directory of New Hires (NDNH) database used for the remainder of the observation period. Earnings impacts for the fourth year of the observation period were not available for Madison Strategies Group. Thus, the earnings impacts for the last two quarters of the third year and the first two quarters of the fifth year were used to interpolate each quarter of the fourth year.[1] After inflating the earnings impacts for the observation period to 2018 dollars and discounting them to the 2018 base year (that is, each estimated impact for each year during the observation period was converted to its social value in 2018 by using the Consumer Price Index and a 3.5 percent social discount rate), the resulting annual values for each program were then simply summed during the observation period to estimate WorkAdvance's impact on the total pretax earnings of participants during the observation period. The annual estimates are reported in Appendix Table B.1.

Estimated regressions were used to predict the earnings impacts for the projection period — that is, the time beyond the observation periods for each site. These regressions are shown in Appendix Table B.2. The regressions used impact estimates on earnings during each calendar quarter for the dependent variable and the time periods, measured as the number of quarters since random assignment (that is, q=1, 2, 3, …) as the independent variable. An additional independent variable (D) was included, which equaled one for earnings impacts estimated with the NDNH data and zero for impacts estimated with the UI data. Twenty-four calendar quarters of earnings impact estimates were available for Per Scholas and St. Nicks Alliance and 23 were available for Towards Employment and Madison Strategies Group. Regressions with five alternative specifications were run (q, $q + q^2$, $q + q^2 + q^3$, $\ln(q)$, and $\ln(q) + \ln(q)^2$). The regression with the best fit for each site, based on their adjusted R-Squares, F-values, and the statistical significance of their coefficients, was selected for purposes of predicting earnings impacts beyond

[1] As an alternative, a regression based on each quarter of available earnings impacts for Madison Strategies Group was estimated and used to predict the quarterly earnings impacts during the fourth year. The predicted earnings impacts were similar, but a little larger, than those resulting from interpolation.

Appendix Table B.1

Annual Earnings Impacts, Adjusted to 2018 Dollars and Discounted

Years since random assignment	Per Scholas	St. Nicks Alliance	Towards Employment	Madison Strategies Group
1	$202	-$339	-$110	$1,273
2	4,802	245	3,656	4,967
3	6,549	-575	2,813	4,234
4	5,762	1,431	3,100	4,012
5	3,889	2,117	1,684	2,686
6	4,735*	1,877*	293#	754#

NOTES: *Based on only three calendar quarters.
#Based on only two calendar quarters.

Appendix Table B.2

Regression Estimates of Changes Over Time in the Estimates of the Earnings Impact

	Per Scholas	St. Nicks Alliance	Towards Employment	Madison Strategies Group
Constant	-629.3	-261.3	-452.2	-229.1
q	277.2	33.9	187.8	203.8
q^2	-10.0	--	-7.4	-8.3
D	1051.8	56.1	97.2	133.3
Adjusted R Square	0.72	0.54	0.58	0.72
F-value	20.3	14.5	11.0	19.5
Number of Observations	24	24	23	23

NOTE: All the coefficients are statistically significant to at least the 5 percent level, except the coefficients on D for St. Nicks Alliance, Towards Employment, and Madison Strategies Group.

the observation period. The quadratic specification was the best fit for Per Scholas, Madison Strategies Group, and Towards Employment, implying that impacts on earnings first increased over time in these sites and then fell; the linear specification was the best fit for St. Nicks Alliance, implying that earnings impacts at this site rose over time, though slightly. The regressions predict that program impacts on earnings ceased to be positive at the end of the observation periods at Towards Employment and Madison Strategies Group, but continued to be positive for five calendar quarters beyond the observation period (that is, for seven full years in all) at Per Scholas, and increased by $34 each year after the observation period at St. Nicks Alliance.[2] When predicted earnings impacts became negative, they were set to zero, as it is implausible that the

[2]The findings for the first three programs are consistent with two earlier studies that found that changes over time in the impact on earnings of training and welfare-to-work programs resemble an inverted U, first increasing and then declining, reaching zero after four to six years: Greenberg, Michalopoulos, and Robins (2004) and Ashworth, Cebulla, Greenberg, and Walker (2004). An exception was found for adult women participants in voluntary training programs for whom impacts on earnings first appear to increase, but then not decline. About 85 percent of the participants in Per Scholas, Madison Strategies Group, and St. Nicks Alliance were male, while only slightly over 40 percent of the participants in Towards Employment were male.

programs would have caused earnings to decrease five or six years after random assignment. Thus, there is no projection period for Towards Employment and Madison Strategies Group, and the projection period for Per Scholas is only five calendar quarters in length. Because of uncertainty concerning projections that extend for a much longer time horizon, the projection period for St. Nicks Alliance is limited to four years and one calendar quarter, although it is possible that the program at that site had positive impacts on earning for longer than 10 years. Thus, the benefit-cost study for St. Nicks Alliance is based on a five-and-three-quarter-year observation period and a four-and-one-quarter-year projection period, a total of 10 years. The predicted impacts on earnings during the projection periods for Per Scholas and St. Nicks Alliance were discounted and then summed along with the values obtained for the observation period.

Fringe Benefits from Work

According to a recent report by the U.S. Bureau of Labor Statistics,[3] in June 2017, wages and salaries averaged $24.10 per hour worked and fringe benefits equaled $11.03. Thus, fringe benefits were 46 percent of earnings ($11.03/24.10). However, this estimate, which pertains to the average worker in the economy, is probably high for WorkAdvance participants, as many are employed in jobs that pay less than average wages and probably provide fewer than average fringe benefits as well. Thus, the 0.46 estimate was reduced by multiplying it by 0.6 (which is roughly the ratio of the percentage of respondents to the WorkAdvance Year 2 survey who received paid sick days, a retirement plan, or eligibility for health coverage to the percentage of workers in the general economy who received the same fringe benefits).[4] The resulting figure of 0.276 was multiplied by the impacts of the WorkAdvance programs on earnings to estimate their effects on fringe benefits.

Payroll Taxes

Payroll taxes include Social Security and Medicare taxes and taxes to support the unemployment insurance and worker's compensation systems. At the federal level, the Social Security retirement and Medicare programs are financed by both employers and employees, while at the state level, unemployment insurance and worker's compensation are financed by payroll taxes that are paid solely by employers. However, studies have found that once federal and state payroll taxes have been in place for a number of years, as is the case in the United States, most of the employers' share is passed on to employees by wages that are lower than they otherwise would have been

[3]U.S. Bureau of Labor Statistics (2019b).

[4]The percentage of workers in the general economy who received fringe benefits was obtained from the 2012 Employee Benefits Survey conducted by the U.S. Bureau of Labor Statistics (Solis and Galvin 2012). Three separate fringe benefits were used in determining the 0.6 ratio: sick days with full pay, having a retirement plan, and eligibility for a health plan or medical insurance. Depending on the type of fringe benefit, the WorkAdvance site, and treatment or control status, the ratio varied from 0.5 and 0.7. The midpoint of 0.6 was used in the benefit-cost analysis.

paid.[5] This implies, in turn, that both WorkAdvance's impact on pretax earnings and its impact on payroll taxes should include its impact on the employer's share of payroll taxes, as well as its impact on the employee's share of payroll taxes.

As indicated above, the only payroll taxes that are directly paid by employees go to the government via the trust fund operated by the Social Security Administration (SSA). To determine WorkAdvance's impact on the SSA trust fund, WorkAdvance's impacts on pretax earnings are multiplied by .0765, the fraction of pretax earnings that workers pay for Social Security taxes.[6]

According to U.S. Bureau of Labor Statistics data, 7.6 percent of total employee compensation (that is, pretax earnings + fringe benefits + employer payroll taxes) in 2016 consisted of payroll taxes paid by employers to support the Social Security, Medicaid, unemployment insurance, and workers' compensation systems.[7] Using these statistics, the impact of WorkAdvance on employer payroll taxes can be computed with the following formula:

$$T = .076(E + F + T) \rightarrow T = .076(E + F) / (1 - .076)$$

where T is WorkAdvance's impact on employer payroll taxes, E is the program's impact on pretax earnings exclusive of payroll taxes, and F is the program's impact on fringe benefits. Estimation of E and F is discussed above. Given these values, T was estimated and then added both to E to determine WorkAdvance's impact on *total* pretax earnings and to the payroll taxes directly paid by WorkAdvance participants to determine the total amount of employer payroll tax. Note that because T appears twice in the participant column in Table 3.1 and Tables 3.3-3.5 in the main text, once as a positive number when it is added to E and once as a negative number when it is added to the participant share of payroll taxes, it cancels out in that column.

Income Taxes

WorkAdvance's impacts on income tax payments by program participants are computed as the product of the programs' impacts on pretax earnings and federal and state income tax rates. Federal and state income tax rates for Per Scholas and St. Nicks Alliance participants in New York, Towards Employment participants in Ohio, and Madison Strategies Group participants in Oklahoma, were computed using version 9 of the National Bureau of Economic Research's (2012) Internet TAX-SIM Model. This model produces marginal tax rates, which is appropriate because the income produced by WorkAdvance's impact on wages is best viewed as marginal income. Because the taxable incomes of program participants vary, their marginal tax rates also vary. Therefore, marginal rates were computed for taxable income levels of $10,000, $15,000, $18,000, and $25,000. Interestingly, the rates were similar at $10,000 and $25,000, probably as a result of the Earned Income Tax Credit, and also higher at both of these two income levels than at $15,000

[5] See, for example, the review of tax incidence studies in Hamermesh (1993).

[6] It is assumed here that very few WorkAdvance participants were above the maximum earnings level that is subject to Social Security taxes.

[7] U.S. Bureau of Labor Statistics (2018a).

or $18,000. Combining the federal and state rates, the ranges of rates are 14.04 to 23.95 percent for New York State, 12.35 to 17.65 percent for Ohio, and 15.0 to 20.25 percent for Oklahoma. The midpoints of these ranges, which are relatively narrow, were used in the benefit-cost study.

Sales Taxes

WorkAdvance's impact on sales tax payments by program participants is computed as the product of the programs' impacts on income available for consumption and state and local sales tax rates. This calculation assumes that all of the increase in the income of WorkAdvance participants was spent, rather than saved. Thus, it exaggerates the impact on sales taxes but probably not by much, as most WorkAdvance participants have relatively modest incomes and most low-income people tend to save relatively little of their incomes. Income available for consumption was computed by subtracting positive program impacts on payroll and income taxes and work-related expenditures and negative program impacts on transfer program benefits from pretax earnings. Decreases in payroll and income taxes and work-related expenditures and increases in transfer program benefits were instead added to pretax earnings.

The total state and local sales tax rates for consumers in New York City (for Per Scholas and St. Nicks Alliance), Cleveland (for Towards Employment), and Tulsa (for Madison Strategies Group) was obtained from a 2012 report produced by the Government of the District of Columbia entitled "Tax Rates and Tax Burdens in the District of Columbia — A Nationwide Comparison," which was supplemented by information on the internet. The rates were 8.875 percent in New York City, 8.0 percent in Cleveland, and 8.52 percent in Tulsa.

Work-Related Expenditures

Work-related expenditures include the costs of transportation, childcare, and uniforms that are required in order to work. According to the Survey of Income and Program Participation (SIPP), mean weekly work-related expenses other than childcare were $64.1 in 2011[8] and mean monthly earnings were $3,329.[9] Both figures were first annualized, and then annualized work-related expenses were divided by annualized earnings, yielding an estimate of work-related expenses per dollar of earnings. This computation implies that 8.34 percent of earnings are devoted to non-childcare work-related expenditures. Childcare expenses are not included in computing work-related expenses because relatively few WorkAdvance participants are working mothers with young children and, hence, pay for childcare.[10] While some participating fathers may have paid

[8]Edwards (2016).

[9]U.S. Census Bureau (2019).

[10]According to the SIPP, only 31.9 percent of working mothers with children under 15 made weekly childcare payments in 2011. For such women, the average weekly payment was $143. See Laughlin (2013). Thus, the average weekly payment made by *all* working mothers with children under 15 was $46 (.319 x $143). Annualizing this figure by multiplying it by 52 and then dividing it by the SIPP's estimate of the annual earnings of women ($31,956) implies that 7.4 percent of the earnings of a typical working mother with children under 15 are used to pay for childcare. However, only 27 percent of WorkAdvance participants are female, and many of them do not have children of an age requiring childcare.

for childcare, they would be expected to be relatively few as well, as most do not live with spouses.

Impacts on Transfer Program Payments (TANF, SNAP, SSI/SSDI, Housing Assistance, Unemployment Insurance)

Like the data on earnings, data on the amount of unemployment insurance (UI) paid to members of the WorkAdvance sample, was obtained from the state governments of New York and Oklahoma. UI data were not obtained from Ohio. Thus, the annual impacts of WorkAdvance on the UI payment amounts were estimated for Per Scholas, St. Nicks Alliance, and Madison Strategies (but not Towards Employment) and directly incorporated into the benefit-cost analysis.

The Year 2 survey asked respondents whether or not they received TANF, SNAP, SSI or SSDI, housing assistance, or UI during the month prior to the survey. The responses to these questions were used to estimate the impacts of WorkAdvance on the receipt of payments from each of these government transfer programs.[11] To monetize these impacts, they were multiplied by the average monthly payment in the state (and when possible, the city) in which the sites were located during the year, corresponding as closely as possible to the second year after random assignment (2013 for Per Scholas and St. Nicks Alliance, and 2014 for Towards Employment and Madison Strategies Group). The payment amounts that were used appear in Appendix Table B.3. This was done for TANF, SNAP, SSI, and housing assistance, and for UI for the Towards Employment site. The average monthly payments for TANF, SNAP, SSI, and UI are at the state level while the housing assistance amounts are at the city level — New York state and city for Per Scholas and St. Nicks Alliance; Ohio and Cleveland for Towards Employment; and Oklahoma and Tulsa for Madison Strategies Group.

After multiplying the monthly values in Appendix Table B.3 by the estimated impacts on the receipt of payments under each program, the resulting amounts for each program were summed across the programs (including UI) to obtain an estimate of the overall effect of WorkAdvance on the total amount of government transfers paid during the month before the Year 2 survey. Because there is no information about how this amount varied over time, it was simply assumed that it remained constant during each month covered by the benefit-cost analysis. Although this assumption undoubtably introduces errors into the analysis, it is difficult to know whether this causes an overstatement or an understatement of WorkAdvance's effect on total expenditures on government transfer benefits.

Administrative Cost of Transfer Programs

The administrative costs of transfer programs include eligibility determination, developing and maintaining information systems, issuing payments, fraud control, staff training, and outreach to

[11] See Table 5.7 in Hendra et al. (2016).

Appendix Table B.3

Monthly Transfer Program Payments

Year	2013		2014	
Program ($)	Per Scholas	St. Nicks Alliance	Towards Employment	Madison Strategies Group
TANF	397	397	354	188
SNAP	274	274	253	258
Housing Assistance	869	869	668	548
SSI/SSDI	580	580	514	520
UI	—	—	1,380	—

SOURCES: For TANF information for Ohio and Oklahoma see Office of Family Assistance (2016), and for New York see Office of the Assistant Secretary for Planning and Evaluation (2015). For SNAP information see Food and Nutrition Service (2013) and Food and Nutrition Service (2014). For SSI/SSDI information see U.S. Social Security Administration (2019). The payment amount is for persons ages 18-64 and includes the average monthly payments for both SSI and SSDI received in December 2013 in New York and in December 2014 in Ohio and Oklahoma. For information on housing assistance see U.S. Department of Housing and Urban Development (2019). Expenditures consist of monthly HUD expenditures for eight housing programs: Public Housing, Housing Choice Vouchers, Moderate Rehabilitation Program, Project-Based Section 8, Rental Assistance Program, Section 236 Multifamily Housing, Section 202 Supportive Housing for the Elderly, and 811 Supportive Housing for Persons with Disabilities. For UI information see Employment and Training Administration (2019). The monthly UI estimate for Ohio was calculated from the reports on monthly program and financial data. The average weekly benefit of $318.38 for July 2014 was multiplied by 52 and then divided by 12 to compute the monthly estimate of UI.

NOTES: TANF = Temporary Assistance for Needy Families; SNAP = Supplemental Nutrition Assistance Program; SSI = Supplemental Security Income; SSDI = Social Security Disability Income; UI = Unemployment Insurance.

potential beneficiaries. An estimate of WorkAdvance's impact on the cost of administering SNAP is computed as the product of the estimate of the program's impact on SNAP payments and the administrative costs of the SNAP program per dollar of benefits paid. The analysis uses an estimate of the latter of 15.8 percent from Isaacs (2008), which relies primarily on budget documents and expenditure reports that reported administrative costs as a separate line item. The administrative costs of TANF, SSI/SSDI, housing assistance, and UI were similarly computed. These five estimates were summed to obtain the total impact of WorkAdvance on the cost of administering transfer programs. The estimates of administrative costs as a percentage of benefits paid that are used in the benefit-cost analysis and the source of these estimates appear in Appendix Table B.4.

Nonmarket Time

If WorkAdvance participants work more as a result of a program, they lose time for other activities that are presumably of value to them. The value of nonmarket time lost to study subjects as

Appendix Table B.4

Administrative Costs as a Percentage of Benefit Payments

Program	Percentage of Benefit Payments	Source
TANF	15.5 percent	Isaacs (2008)
SNAP	15.8 percent	Isaacs (2008)
SSI	7.7 percent	Isaacs (2008)
Housing Assistance	9.5 percent*	HUD (2015)
UI	12.6 percent*	DOL (2018)

NOTES: TANF = Temporary Assistance for Needy Families; SNAP = Supplemental Nutrition Assistance Program; SSI = Supplemental Security Income; UI = Unemployment Insurance; HUD = U.S. Department of Housing and Urban Development; DOL = U.S. Department of Labor.

*Calculation by MDRC from the information provided in the source. The UI figure is a national average. State-specific information does not appear to be available for UI.

their work hours increase is difficult to estimate. Nonetheless, there is at least some previous research that suggests that the per-hour value of such time is substantial — at least a quarter of the increase in income attributable to increased hours of work, and quite probably more.[12] A more recent random assignment study found that the value of nonmarket time is 58 percent of pretax earnings for telephone interviewer and data entry positions.[13] For purposes of the benefit-cost analysis, WorkAdvance's impact on those pretax earnings that result from reductions in nonmarket time was multiplied by 0.5 to estimate the value of this reduction. This allows for the possibility that because of their training, WorkAdvance participants are employed in jobs that are more interesting than telephone interviewer and data entry positions, so relinquishing nonmarket time is less onerous.

While some of WorkAdvance's impact on earnings result from increased hours of work, some of it results from the program's impact on hourly wages — a human capital effect. In estimating the loss of nonmarket time, only the former needs to be considered. The top panel in Appendix Table B.5 addresses this by comparing WorkAdvance's impact on earnings as a percentage of control group earnings with the program's percentage impact on the number of quarters worked. Both estimates are computed over that part of the observation period covered by the UI data (three years for Madison Strategies Group and five years for the remaining sites). The third row in the table indicates that the impact on employment accounted for only about a third of the increase in earnings for Per Scholas and Madison Strategies Group but played a more important role at the other two sites. However, although the impact on earnings at St. Nicks Alliance was negligible early in the observation period, it was about 10 percent during the fifth year of the

[12]Bell and Orr (1994); Greenberg (1997); and Greenberg and Robins (2008).

[13]Mas and Pallais (2019).

Appendix Table B.5

WorkAdvance's Percentage Impacts on Earnings, Employment, Hours, and Wage Rates

	Per Scholas	St. Nicks Alliance[a]	Towards Employment	Madison Strategies Group
Based on UI Data				
Percentage impact on earnings	20.5% ***	3.3%	12.7%	19.7% **
Percentage impact on number of quarters employed	7.3% *	2.2%	7.3%	6.6%
Percentage of impact on earnings attributable to impact on employment[b]	35.6%	66.4%	57.4%	33.5%
Based on Year 2 survey and on only those employed				
Percentage impact on hourly wage rate	12.0% **	-1.5%	6.7%	8.1%
Percentage impact on average hours per week	-1.3%	6.9% *	6.0%	6.1% *

NOTES: UI = Unemployment Insurance.

[a]Year 5 only for St. Nicks Alliance: 9.9% for percentage impact on earnings, 2.9% for percentage impact on number of quarters employed, 29.9% for percentage of impact on earnings attributes to impact on employment.

[b]Percentage of impact on earnings attributable to impact on employment is calculated by dividing percentage impact on earnings by percentage impact on number of quarters employed.

Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

observation period and the impact on employment accounts for only 30 percent of this increase. These fifth-year findings are important because the positive net benefit estimates for St. Nicks Alliance are mainly attributable to WorkAdvance's impact on earnings late in the observation period.

The bottom panel in Appendix Table B.5 uses data from the Year 2 survey, and hence is not directly comparable to the top panel, which is based on UI data available over three years for Madison Strategies Group and over five years for the remaining sites. The results for St. Nicks Alliance occurred before the positive impact on earnings occurred at that site and thus are probably best ignored. The results for the other three sites suggest that there was an increase in the hourly wage rate, especially at Per Scholas, which is consistent with some of WorkAdvance's impact in earnings being attributable to the program's effects on human capital. The findings in the bottom panel also suggest that, except for Per Scholas, some of the impact on earnings is accounted for by increased hours of work among those who were employed.

Based on MDRC's interpretation of the findings in Appendix Table B.5, it is assumed in the benefit-cost analysis that 35 percent of the impact on earnings at Per Scholas, 50 percent of the earnings impact at St. Nicks Alliance and Madison Strategies Group, and 60 percent of the increase in earnings at Towards Employment was due to increased hours of work, with the remainder attributable to WorkAdvance's impact on hourly wages.

Deadweight Loss

The estimate of deadweight loss was obtained by multiplying an estimate of the marginal excess tax burden (METB) obtained from the economics literature by the estimated change in the government's fiscal position, as indicated by the total net benefit estimates in the columns for the government in Table 3.1 and Tables 3.3-3.5 in the main text. The METB is the increase in deadweight loss resulting from raising an additional dollar of tax revenue. Estimates of the METB are usually derived from general equilibrium models of the economy. METB estimates based on uncompensated labor supply elasticities, rather than compensated labor supply elasticities, are appropriate for the WorkAdvance benefit-cost analyses because those who support the benefit offset through their taxes are unlikely to be compensated through the program. A number of such estimates of the METB are reported in a recent book; the median value of these estimates for the United States is 19 cents per dollar.[14] This is the value of the METB that was used to obtain the estimate of deadweight loss appearing in Table 3.1 and Tables 3.3-3.5.

[14] See Table 3.2 in Boardman, Greenberg, Vining, and Weimer (2018).

Appendix C

Nonmonetized Benefits and Costs

Would net gain estimates reported in Tables 3.1 and 3.3-3.5, which are based on those benefits and costs that were estimated and monetized, change if the dollar values of the six items listed in Appendix Table C.1 could be determined? Although the precise values of the estimated net gains undoubtably would be different than reported, the positive conclusions about the success of the four WorkAdvance programs would almost certainly remain. Indeed, the net estimated gains might increase rather than shrink. Only two of the listed items (reductions in the earnings of spouses and partners, and labor market displacement) have the potential to seriously reduce the net gains from WorkAdvance, while three of the others should increase these gains.

The WorkAdvance Year 2 survey found that there was some reduction in overall health care coverage for participants at Per Scholas and St. Nicks Alliance, but the estimated differences at the other two sites were positive. However, the size of these estimates was moderate and never statistically significant.[1] Moreover, there is evidence that health itself improves with increases in employment and earnings,[2] such as those that occurred with WorkAdvance. Further offsetting any reductions in health insurance coverage is an indication from the Year 2 survey that the quality of life of program participants improved at all four sites, although this impact was substantial and statistically significant at only the Per Scholas site.[3] Answers to other relevant survey questions were also consistently more positive for WorkAdvance group members than for members of the control group (for example, whether they are satisfied with their current job or whether they often worry about their financial situation), although the differences were not usually statistically significant, except at Per Scholas.

Impact estimates for the other four nonmonetized items listed in Appendix Table C.1 do not exist. Thus, some conjecture is necessary to assess them. The first of these — program impacts on the earnings of spouses and partners — almost certainly reduces the net gain of the families in which participants reside and thus the gains of society. As the earnings of participants increase, their spouses and partners may be able to work less. However, only around a third of participants lived with either a spouse or a partner at three of the sites; at the Madison Strategies Group site about 45 percent did. This suggests an upper bound on the extent to which spousal and partner earnings might have fallen, although they probably fell by far less because it is unlikely that most couples would be willing to relinquish the entire increase in income provided by one person so that the other could work less. Indeed, 87 percent of spouses and partners were not working prior to WorkAdvance and thus had no earnings to reduce.[4] Moreover, not all spouses and partners share their earnings. This may be especially likely among unmarried partners, who accounted for about a third to a half of all WorkAdvance couples.

[1]See Appendix Table F.3 in Hendra et al. (2016).

[2]Fujiwara (2010).

[3]See Table 5.7 in Hendra et al. (2016).

[4]See Appendix Table B.1 in Hendra et al. (2016).

Appendix Table C.1

Nonmonetized Benefits and Costs of WorkAdvance with Likely Magnitudes, by Site

	Has health coverage	Quality of life	Earnings of spouses and partners	Effects on crime	Value placed by public on increasing work among participants	Labor market displacement
Per Scholas						
Participants	Moderate negative insignificant impact	Substantial significant positive impact	Negative impact, but probably modest		0	0
Government budget	0	0	0	Likely positive, but of unknown magnitude	0	0
Society	Moderate negative insignificant impact	Substantial significant positive impact	Negative impact, but probably modest	Likely positive, but of unknown magnitude	Positive, but of unknown magnitude	Negative, but probably moderate
St. Nicks Alliance						
Participants	Moderate negative insignificant impact	Positive modest insignificant impact	Negative impact, but probably modest		0	0
Government budget	0	0	0	Likely positive, but of unknown magnitude	0	0
Society	Moderate negative insignificant impact	Positive modest insignificant impact	Negative impact, but probably modest	Likely positive, but of unknown magnitude	Positive, but of unknown magnitude	Negative, but probably moderate
Madison Strategies Group						
Participants	Negligible positive impact	Positive modest insignificant impact	Negative impact, possibly modest		0	0
Government budget	0	0	0	Likely positive, but of unknown magnitude	0	0
Society	Negligible positive impact	Positive modest insignificant impact	Negative impact, possibly modest	Likely positive, but of unknown magnitude	Positive, but of unknown magnitude	Negative, but probably small

(continued)

Appendix Table C.1 (continued)

	Has health coverage	Quality of life	Earnings of spouses and partners	Effects on crime	Value placed by public on increasing work among participants	Labor market displacement
Towards Employment						
Participants	Modest positive insignificant impact	Small positive impact	Negative impact, but probably modest		0	0
Government budget	0	0	0	Likely positive, but of unknown magnitude	0	0
Society	Modest positive insignificant impact	Small positive impact	Negative impact, but probably modest	Likely positive, but of unknown magnitude	Positive, but of unknown magnitude	Negative, but probably moderate

SOURCE: The sources and derivation of the benefit and cost components are described in Appendix B.

NOTE: The basis for judgements about the likely magnitudes of the nonmonetized benefits and costs are described in the text.

As implied by a number of studies, if a training program increases employment and earnings among its participants, it might also decrease criminal activities among these persons.[5] One study found that a 1 percent increase in income reduces the propensity to commit crime by 0.6 percent among male U.S. youth who have permanently left school.[6] Although WorkAdvance participants are not exactly youths, well over half were between 18 and 34 at study entry and, except for the sample at Towards Employment, around 85 percent were male. Thus, decreased crime among participants could possibly be important, resulting in benefits for the government and for the potential victims of crime, although whether this is the case is

[5]See Fujiwara (2010) for a summary.

[6]Grogger (1998).

unknown. Moreover, only a limited number of persons can potentially participate in sector-focused programs such as WorkAdvance, putting a cap on the size of these benefits.

If the general public values reductions in the receipt of government transfer benefits by WorkAdvance participants, in and of itself, or the fact that these persons are more financially successful than they would have been without WorkAdvance, then that is a benefit to society. Although nothing is currently known about the possible size of this benefit, even if the value each member of the general public places on the success of WorkAdvance participants is very small, it might potentially be summed over a very large number of persons. The size of this benefit is capped, however, by the fact that the number of potential participants in WorkAdvance is limited. Moreover, according to the two-year survey, except for SNAP at the Per Scholas site, the rolls of government transfer programs for WorkAdvance participants fell by less than 5 percentage points due to the program.

Because WorkAdvance successfully increased the earnings and employment of its participants, some may have ended up in jobs that otherwise would have been held by nonparticipants.[7] If, as a result of such displacement, these nonparticipants became unemployed or accepted lower-wage jobs, then this is a potential cost of the program to society as a whole. To the extent that full employment was maintained in the WorkAdvance sites, however, it should have been relatively easy for nonparticipants to find jobs, and this cost would have been mitigated. At around 4 or 5 percent, the unemployment rate remained low in Tulsa, the site of Madison Strategies Group, throughout the period covered by this benefit-cost study evaluation, suggesting that the displacement of nonparticipants by WorkAdvance participants was probably small. At around 6 or 7 seven percent, the unemployment rate was initially fairly high in New York City, where Per Scholas and St. Nicks Alliance are located, and in the Cleveland area, the site of Towards Employment. After a couple of years, however, the unemployment rates in these sites were similar to Tulsa's. Moreover, given the specialized training provided by WorkAdvance, it is possible that the program imparted skills that allowed participants to leave slack labor markets for tight ones, making it easier for unemployed nonparticipants who remained in the slack markets to find jobs.

[7]A review of studies of this effect suggests that it is moderate, perhaps under 20 percent. See Greenberg et al. (2011). However, studies on this topic vary greatly in methods and findings, and some suggest much larger effects. One recent random assignment study found that displacement offset almost the entire impact of a program in France that offered intensive job counseling to young, educated job seekers (Crépon et al., 2013).

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