

# New Insights on Career Pathways: Evidence from a Meta-Analysis

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Over the last 30 years, adults with a high school education or less have experienced stagnating wages and relatively high unemployment while those with postsecondary credentials enjoyed economic gains (Autor, 2015; Carnevale et al., 2016). The career pathways approach to workforce development emerged to help workers with lower levels of formal education advance to better paying jobs by earning in-demand postsecondary credentials. The approach involves articulated steps of education, training, and jobs within an industry sector or occupational cluster, combined with other services and employer connections to support participant success (WIOA, 2014).

To provide the workforce development field with more career pathways information and evidence, the Department of Labor's (DOL) Chief Evaluation Office, in collaboration with DOL's Employment and Training Administration, contracted with Abt Associates to conduct the **Descriptive & Analytical Career Pathways Project** (see box on the next page for more information). This brief summarizes findings of the project's meta-analysis study, which analyzes research on the impacts of 46 career pathways programs, based on evaluation findings published between 2008 and 2021. The brief first describes the programs and participants in the evaluations included in the meta-analysis. It then discusses the study's overall impact findings and the findings about which program characteristics were associated with impacts, as well as the implications of each for policymakers, practitioners, and researchers. It concludes with ideas for ways to improve future meta-analyses of career pathways and other workforce development approaches.

This meta-analysis adds to existing evidence about career pathways programs in several ways. Specifically, the study:

- Provides highly credible estimates of the overall impacts of career pathways programs,
- Adds new information on the impact of programs on employment in targeted industries, and
- Examines program characteristics associated with educational and labor market impacts.

## Highlights

This brief presents a **meta-analysis of 46 impact evaluations** of career pathways programs. The study includes both causal and suggestive findings on the career pathways approach.

**Findings that can be interpreted as causal** (in which we have a high degree of confidence). The study found career pathways programs overall:

- **Greatly increased educational progress** as measured by credential receipt (by 155 percent)
- **Increased employment in targeted industries** substantially (by 72 percent) but raised **overall employment** by much less (9 percent)
- Did not have a meaningful effect on **earnings**

**Findings best interpreted as suggestive** (not causal and do not lend themselves to simple interpretations). The study examined which characteristics associated with impacts and found:

- **Larger** educational progress impacts for programs where employers provide input on curricula or program design, or where staffing agencies are partners
- **Larger** labor market impacts for programs that serve a larger share of Black participants
- **Smaller** educational progress impacts (though still positive ones) for programs where community colleges are the **lead agencies or partners**
- **Smaller** labor market impacts for programs that offer flexible sequencing of courses or offer tuition or other financial assistance

Future research—especially on how to translate positive impacts on educational progress and industry-specific employment into higher long-term earnings—could build on this study to offer new insights for improving the effectiveness of career pathways and other training programs.

## The Descriptive & Analytical Career Pathways Project and its Meta-Analysis Study

The Workforce Innovation Opportunity Act (WIOA) emphasizes the use of career pathways programs and requires the Department of Labor (DOL) to conduct a study to develop, implement, and build upon career advancement models and practices. In order to respond to the need for information and evidence in the field due to this growing emphasis, DOL's Chief Evaluation Office, in collaboration with the Employment and Training Administration, contracted with Abt Associates to conduct the **Descriptive & Analytical Career Pathways Project**. The project's purpose is to advance the evidence base in the career pathways field by addressing key research gaps, drawing primarily on existing data, to inform career pathways systems and program development to help meet the needs of both participants and employers.

The project builds on Abt's earlier work for DOL in the **Career Pathways Design Study** (Sarna & Strawn, 2018; Schwartz et al., 2018), which scanned career pathways research and practice, interviewed stakeholders, and pointed to ways to fill evidence gaps (Peck et al., 2018).

The **Meta-Analysis Study** systematically analyzes 46 impact evaluations that met certain quality criteria. All used rigorous designs to assess career pathway program impacts, with 27 (59 percent) using an experimental design and the remaining 19 (41 percent) using a quasi-experimental design. The meta-analysis study coded information from each evaluation into a single dataset for two types of analysis:

**First, overall impacts for education progress and labor market outcomes.** The study estimates these by averaging across all evaluations that reported on those outcomes. In the main report, the educational progress domain's single outcome is credential receipt. The labor market domain has four outcomes: (1) employment, (2) employment in industry trained for, (3) short-term (less than 36 month) earnings, and (4) medium/long-term (36 months or more) earnings. The report's appendix includes additional outcomes.

For these findings, the study has high confidence that the outcomes were caused by the programs because each evaluation in the meta-analysis used experimental or quasi-experimental methods—comparing a “program” group to a “control” or “comparison” group—to ensure that any differences in outcomes between the two groups can be attributed to effects of the programs. These differences are known as impacts.

**Second, variation in program impacts according to selected evaluation and program characteristics.** The study estimates these associations by first coding specific characteristics of each evaluation and program on which it focused. Then, using a series of meta-regressions, the study analyzed how the variation in characteristics associates with variation in overall impacts.

As with the analysis of overall impacts, the educational progress domain's single outcome is credential receipt. For the labor market domain, the study also analyzes a single outcome: a composite of overall employment and earnings. Unlike the overall impact analysis results, the findings of the meta-regression are suggestive, not causal (see **Limitations** box on page 8).

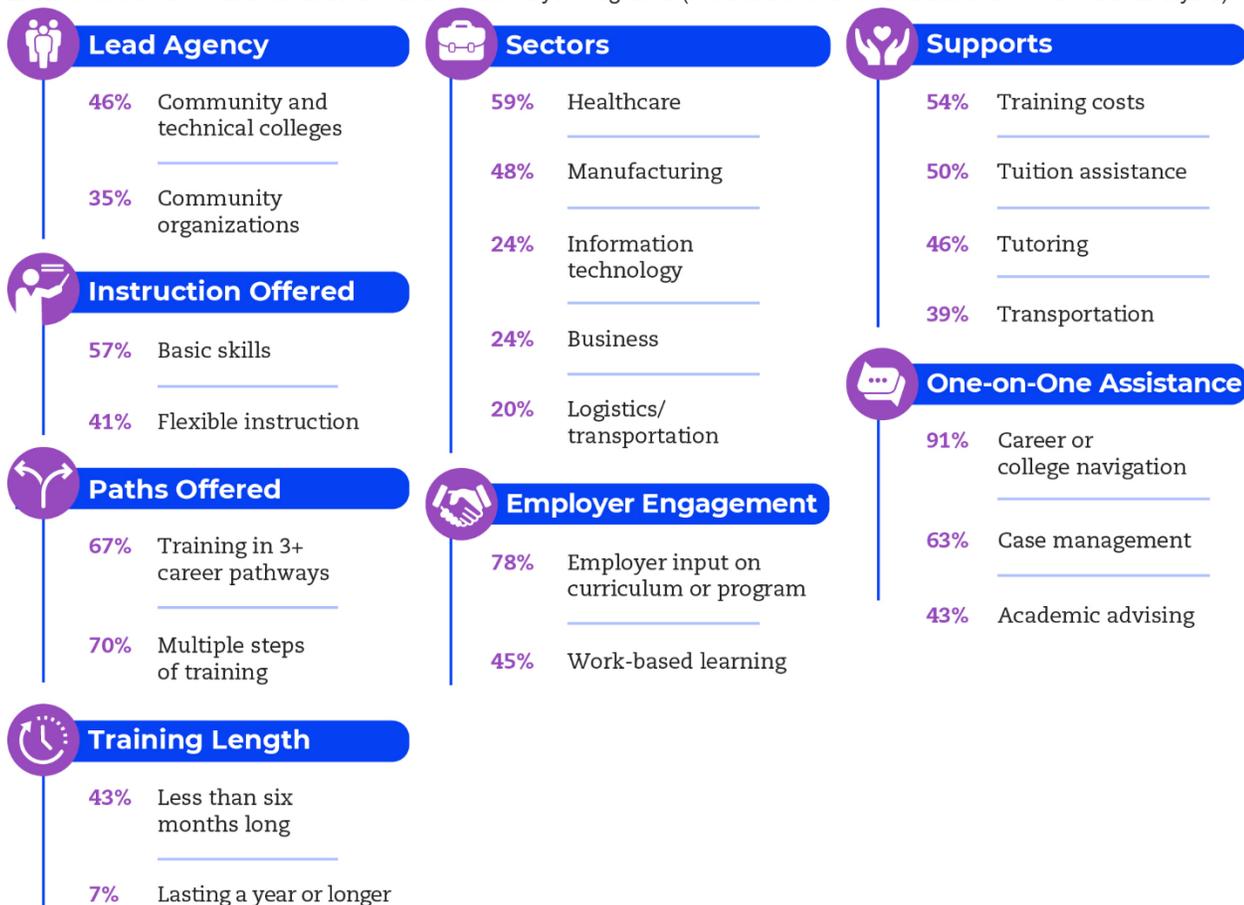
**For the full report and other briefs from this project see:**

<https://www.dol.gov/agencies/oasp/evaluation/currentstudies/Career-Pathways-Descriptive-and-Analytical-Study>

# 1. What did the career pathways programs in the meta-analysis look like and who did they serve?

The programs studied in the 46 impact evaluations<sup>1</sup> included in the meta-analysis varied considerably in the geographies and labor markets where they operated and in their designs and implementation (Exhibit 1). The career pathways programs were most commonly led by community or technical colleges, followed by community organizations. Healthcare was the most common sector of training.

**Exhibit 1.** Select Characteristics of Career Pathways Programs (included in the 46 evaluations in the meta-analysis)

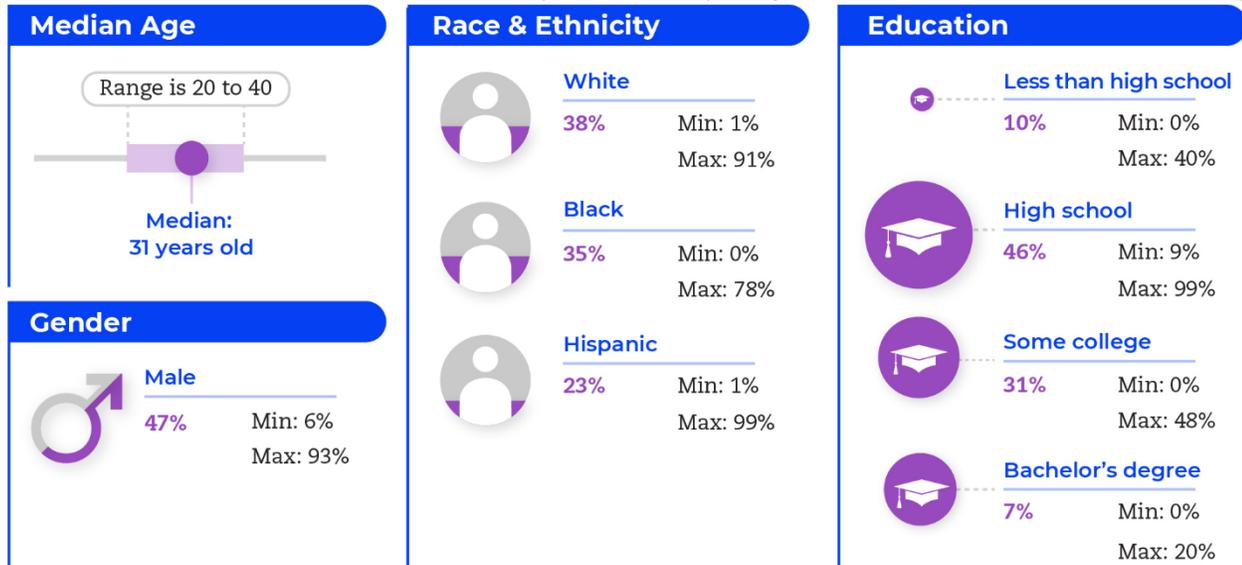


Notes: Lead agency and training length categories are mutually exclusive. Training length refers to the program's most common training duration. Only selected categories are presented so percentages do not necessarily total 100. For the remainder of characteristics, categories are not mutually exclusive. Source: Authors' computation from the Descriptive & Analytical Career Pathways Project meta-analysis dataset.

The programs also varied in terms of the people they served (Exhibit 2). The gender, race and ethnicity of participants especially varied across programs in the study (as reflected by the ranges provided for each characteristic). To some extent differences in participant characteristics may have been driven by program characteristics, particularly the industry sector targeted (e.g., healthcare programs tended to serve mostly women, while manufacturing tended to serve mostly men).

<sup>1</sup> *Impact studies* seek to understand what difference a program makes by comparing participants with access to program services ("treatment" group) to similar individuals without access to those services ("control" or "comparison" group). They are either "experimental" or "quasi-experimental" in design.

**Exhibit 2.** Select Characteristics of Career Pathways Participants (in programs in the 46 evaluations in the meta-analysis)



Notes: The “Min” and “Max” refer to the lowest and highest values observed across the programs and reflects the wide variation in participant characteristics. The percentages in purple represent the mean value across evaluations.

Source: Authors’ computation from the Descriptive & Analytical Career Pathways Project meta-analysis dataset.

## 2. How effective was the career pathways approach?

The meta-analysis study examined the overall average impacts of the career pathways approach on educational progress and labor market outcomes. The study averaged these impacts across program and control/comparison group members, for all studies that reported a particular outcome.<sup>2</sup> For these findings, the study has high confidence that the outcomes were caused by the programs because each evaluation in the meta-analysis used experimental or quasi-experimental methods to estimate impacts. That is, they compared a “treatment” group to a “control” or “comparison” group to ensure that any differences in outcomes between the two groups can be attributed to effects of the programs.

The meta-analysis found the career pathways approach substantially increased both educational progress and industry-specific employment (that is, employment in the industry or occupation in which the program offered training). However, the career pathways approach produced only small increases in overall employment rates and short-term earnings (less than three years of follow-up) and did not lead to meaningful medium-/long-term earnings gains (defined as three years or longer of follow-up) (Exhibit 3).

Overall, the career pathways approach:

- **Increased educational progress** (measured as credential receipt) substantially, from 18 percent in the control/comparison group to 45 percent in the program group—a 155 percent relative gain (based on 33 evaluations).<sup>3</sup>
- **Increased employment** by a small amount, from 60 percent employed in the control/comparison group to 66 percent in the program group—a 9 percent relative gain (based on 37 evaluations).

<sup>2</sup> Not all studies in the meta-analysis reported on all outcomes of interest for this study. For each finding we indicate the number of evaluations included in the average impact estimate.

<sup>3</sup> The figures in Exhibit 3 and throughout the brief are rounded; however, all calculations are based on the unrounded figures. Although this can make the numbers appear inconsistent, it ensures that all data presented are both accurate and comprehensible. For example, in Exhibit 3 the control and program group means for educational progress are 17.71 and 45.21 (rounded to 18 and 45) percent, respectively. The rounded figures would suggest an impact of 27 percent and a relative impact of 150 percent; however, the true figures give the displayed impact of 28 percent and a relative impact of 155 percent.

- **Increased industry-specific employment** by much more than it increased employment overall, from 26 percent in the control/comparison group to 45 percent in the program group—a 72 percent relative gain (based on 24 evaluations).
- **Increased short-term earnings** (through 35 months) by a very small amount, from a quarterly average of \$4,081 in the control/comparison group to \$4,342 in the program group—a 6 percent relative gain, or about \$260 more per quarter (based on 37 evaluations).
- **Did not meaningfully increase medium/long-term earnings** (from 36 months or more), with program and control/comparison groups' earnings about the same (just over \$10,000 per quarter; based on 16 evaluations).

Only 16 evaluations in the study reported earnings impacts over three or more years (compared to 37 studies reporting short-term earnings impacts). Fewer still (only two) reported earnings impacts over five or more years. Future meta-analyses will be better able to report on medium- and long-term impacts when more evaluations report impacts over a longer time frame.

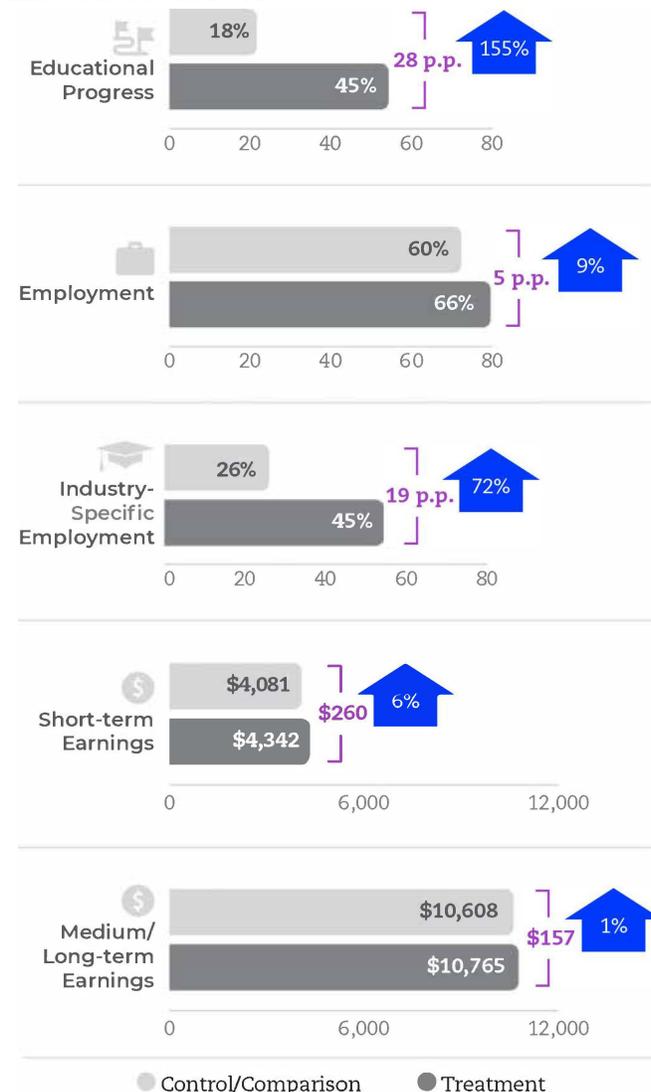
## Implications for Policy, Practice, and Research

The meta-analysis shows programs using the career pathways approach can substantially increase credential attainment and help participants secure jobs in the industry targeted by training. However, it found more limited gains for other labor market outcomes.

For **policymakers and practitioners**, the results suggest focusing on how to translate impacts on educational progress and industry-specific employment into larger and more sustained earnings gains. This could include:

- ✓ **Targeting training that results in higher-level credentials for better paying jobs from the outset.** Currently much of the training in career pathways programs, particularly the first training step, is short term and for relatively low-paid, entry-level jobs (Juras & Buron, forthcoming; Sick & Loprest, 2021). The career pathways approach is designed to help participants continue in a pathway to higher-level training and jobs over time. However, based on the limited evidence to date, most participants do not move beyond the initial step of training (Sick & Loprest, 2021; Klerman, Litwok, & Morris, forthcoming; Gardiner & Juras, forthcoming). Some programs that target longer, more advanced training from the outset, such as Project Quest, have had larger and more sustained impacts on earnings (Roder & Elliott, 2021).

**Exhibit 3.** Overall Career Pathways Impacts on Education and Labor Market Outcomes



Notes: Sample includes 46 evaluations: 33 contribute to educational progress; 37 contribute to employment; 24 contribute to industry-specific employment; 37 contribute to short-term earnings; 16 contribute to medium and long-term earnings.

Source: Authors' computations from **Descriptive & Analytical Career Pathways Project** meta-analysis dataset.

- ✓ **Targeting occupations and industries that offer higher potential for wage growth over time.** Entry-level occupations vary considerably in the wage growth workers experience over time. Within healthcare, for example, clinical laboratory technicians have much stronger wage growth over ten years than occupations commonly targeted by career pathways programs, such as nursing assistants (Schwartz et al., forthcoming). Some programs included in the evaluations in the meta-analysis targeted “knowledge” industry sectors, such as information technology or financial services, and had large and sustained earnings trajectories (see Schaberg & Greenberg, 2020; Fein, Dastrup, & Burnett, 2021).

Policymakers and practitioners must, of course, balance multiple objectives and tradeoffs in making choices about career pathways implementation, including program goals, target population, local labor market conditions, and resources available. Tradeoffs to targeting higher paying jobs may include workers spending more time in training and having to wait longer to enter jobs if that advanced training is longer than is typical now. Even if the training is not longer, it may still be less accessible to targeted populations because of higher program skill requirements, as is often the case with information technology training programs. The availability, or lack thereof, of academic, financial, and other supports may be crucial in determining how severe these tradeoffs are; it seems possible that sufficient support could at least mitigate attrition and access issues.

For **researchers**, to help inform policy and practice to improve earnings outcomes, new studies should consider:

- ✓ **Exploring workers’ career trajectories** in the labor market to understand better which occupations tend to be launchpads for future wage growth as well as the specific occupational steps workers take to advance.
- ✓ **Examining workers’ characteristics**, such as skills, educational attainment, prior work experience and others, that are associated with future wage growth.
- ✓ **Engaging in longer-term follow-up evaluation**, more generally, in order to build new evidence on the longer-term impacts of the career pathways approach.

This new research could provide programs and policymakers with insights into promising occupations and industries for training. In particular, the role that targeted industry sectors, occupations, and occupational steps may play in improving labor market outcomes should be given additional attention, especially given lack of earnings impacts and despite large educational impacts. In addition, analyses of labor market disparities in wage growth, such as along racial/ethnic or gender lines, could reveal subgroups that programs could target for additional support for advancement. To date, labor market research on the various paths individual workers take to higher wages, and its implications for workforce development programs, is limited. Another study in the **Descriptive & Analytical Career Pathways Project**, the *Career Trajectories and Occupational Transitions Study*, is considering these types of research questions.<sup>4</sup>

### 3. Which characteristics are associated with programs being more or less effective?

In addition to analyzing overall impacts, the study also used a “meta-regression” to examine how certain evaluation and program characteristics associated with program impacts while controlling for some other factors. The study has less confidence in these findings than in the overall impact findings because this analysis is based only on associations between characteristics and impacts.<sup>5</sup> Therefore, the results cannot be interpreted as meaning that a particular program characteristic *caused* an impact, only that it suggests a statistical *association* with the impact after taking some other factors into account.

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<sup>4</sup> See Deena Schwartz, Andrew Clarkwest, Marissa Hashizume, Tresa Kappil, and Julie Strawn. (2021). *Building Better Pathways: An Analysis of Career Trajectories and Occupational Transitions*. Report prepared for the U.S. Department of Labor, Chief Evaluation Office. Rockville, MD: Abt Associates, and Clarkwest, Andrew, Tresa Kappil, Deena Schwartz, Marissa Hashizume, and Karin Martinson. (2021). *Wage growth disparities by race, ethnicity, and gender among entrants to mid-level occupations: Findings from the Career Trajectories and Occupational Transitions Study*. Report prepared for the U.S. Department of Labor, Chief Evaluation Office. Rockville, MD: Abt Associates

<sup>5</sup> The meta-analysis described above allows for causal interpretation because the underlying data are impact estimates.

The meta-regression identified several characteristics that have stronger and larger associations<sup>6</sup> with impacts than others. Specifically, the analysis found the following:

- Larger educational progress impacts in studies of programs where *employers provide input on curricula or program design*, or where *staffing agencies* are partners.
- Smaller educational progress impacts in studies of programs with a *community or technical college* as the lead or partner, although it is important to note that these programs still had favorable educational progress impacts.
- Larger labor market impacts in studies of programs serving a larger share of *Black participants*.
- Smaller labor market impacts in studies of programs that offered *flexible sequencing* of courses or offered *tuition or other financial assistance*.

In general, these associations should be interpreted cautiously, both given the caveats noted in the “Limitations” box and because the findings do not lend themselves to simple interpretations. For example, the larger educational progress impacts among programs with staffing agency partners and the smaller educational progress impacts among programs with community or technical college partners may be “real” relationships, or they may reflect program characteristics for which the meta-regressions did not control, given the very small number of evaluations that include staffing agencies (three) or did not include community colleges (five). Other possible characteristics that could explain these results, not controlled for in the meta-regression, include program selectivity, funding levels, program intensity, occupations trained for, and the degree of participants’ economic disadvantage.

Taken together, though, the results of the meta-regression suggest a pattern of larger impacts associated with characteristics more commonly found in the evaluations of sectoral training programs led by private nonprofit entities included in this meta-analysis. For example, these programs less commonly included a community or technical college partner or offered tuition or other financial assistance (though many did have both features). They more commonly received employer input on program curricula or design and served a larger share of Black participants. Sectoral training programs in the evaluations in the study also more often targeted

## Limitations

In considering findings from the meta-regressions, it is important to acknowledge some technical limitations, which imply being cautious about how to interpret results.

- The analysis is limited to what authors of evaluation reports chose to report; some potentially important characteristics were not reported consistently or at all by enough evaluations to include in our analyses.
- Because none of these characteristics were randomly assigned to programs (that is, programs *chose* what to implement and how), the characteristics very well may be correlated with other characteristics that we did not or could not measure (such as the motivation or dynamism of a program’s administrators or staff, a program’s selectivity, or its funding level).
- Although we analyzed 78 characteristics initially, for technical reasons, we could only include a small number of them in our final meta-regression. In selecting ones that might help explain educational progress impacts, for example, a larger number of characteristics (12 of them) appeared relevant in our initial analyses than we ultimately could include (just 5).

For these reasons, results are not causal but rather suggestive of possible associations between the characteristics and impacts.

<sup>6</sup> For ease of interpretation, we describe the associations as smaller/larger based on the overall average effect size. For example, the average effect size of the career pathways approach on educational progress is 0.72 (standard deviation units), and so a negative coefficient of 0.32 implies that programs that have that variable have an average effect size of 0.40. In absolute terms 0.40 is a positive number, but it is smaller than the overall (0.72) average. If the overall average effect size were negative, a negative coefficient would imply a larger association.

non-healthcare sectors such as manufacturing, construction, information technology, and financial services, a factor not controlled for in the final meta-regression.<sup>7</sup>

In addition, labor market impacts varied widely across the evaluations in this study, including among evaluations of sectoral training programs. Given this variation, while these findings may be informative about factors that appear to associate with more effective programs, it is important not to overgeneralize from these findings—which aggregate across many distinct programs—to any one program or context.

## Implications for Policy, Practice, and Research

The meta-regression results show some suggestive relationships, with implications for policy, practice, and research. As discussed, this analysis does not offer causal evidence to suggest that programs should prioritize or eliminate any particular characteristic.

For **policymakers and practitioners**, it is important to:

- ✓ **Consider these findings as informative but not prescriptive.** Policymakers and practitioners should consider the findings alongside other factors, such as the diverse settings, populations, and goals of various programs. For example, findings around flexible sequencing and financial assistance should be interpreted in light of the fact that programs that use these approaches might do so because their populations especially need that flexibility or aid. By contrast, given that most programs would likely benefit from strong employer relationships, policymakers and practitioners may want to give more weight to the finding that receiving employer input on curricula or program design is associated with larger educational progress impacts.
- ✓ **Set expectations for varied types of programs according to their distinct missions, administrative structures, populations, and resources.** For example, the community college finding may reflect different priorities or challenges for those institutions as compared to private, nonprofit sectoral training programs, given colleges' larger scale and mandate to serve their communities.<sup>8</sup> Programs generally face tradeoffs between scale, access, and impacts: producing larger impacts may mean being more selective and/or providing more intensive services to a smaller number of people versus producing more modest impacts for a larger number of people. Given that, policymakers might need to adjust performance expectations according to different program goals, populations, and resources.

The meta-regression findings imply that **researchers** could further advance research on career pathways by:

- ✓ **Examining attributes of successful programs across program types** to more fully understand the most important factors behind programs that have produced large and sustained impacts. Researchers could compare attributes of leading programs to examine the ways in which program and participant characteristics differ among them. This could yield insights about the other settings to which particular elements might be

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<sup>7</sup> Some initial analyses did control for whether programs trained for healthcare jobs (vs. other sectors); however, our final educational progress and labor market meta-regressions did not because technical reasons limited each analysis to a small number of characteristics.

<sup>8</sup> Other technical factors could be influencing the community college finding. One is service contrast: even when programs achieve favorable outcomes for their participants, evaluation impacts may be smaller if control/comparison group members are easily able to access similar services on their own. This could be especially true for community college career pathways programs where participants are typically receiving the same occupational training as others at the college—meaning the primary contrast is about the additional services and supports that programs provide—in contrast to a private, nonprofit program that delivers its own specialized training that only program participants can access. A second factor is implementation fidelity: evaluations of broad funding streams or grant programs, such as the Health Professions Opportunity Grants program or the Trade Adjustment Assistance Community College and Career Training grant program, will necessarily capture a wider range of implementation approaches and quality than evaluations of smaller, highly structured replication efforts, such as Year Up or Per Scholas, where implementation of a specific model is carefully developed, monitored, and controlled.

usefully adapted in order to improve results. That could be followed by pilots to test replication and scaling of promising elements.<sup>9</sup>

- ✓ **Engaging in component-focused evaluation** in order to generate stronger evidence on the contribution of various program characteristics to overall impacts. The program characteristics that this study identified as suggestively related to program impacts, such as financial assistance, could be directly tested in well-designed impact evaluations. For example, a new evaluation might randomize—across two or more treatment groups—the extent or type of tuition or other financial assistance to which participants have access to learn more about how financial assistance links to program impacts.
- ✓ **Evaluating targeted program models or configurations.** Likewise, some other program characteristics that this study identified as suggestively related to program impacts—including types of partnerships, employer input on program curricula or design or other targeted characteristics—could also be directly tested in well-designed impact evaluations that isolate their contribution to impacts by randomizing them.
- ✓ **Conducting additional meta-regressions** when a greater number of evaluations are available to increase the number of characteristics that can be examined. Due to statistical limitations, this analysis used a phased approach that involved testing small groups of characteristics at a time. As more and more evaluation findings are published, they could be added as additional observations, which would increase researchers' ability to explore more characteristics within a single analysis. This would allow researchers to control for additional confounding factors as they explore additional characteristics.

All these future research possibilities would shed light on the mechanisms through which program impacts arise. Although the experimental evaluation approaches would likely only be able to focus on a small number of characteristics or contexts at any one time (due to resources and logistical constraints), they would offer the greatest confidence that implementing a certain characteristic or operating in a certain context would lead to greater or lesser impacts.

#### 4. How Can we Strengthen Future Meta-Analyses?

Overall, several overall considerations can be drawn from the study as a whole to strengthen future meta-analyses of career pathway programs. A major challenge of this study was selecting and coding evaluations for the meta-analysis. Specifically, the study faced challenges related to variation in the evaluations' quality, capturing variation in the programs themselves, and incomplete and inconsistent reporting on the impact findings as well as on the characteristics of programs and participants included in the evaluations. Possible strategies to address these issues in future research include:

- ✓ **Identify “core components” in workforce development.** As other fields have done, the workforce development field could apply a “core components” approach to the study of workforce interventions (e.g., Hoffman, 2020). Core components refers to “the parts, features, attributes, or characteristics of a program that research shows are associated with its success” (Francis et al., 2020). A core components approach can help identify what the field and research indicate are critical elements, guiding both program implementation and funding.
- ✓ **Provide more guidance or requirements to grantees and evaluators on quality criteria for impact evaluations.** This study began with a sample of 123 evaluations that seemed potentially eligible. On reviewing studies, we found that only 96 of these were impact evaluations, and of those, just 46 met our eligibility criteria. The single largest reason for studies being excluded was inadequate quality. For example, many studies could not be included due to “time confounds”; that is the outcomes reported for the program group and control/comparison groups were from different follow-up time periods that did not overlap. In that

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<sup>9</sup> The recent experience of the Year Up Professional Training Corps, for example, shows how incremental and iterative experimentation by practitioners in close partnership with researchers helped community colleges adopt and refine promising practices from a leading sectoral training program to meet the particular needs of their students, institutions, and local labor markets (Britt et al., 2021; Fein et al., 2020; Maynard et al., 2020).

case an impact evaluation cannot support causal conclusions because it is unclear whether the differences in outcomes are due to the program or due to other changes, such as in the broader economy.

- ✓ **Specify criteria for reporting impact findings** so that evaluations include the information needed to convert impacts into standardized effect sizes (which is necessary for a meta-analysis to compare impacts across evaluations).
- ✓ **Synthesize findings across more studies.** As more studies become available, future meta-analyses of workforce development programs could synthesize findings across more studies, not only for overall impacts but also for subgroup impacts. They could also examine a greater number of characteristics that may be associated with these impacts as for technical reasons, the more studies in such an analysis, the more characteristics it can explore (see Limitations, p, 7).
- ✓ **Pool individual-level data across multiple evaluations** in order to conduct a participant-level meta-analysis. This could complement or replace analyses of core components and characteristics (which may not be readily and consistently available in program evaluations) and would support a greater diversity of subgroup analyses than a standard meta-analysis involves. However, accessing individual-level data is often complex and, in some cases may be impossible. Efforts to promote the creation of public- and/or restricted-use datasets may make meta-analyses using pooled, individual-level data more feasible in the future.

Meta-analyses play a unique role in informing policy and practice by providing a systematic assessment of the totality of evidence in a field, something no single evaluation can do. Overall, this meta-analysis study provides important new evidence for strengthening both program implementation and research on career pathways. The study provides the first definitive look at the overall results of career pathways programs—and related sectoral training and integrated education and training—across a range of funding streams and lead organizations. This broad scope expands our learning beyond findings from other recent meta-analyses that focused more narrowly on just one funding stream, or just one type of lead organization, such as community colleges. This study also stands out for including far more impact findings on earnings and on medium- or long-term outcomes than other meta-analyses to-date.<sup>10</sup> And despite some limitations, this study's analysis of how program characteristics relate to impacts shows how such meta-regression methods can be used to explore questions that policymakers and practitioners especially care about for decision making. With more comprehensive, consistent, and higher quality evaluation data, these methods can become an even more powerful tool in the future.

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This brief summarizes (and in some places is largely excerpted *verbatim* from) the full report for this study, *A Meta-Analysis of 46 Career Pathways Impact Evaluations* (Peck et al., 2021).

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<sup>10</sup> These meta-analyses are *Estimating the Impact of the Nation's Largest Single Investment in Community Colleges: Lessons and Limitations of a Meta-Analysis of TAACCCT Evaluations* (Blume et al., 2019) and *Designing and Delivering Career Pathways at Community Colleges: A Practice Guide for Educators* (Cotner et al., 2021). On earnings, for example, this meta-analysis includes 37 studies that report earnings, compared to just 5 and 7 for the other two meta-analyses respectively. This meta-analysis includes 16 studies that report medium- or long-term earnings vs. zero for the TAACCCT meta-analysis and one for the community college meta-analysis. This reflects in part just how much new career pathways impact evidence has emerged in the last several years.

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