

What Works In Job Training: A Synthesis of the Evidence

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What Works In Job Training: A Synthesis of the Evidence

Executive Summary

On January 30, 2014, President Barack Obama directed Vice President Joseph Biden to lead a Government-wide review of Federal programs in the workforce and training system to ensure they are designed to equip the nation's workers with skills matching the needs of employers looking to hire. The review culminated in an action plan to make the system more job-driven, integrated, and effective.

To inform the development of the action plan, agencies were asked to summarize the evidence on adult and youth job training strategies and programs to "...determine what information is lacking and identify future research and evaluation that can be undertaken to ensure the Federal programs invest in effective practices." This document, prepared by the Secretaries of Labor, Commerce, Education and Health and Human Services, with input from several other Federal agencies and staff, presents the results of that evidence summary.

What works for adults?

- A post-secondary education, particularly a degree or industry-recognized credential related to jobs in demand, is the most important determinant of differences in workers' lifetime earnings and incomes;
- Flexible and innovative training and post-secondary education approaches, such as contextual learning and bridge programs are expanding and show promise;
- The more closely training is related to a real job or occupation, the better the results for training participants;
- Employer and industry engagement strategies may improve the alignment of training to employer needs;
- Since there is no single job training

approach that is right for all workers, having access to accurate and up-to-date labor market data, as well as information and guidance about career and training opportunities, can help individuals make better decisions about training and lead to better outcomes, and can help policymakers and program administrators plan accordingly; and

- Lower-skilled individuals and those with multiple barriers to employment benefit from coordinated strategies across systems, and flexible, innovative training strategies that integrate the education, training, and support services they need to prepare for and succeed in the workplace.

What works for youth?

The evidence on effective employment and training-related programs for youth, particularly the most disadvantaged youth, is less extensive than for adults, and there are fewer positive findings from evaluations. Nonetheless, some important themes emerge from existing evidence on job training for youth, some of which are consistent with findings from research on adults:

- Early exposure to a range of career and higher education information and opportunities is associated with better post-secondary education outcomes.
- Work experience for youth still in school, including paid summer jobs, has some important results in terms of educational outcomes, particularly if job skills and education are combined.
- Occupation- and industry-based training programs, including Career Academies, show some promising employment outcomes for youth. Work-based learning, such as paid internships, cooperative education, and some transitional jobs programs suggest that low-income, economically disadvantaged youth are

successful in programs where they receive wages. Strategies that allow high school students to accelerate their transition to college or start preparing for a career early can also improve youth outcomes.

- Youth disconnected from work and school, including those who also have serious disadvantages such as early-child bearing, homelessness, or involvement with the criminal justice system, have the most difficult challenges succeeding in adulthood, but there is some evidence that they can benefit from comprehensive and integrated models that combine education, occupational skills, and support services.¹

Next Steps: Expand what works and fill the gaps in evidence

Moving forward, it is important to encourage the adoption of job training approaches that have evidence of effectiveness, and to continue to expand the evidence base on what works. This can be done by taking the following actions:

- Expand analysis on the long-term impacts of training approaches that have shown to have strong short-term impacts and appear to be the most job-driven, such as industry-recognized certificates, apprenticeships, and career pathways;
- Disaggregate subgroup impacts to better understand how promising approaches can help particular groups of workers and future workers, including the long-term unemployed, dislocated workers, low skilled workers, persons with disabilities, youth, women, and those with barriers to employment;
- Expand analysis of program components to examine the effect of key components of program models and untangle what specific strategies or mix of strategies are most effective;
- Replicate and evaluate promising models and approaches in different settings to provide more useful information about how communities and agencies can adopt or adapt proven strategies;
- Measure and evaluate outcomes of employer engagement and public/private training partnerships; and
- Expand and improve access to essential labor market and administrative data and evaluate ways that consumers, program administrators, and policymakers access and use labor market information.

footnote 1 MDRC (2013). Building Better Programs for Disconnected Youth. New York: NY: MDRC.

1. Introduction

On January 30, 2014, President Barack Obama signed a memorandum directing Vice President Joseph Biden to lead a Government-wide review of Federal programs in the workforce and training system to ensure these programs are designed to equip the Nation's workers with skills matching the needs of employers looking to hire.² This review, which involved the Secretaries of Labor, Commerce, Education, Health and Human Services, and staff from other Federal agencies, culminated in an action plan to make the workforce and training system more job-driven, integrated, and effective.

To inform the development of the action plan, agencies were tasked with summarizing “existing evidence of the job training strategies that most effectively achieve the goals of this memorandum, determine what information is lacking, and identify future research and evaluation that can be undertaken to ensure the Federal programs invest in effective practices.” This document presents that summary: a synthesis of evidence on adult and youth job training strategies, training-related

^{footnote 2} Presidential Memorandum -- Job-Driven Training for Workers. The White House. Retrieved from <http://www.whitehouse.gov/the-press-office/2014/01/30/presidential-memorandum-job-driven-training-workers>

supports (e.g., job search assistance), and other important strategies, such as employer/industry engagement and cross-agency/system collaboration.

The effective or promising job training strategies and programs in this synthesis were identified through literature reviews, structured evidence reviews of evaluations conducted for Federal Clearinghouses, and research summaries.³ The synthesis is as transparent as possible about the quality and quantity of evidence that supports each program or strategy, recognizing that evidence standards vary across disciplines and across Federal agencies. For more information on the types of evidence used in this review, please see the Appendix.

This report is organized as follows: the first section synthesizes evidence on what works for adults to improve their employment and educational outcomes, while the second section discusses what works for youth. The third section summarizes the main findings based on evidence to date, highlights gaps in evidence, and suggests directions for future research.

^{footnote 3} Summaries and study reviews profiled in Federal clearinghouses, like the Department of Education's What Works Clearinghouse (WWC), the Department of Health and Human Services' Findyouthinfo.gov, and the Department of Labor's Clearinghouse for Labor Evaluation and Research (CLEAR) are important resources. These clearinghouses review evaluation studies and findings and use transparent criteria for determining the quality of evidence produced.

2. “What Works” for Adults

Findings from research and evaluations on job training for adults suggest several themes relevant to the Job-Driven Training Initiative:

- A post-secondary education, particularly a degree or industry-recognized credential related to jobs in demand, is the most important determinant of differences in workers’ lifetime earnings and incomes;
- Flexible and innovative training and post-secondary education approaches, such as contextual learning and bridge programs are expanding and show promise;
- The more closely training is related to a real job or occupation, the better the results for training participants;
- Employer and industry engagement strategies may improve the alignment of training to employer needs;
- Since there is no single job training approach that is right for all workers, having access to accurate and up-to-date labor market data, as well as information and guidance about career and training opportunities, can help individuals make better decisions about training and lead to better outcomes, and can help policymakers and program administrators plan accordingly; and
- Lower-skilled individuals and those with multiple barriers to employment benefit from coordinated strategies across systems, and flexible, innovative training strategies that integrate the education, training, and support services they need to prepare for and succeed in the workplace.

Post-secondary Education and Industry-recognized Credentials

Much research confirms the value of a college degree (Associates, Bachelors, or Graduate). In general, studies have found that one additional year of schooling leads to earnings gains of between six to nine percent, depending on the

method, sample, and time frame of the analysis. Recent studies suggest these returns may be even higher, averaging between 10 to 15 percent per year.⁴

Post-secondary training that takes less than two years (e.g., certificate programs) also has been shown to have valuable returns. In 2012, individuals with professional certifications or licenses earned more than those without these credentials at each level of education below a bachelor’s degree.⁵ Post-secondary training programs that result in credentials related to technology, state licensure, and in-demand occupations are associated with particularly positive outcomes.⁶ For example, one study found that earnings were higher for people with sub-baccalaureate degrees in business, computer/technical, and health fields compared to those with degrees in service and education fields.⁷

To date, studies on credentials have mainly used non-experimental evaluation designs. A number of experimental demonstrations currently in the field, including the Health Profession Opportunity Grants, are using random assignment designs and the findings will help to further the evidence base on the impact of industry-driven training and credentials.

⁴ Goldin, C. & Katz, L. F. (2008). *The Race between Education and Technology*. The Belknap Press. Cambridge, MA.

⁵ Ewert, S. & Kominski, R. (2014). *Measuring Alternative Educational Credentials: 2012*. Washington, DC: U.S. Census Bureau.

⁶ Holzer, H. J. & Lerman, R. I. (2009). *The Future of Middle-Skill Jobs*. Brookings Institution. http://www.brookings.edu/~media/research/files/papers/2009/2/middle%20skill%20jobs%20holzer/02_middle_skill_jobs_holzer.pdf; and Jacobson, L. S., LaLonde, R. J., & Sullivan, D.G. (2005). *Estimating the Returns to Community College Schooling for Displaced Workers*. *Journal of Econometrics*, 125(1-2). Retrieved from <http://repec.iza.org/dp1017.pdf>; and Jepsen, C., Troske, K., & Paul Coomes. 2009. *The Labor-Market Returns to Community College Degrees, Diplomas, and Certificates*. University of Kentucky Center for Poverty Research Discussion Paper Number 2009-08. Retrieved from <http://www.ukcpr.org/Publications/DP2009-08.pdf>.

⁷ Crissey, S. & Bauman, K. (2010). *Between a Diploma and a Bachelor’s Degree: The Effects of Sub-Baccalaureate Postsecondary Educational Attainment and Field of Training on Earnings*. Presented at the Annual Meeting of the Population Association of America, Dallas, TX, April 2010. Retrieved from <http://www.edweek.org/media/censusdiplomas-34jobs.pdf>.

Flexible and Innovative Skill-building Training Curricula and Strategies

Training institutions, especially community colleges, are developing new ways to structure and deliver training, not only for traditional students, but also for non-traditional students. Some of these approaches include providing options for accelerating coursework; integrating work-based and classroom-based instruction; and linking courses and requirements in ways that accumulate skills along a specific career pathway, facilitate the persistence and completion of programs, and lead to industry-recognized credentials and jobs. Although there is limited evaluation evidence on the effectiveness of these emerging instructional models to-date, the face validity of several new strategies seems especially promising for students who also are working, workers seeking to retrain for a new occupation, and low-skilled workers with little prior post-secondary education experience. Several emerging skill-building training approaches appear particularly promising: (1) curriculum re-design, (2) contextual and bridge programs, and (3) cohort models.

Curriculum Re-design.

Some of the innovative curriculum designs being adopted include: (1) modularized curricula providing job-specific training in smaller increments than typical certificate or AA programs; (2) flexible class scheduling to facilitate combining school and work; (3) varying approaches to compressing material to reduce time in class and accelerate progress, such as self-paced instruction and distance learning; and (4) arranging for multiple entry and exit points to make it easier to leave and resume schooling as work and family demands require.⁸

Another approach many community colleges are taking to engage and retain adult students in post-secondary occupational training is

^{footnote 8} Martinson, K. & Holcomb, P. (2007). Innovative Employment Approaches and Programs for Low-Income Families. Urban Institute. Retrieved from http://www.urban.org/UploadedPDF/411467_employment.pdf.

establishing coursework aligned with career ladders, or pathways. Career ladders provide a sequence of training steps that lead to progressively more advanced jobs in a single career or occupation. To create these pathways, community colleges typically re-map existing courses into job-specific clusters and create new industry-recognized credentials for each. Students can stack these credentials, building up their qualifications to move along a career pathway or up a career ladder. Formal career ladders are typically created in partnership with local employers. In addition to helping design curricula for these programs, employers may provide instruction; sponsor work study, internship, or apprenticeship positions; provide funds for training, including state of the art equipment; and recruit students. Career pathways studies are being developed for a number of different sectors (e.g., health, advanced manufacturing), many of which offer a range of tracks that enable employed and unemployed workers of different education levels and different levels of experience to enroll.⁹

At this time, there are only preliminary evaluations of career pathways training. However, several randomized control trials are underway, including the HHS-ACF Health Profession Opportunity Grant evaluation and the Innovative Strategies for Improving Self-Sufficiency (ISIS) demonstration, which are formally testing several models.

Contextual and Bridge Programs.

Another promising skill-building training approach for adults involves coordinating academic and occupational instruction by providing basic educational remediation concurrently with, rather than as a prerequisite for, college-level courses. These “bridge” programs, used in a number of community colleges, are typically one or two-semester

^{footnote 9} Fein, David J. (2012). Career Pathways as a Framework for Program Design and Evaluation: A Working Paper from the Innovative Strategies for Increasing Self-Sufficiency (ISIS) Project. Abt Associates, Inc.

interventions that aim to accelerate students' acquisition of basic academic skills in a supportive learning environment. Sometimes instruction is delivered in the context of an industry or occupation.

One contextualized Bridge approach that appears promising is the Integrated Basic Education and Skills Training (I-BEST) program developed by the Washington State Board for Community and Technical Colleges. In I-BEST, a basic skills instructor and an occupational instructor co-teach college level courses in fields such as health care and advanced manufacturing. A non-experimental study found that I-BEST participants were more likely to earn college credit, attain a credential, and demonstrate basic skills gains on a standardized assessment than a comparison group of basic skills students who took a college-level occupational course on their own. However, participation in I-BEST had no impact on the probability of persistence into the next year, real wages, or the average number of hours worked after leaving the program.¹⁰ This supports the findings of other evaluations, which have found that Bridge programs can increase completion of remedial skills courses, but do not appear to have an effect on outcomes following the program, such as persisting in other college courses and programs.¹¹

More student support and advising may improve the effectiveness of bridge programs, evidence from a recent evaluation of LaGuardia Community College of the City University of New York (CUNY) GED Bridge to Health and Business program suggests. Students in

the program, which has an interdisciplinary curriculum for GED preparation that integrates material from the health care and business fields, spend more time in class over the course of a semester than is typical for GED programs and also receive intensive advising. Preliminary results from an impact evaluation showed that students in this program persisted in college at a higher rate than students in a regular GED Prep course: 12 percent of Bridge students enrolled in a CUNY community college the first semester after completing the course and continued into the second semester, compared with only 3 percent of GED Prep students.¹²

Future evaluations should continue to test variations of the bridge and integrated contextual instructional models, such as programs connected to specific occupations and industries and those that integrate supplemental services that help students at school balance childrearing, employment, and other extracurricular responsibilities.

Cohort Models.

Qualitative research by the National Center for the Study of Adult Learning and Literacy found that belonging to a cohort, or a tightly knit, reliable group of student peers with a common purpose, contributes to developing skills and persisting in courses and programs.¹³ Similarly, a report on the completion rates and job placement rates of participants in Tennessee's Technology Centers indicates that intensive cohort-based and job-driven/career-driven postsecondary education and training can lead to significant improvements in completion rates and job placement.¹⁴

¹⁰ The I-BEST program is one of 9 career pathways programs currently under evaluation by the Administration for Children and Families as part of the Innovative Strategies for Increasing Self-Sufficiency (ISIS) evaluation.

¹¹ Fein, David J. and E. Beecroft (2006). College as a job advancement strategy: Final report on the New Visions Self-Sufficiency and Lifelong Learning Project. Abt Associates Inc. Retrieved from http://www.abtassociates.com/reports/new_visions_final.pdf; and Scrivener et al. (2008). A Good Start: Two-Year Effects of a Freshmen Learning Community Program at Kingsborough Community College. Retrieved from <http://www.mdrc.org/sites/default/files/A%20Good%20Start.pdf>.

¹² Martin, V. & Broadus, J. (2013). Enhancing GED Instruction to Prepare Students for College and Careers: Early Success in LaGuardia Community College's Bridge to Health and Business program. MDRC. Retrieved from http://www.mdrc.org/sites/default/files/Enhancing_GED_Instruction_brief.pdf.

¹³ Drago-Severson, E., Helsing, D., Kegan, R., Popp, N., Broderick, M., & Portnow, K. (2001). The Power of a Cohort and of Collaborative Groups. *Focus on Basics* (5), Issue B: 15-22.

¹⁴ Hoops, J. (2010). A Working Model for Student Success: The Tennessee Technology Centers. Complete College America. Retrieved from <http://files.eric.ed.gov/fulltext/ED536826.pdf>.

Work-Based Training and Education

Most training in the U.S. occurs at the workplace: over a quarter of all workers report that they receive some formal job training from their employers, and about 70 percent of firms indicate they offer some type of training to employees, mainly management and mid-level workers.¹⁵

Research clearly finds that workers and, to a greater extent, their employers, benefit from workplace training.¹⁶ For employers, who are more likely to provide firm-specific training (e.g., training on company procedures, software, policies, equipment) than general training that could be valuable in the labor market outside the firm (e.g., training on management or sales skills), firm training can reduce worker turnover and associated costs, and improve productivity, if the training is of high quality and if workers' expectations about the benefits of training are fulfilled.¹⁷ There is also some evidence that firms that invest in education and training realize significant and positive returns to shareholders, suggesting the importance of training to successful businesses.¹⁸ However, quantitative estimates on the return-on-investment to firm training in the U.S. are limited, due in large part to a lack of standardized measures and publicly-available data, particularly on the direct costs of training.¹⁹

¹⁵ Lerman, Robert I., Signe-Mary McKernan and Stephanie Riegg (2004). *The Scope of Employer-Provided Training in the United States: Who, What, Where, and How Much?* In *Job Training Policy in the United States*, Christopher J. O'Leary, Robert A. Straits, and Stephen A. Wandner, eds. Kalamazoo, MI: W.E. Upjohn Institute, pp. 211-244. Retrieved from http://research.upjohn.org/up_bookchapters/168.

¹⁶ Lynch, Lisa M. (1994). Introduction. In *Training and the Private Sector: International Comparisons*, Lisa M. Lynch, ed. University of Chicago Press.

¹⁷ Wagner, Shelbye (2004). *An Examination of the Utility of Training: Relationships with Turnover and Promotion*. Emploria State University Department of Psychology and Special Education. Unpublished manuscript; and Wagner, Richard and Robert Weigand (2004). *Can the Value of Training be Measured? A Simplified Approach to Evaluating Training*. *Health Care Manager*, Vol. 23, Issue 1, pp. 71-77.

¹⁸ Laurie J. Bassi, Jens Ludwig, Daniel P. McMurrer, and Mark Van Buren (2000), "Profiting From Learning: Do Firms' Investments in Education and Training Pay Off?" Research White Paper, ASTC and SABA; and Almeida, Rita and Pedro Carneiro (2008). *The Return to Firm Investments in Human Capital*. The World Bank Social Protection and Labor Discussion Paper No. 0822.

¹⁹ *Ibid.*; and Lynch (1994).

In addition to job training, there is some evidence in the U.S. and elsewhere that firms and workers benefit from education and literacy programs offered at work. For example, The Program for the International Assessment of Adult Competencies' Survey of Adult Skills found that the participation rate in job-related education and training in the United States in 2012 ranged from 21 percent for adults with the lowest literacy skills to 69 percent for adults with the highest literacy skills.²⁰ A quasi-experimental evaluation of a workplace literacy program for low-skilled manufacturing workers found that average wage growth for participants was higher than that for non-participants and that participants were more likely to apply for and to receive a promotion than comparable non-participants.²¹ A random assignment study of workplace literacy programs conducted in late 1990s also found positive impacts of literacy programs on worker outcomes, including improved skills, attendance, and job performance; higher receipt of job benefits; and development of new career plans.²² The same results were evident from a 1997 survey of Canadian employers who offered workplace literacy instruction.²³

Public policies have also been developed to fund or enhance workplace-based training, several of which appear to have positive employment and earnings outcomes for workers: (1) subsidized on-the-job (OJT), (2) registered apprenticeships, and (3) subsidized jobs and transitional employment.

²⁰ The Organization for Economic Co-operation and Development. (2013). *Survey of Adult Skills* [data file], Retrieved from <http://www.oecd.org/site/piaac/overviewoftheoecdskillsoutlook2013.htm>.

²¹ Krueger, A. and Rouse, C. (1994). *New Evidence on Workplace Education*. Working Paper 4831. Cambridge, MA: National Bureau of Economic Research.

²² Moore, M. T., Myers, D., & Silva, T. (1998). *Addressing Literacy Needs at Work: Implementation and Impact of Workplace Literacy Programs: Final Report of national evaluation of NWLP partnerships*.

²³ Bloom, M., Burrows, M. et al. (1997). *The Economic Benefits of Improving Literacy Skills in the Workplace*. Ottawa ON: The Conference Board of Canada.

Publicly Subsidized On-The-Job Training (OJT). Subsidizing workplace-based learning appears to be an important approach that meets employer needs and worker skills development. A common type of subsidized employment called OJT, available through workforce development agencies and other programs provides a subsidy to firms amounting to about 50 or 60 percent of the wages the firm pays to a new worker for a specified period of time (e.g., six or nine months) to offset the costs of training. While there is usually no commitment to hire the person as a regular employee after the end of the subsidy period, most programs and employers have that expectation. Over the past four decades, evaluations have found that subsidized OJT has positive employment and earnings outcomes.²⁴ In-firm, on-the-job training, whether subsidized or not, has also been associated with better employment outcomes in many other countries, a review of causal evaluations on job training internationally has shown.²⁵

Registered Apprenticeships.

Registered apprenticeship is a comprehensive, formal, work-place-based training model that involves a close public-private partnership of government, firms, unions, and training institutions. Participants in registered apprenticeship programs receive industry-specified technical instruction and wages from employers. Upon program completion, which often takes three or more years, participants receive a nationally-recognized certification administered by the Office of Apprenticeship at the U.S. Department of Labor. Evidence suggests that registered apprenticeship programs are quite effective. A recent quasi-

^{footnote 24} Ibid; and Kleinman, Liu, Mastri, Reed, Sattar, & Ziegler (2012). An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States. Mathematica Policy Research. Prepared for the U.S. Department of Labor, Employment and Training Administration.

²⁵ Evidence Review: Employment and Training. (2014). What Works Centre for Local Economic Growth. Retrieved from <http://what-works-growth.org/wp-content/uploads/2014/04/employment-training-Full-Report.pdf>.

experimental evaluation found that participants in registered apprenticeship programs earned about \$8,000 a year and over \$200,000 in their lifetime more than a comparison group of individuals who did not participate in registered apprenticeships.²⁶

Subsidized Public Employment with Training.

In addition to subsidized OJT, other forms of subsidized employment approaches in the U.S. fund work-based jobs and experience, mainly in the public and non-profit sectors. These programs are usually targeted to particular groups of workers, such as the unemployed during periods of high unemployment, youth during summer periods, or welfare recipients. While evidence on the effects of subsidized public employment is very mixed, there are some important findings from highly structured, subsidized employment programs, such as supported work experience for welfare recipients and wage-paying transitional jobs for the unemployed.²⁷

Some subsidized employment programs focus on providing individuals who have significant barriers to employment with work experience and basic job skills training. Very early experimental and non-experimental evaluations found that subsidized employment improved workforce attachment and work hours among very low-skilled youth with little prior work experience and among adults (particularly women and some adult male groups) with moderate-to-low levels of education and little recent work experience.²⁸ Studies in the 1970s also found that supported employment was associated with moderate increases in employment and earnings among long-term

^{footnote 26} Kleinman, et al. (2012).

²⁷ Bloom et. al. Promoting Work in Public Housing: The Effectiveness of Jobs-Plus. MDRC. http://www.mdrc.org/sites/default/files/full_485.pdf; and Card, Kluve, & Weber (2010). Active Labour Market Policy Evaluations: A Meta-Analysis. *The Economic Journal*, 120, F452-F477.

²⁸ Summary and Findings of the National Supported Work Demonstration. (1980). Board of Directors, MDRC. Retrieved from http://www.mdrc.org/sites/default/files/full_249.pdf.

welfare recipients and more modest gains among former drug addicts and young school dropouts with high rates of delinquency. Some studies in the 1980s and 1990s found that subsidized employment had substantial impacts for adult women, but impacts have been more mixed for broader segments of the young adult dropout population.²⁹

A few more recent experimental evaluations on subsidized transitional jobs focused on low income and disadvantaged workers also showed mixed results. One such evaluation, of the Center for Employment Opportunities (CEO) in New York City, an employment program that placed former prisoners in transitional jobs, found statistically significant impacts in terms of reduced criminal recidivism and arrests for program participants compared to a control group that did not go into the program. However, these employment and earnings impacts were not maintained after the end of the subsidized job.³⁰ Other evidence shows that subsidized jobs can have positive impacts on employment and earnings when more job-specific training and subsequent job placement is incorporated into the design. For example, a rigorous evaluation of the effects of Philadelphia's Transitional Work Corporation (TWC) on long-term and potential long-term welfare/TANF recipients found that, after 18 months, participants in the transitional jobs program experienced statistically significant increases in earnings compared to a control group that did not participate in the program, as well as significant decreases in both receipt of **TANF and TANF payment amounts.**³¹

²⁹ Bell, S. H. & Orr, L.L. (1994). Is Subsidized Employment Cost Effective for Welfare Recipients? Experimental Evidence from Seven State Demonstrations. *Journal of Human Resources*, University of Wisconsin Press, vol. 29(1), pp. 42-61.

³⁰ Redcross et al. (2010). Work After Prison: One-Year Findings from the Transitional Jobs Reentry Demonstration. Retrieved from http://www.mdrc.org/sites/default/files/full_615.pdf.

³¹ Bloom, D., Rich, S., Redcross, C., Jacobs, E., Yahner, J., & Pindus, N. (2009). Alternative Welfare-to-Work Strategies for the Hard-to-Employ. MDRC. Retrieved from http://www.mdrc.org/sites/default/files/full_19.pdf.

Subsidized employment also has shown promise for young adults with cognitive disabilities, with large employment and earnings gains among those with moderate levels of mental retardation.³²

More recently, a large-scale subsidized employment program for unemployed workers mounted under the American Recovery and Reinvestment Act (ARRA) showed more promise. From 2009 to 2010, states accessed \$1.3 billion in funding from the Temporary Assistance for Needy Families (TANF) Emergency Fund to help cover the costs of creating or expanding subsidized employment programs for low-income, unemployed workers in the wake of the Great Recession. By the fund's expiration, in September 2010, states had placed more than a quarter of a million people in subsidized jobs.³³ One quasi-experimental evaluation of the program in Florida also found that, compared to individuals who were eligible for but did not take part in subsidized employment, program participants experienced significantly greater increases in earnings even after the subsidy ended.³⁴

Employer/Industry Engagement

Employer and industry engagement in job training programs can take many forms, including the direct involvement of employers in determining training demanded by the labor market, developing curricula, providing worksite internships, making equipment

³² Kerachsky, S., Thornton, C., Bloomenthal, A., Maynard, R., & Stephans, S. (1985). Impacts of Transitional Employment for Mentally Retarded Young Adults: Results of the STETS Demonstration. Mathematica Policy Research, Inc. Retrieved from http://www.mdrc.org/sites/default/files/impacts_of_transitional_employment_fr.pdf.

³³ Pavetti et. al (2011). Creating Subsidized Employment Opportunities for Low-Income Parents: The Legacy of the TANF Emergency Fund. Retrieved from <http://www.cbpp.org/files/2-16-11tanf.pdf>; and Farrell et. al (2011). Subsidizing Employment Opportunities for Low-Income Families: A Review of State Employment Programs Created Through the TANF Emergency Fund. MDRC. Retrieved from <http://www.mdrc.org/publication/subsidizing-employment-opportunities-low-income-families>.

³⁴ Roder, A. & Elliott, M. (2013). Stimulating Opportunity: An Evaluation of ARRA-Funded Subsidized Employment Programs. Economic Mobility Corporation. Retrieved from <http://economicmobilitycorp.org/uploads/stimulating-opportunity-full-report.pdf>.

and technology available for programs, and developing and teaching courses. Strong partnerships among the public workforce system, education providers, and employers in key sectors appear to be critical for improving employment and earnings outcomes for workers.

Sectoral Training.

More than half of the nation's states are implementing sectoral training strategies – partnerships of employers within one industry that bring government, education, training, economic development, labor, and community organizations together to focus on the workforce needs of an industry within a regional labor market.³⁵ Sectoral training strategies include a wide area of focus and strategies, but most often: (1) address current and emerging skills gaps; (2) provide a means to engage directly with industry across traditional boundaries; (3) better align state and local programs and resources serving employers and workers; and (4) address issues at multiple firms in ways that individual firms, which independently could not solve the issues, can benefit.³⁶

Over the past decade, local and national foundations have supported the sector model, including 22 regional workforce funding collaboratives, more than 80 associated workforce partnerships, and the National Fund for Workforce Solutions initiative.³⁷ Sectoral education and training programs that take a regional, industry-focused and occupation-specific approach to building skills may be effective in increasing employment and the receipt of credentials.³⁸

³⁵ Woolsey, L. & Groves, G. (2013) State Sector Strategies Coming of Age: Implications for State Workforce Policy Makers.

³⁶ Ibid.

³⁷ Ibid.

³⁸ Glover, R. W. & King, C. T. (2010). Sectoral Approaches to Workforce Development: Toward an Effective U.S. Labor-Market Policy. In *Human Resource Economics and Public Policy: Essays in Honor of Vernon M. Briggs Jr.* W.E. Upjohn Institute for Employment Research. Retrieved from http://research.upjohn.org/up_bookchapters/190/.

One recent random assignment evaluation of sectoral training programs that provided integrated job readiness, basic skills, technical training, case management, supportive services, and job placement assistance found that, over the 24-month study period, participants in some programs earned 18 percent more, were more likely to be employed, and worked significantly more hours than members of the control group.³⁹ This evaluation reinforced findings from earlier studies that found that employers also benefit from partnerships with training programs. For example, in a 2009 survey of Pennsylvania employers, 84 percent of those who indicated they participated in industry partnerships reported significant increases in productivity. A 2008 study in Massachusetts found that sector initiatives resulted in a 41 percent reduction in employee turnover, a 19 percent reduction in work revision, and a 23 percent reduction in customer complaints.⁴⁰

There is, therefore, reason to be optimistic about sectoral training strategies. The number of sectoral training programs is growing, and there are also several ongoing formal evaluations from which findings will become available over the next few years. However, more evaluations are needed to determine long-term impacts, effective ways to integrate work and training, and career advancement outcomes.⁴¹

Layoff Aversion and Worker Retraining.

One way that incumbent workers may be retrained is through public-private partnerships that respond quickly to firm needs, including sometimes working in tandem to avert layoffs. Over the last decade, for example, the Department of Labor and state and local Workforce Investment Boards (WIBs)

³⁹ Maguire, S., Freely, J., Clymer, C., Conway, M. & Schwartz, D. (2010). Tuning In to Local Labor Markets: Findings from the Sectoral Employment Impact Study. Philadelphia, PA: Public/Private Ventures.

⁴⁰ Woolsey, Lindsey and Groves, Garrett (2013). State Sector Strategies Coming of Age: Implications for State Workforce Policy Makers.

⁴¹ Glover & King. (2014).

have used Workforce Investment Act dislocated worker funds for incumbent worker training to prevent layoffs or minimize the effect of layoffs on workers and communities. Companies can be determined “at risk” of closing or necessitating layoffs for a variety of factors, from quality problems to management instability to declining sales, and addressing these risk factors before they become acute increases available options and the likelihood of successfully averting layoffs. Strategies to address the risk factors can include retraining existing workers to increase efficiency or adopting new technologies and process improvements.

Some layoff aversion strategies have both economic development and retraining objectives. For example, at the California Manufacturing Technology Consulting (CMTC), the Department of Commerce-sponsored Manufacturing Extension Partnership (MEP) serving southern California, works with eight different local Workforce Investment Boards and other partners to implement business services, retraining, and layoff aversion programs. The MEP program has also conducted layoff aversion programs on behalf of the public workforce system in Pennsylvania, South Carolina, Oklahoma, Missouri, Michigan, New York, and several other states over the last decade.

While there are no evaluations yet of the impact of MEP and other economic development/workforce development collaborations on worker skills, there are suggestive results in terms of jobs created and increased firm sales on which further research should be conducted.⁴²

⁴² Layoff Aversion Fact Sheet, MEP National Program Office. Retrieved from <http://www.nist.gov/mep/upload/Layoff-Aversion2014.pdf>.

Labor Market Information and Guidance

The workforce development system and the U.S. Bureau of Labor Statistics collect and publish information on skills required for particular occupations, along with average wages and projections of future demand. Evidence from several evaluations suggests that having labor market information improves workers’ ability to make informed decisions about training and employment. For example, a major RCT evaluation of individual training accounts (ITAs) available through the workforce investment system, which allow workers to choose their training and training provider, resulted in more positive outcomes when workers received structured guidance and information compared to workers who received the ITA and selected training options on their own.⁴³ Similarly, a recent evaluation of workers eligible for trade adjustment assistance found suggestive evidence that guidance on career opportunities was associated with higher persistence in occupational training. Longer-term follow-up will indicate whether they also have higher completion rates.⁴⁴

The importance of labor market information and guidance when making training decisions is consistent with broader evidence about the role guidance and assistance to unemployed workers can play. An experimental evaluation of services to unemployment insurance recipients in Nevada found that recipients who received labor market information, reemployment planning, and job search skills training, had

⁴³ Perez-Johnson, I., Moore, Q., & Santillano, R. (2011). Improving the Effectiveness of Individual Training Accounts: Long-Term Findings from an Experimental Evaluation of Three Service Delivery Models. Mathematica Policy Research. Retrieved from http://www.mathematica-mpr.com/~media/publications/PDFs/labor/ITA_fnlrpt.pdf.

⁴⁴ Dolfin, S., Berk, J. (2010). National Evaluation of the Trade Adjustment Assistance Program: Characteristics of Workers Eligible Under the 2002 TAA Program and their Early Program Experiences. Mathematica Policy Research. Retrieved from http://wdr.doleta.gov/research/Full-Text_Documents.

reduced periods of unemployment, sped up re-employment, and increased earnings compared to a control group that received no special services.⁴⁵ Subsequent experimental tests are underway by the Department of Labor to confirm these earlier findings.

Given the emerging evidence on the importance of labor market information for reemployment and training success, several states and programs are using official labor market information to develop consumer reports, or scorecards, that publish results of training programs (e.g., graduation rates and employment outcomes) to help workers and students make the right decisions about training. While there is no empirical evidence yet on the use and value of the scorecards, the efforts are based on the emerging evidence about the importance of labor market information and guidance for workers making decisions about training and careers.⁴⁶ Incumbent workers also may benefit from better labor market information, but there is very little research specifically on this issue.

Cross-system Coordination and Integrated Education, Training, and Work Supports

Research on job training and skills development indicates that many of the most promising job training strategies involve a mix of employment services, job training, and supportive services. This inevitably requires coordination and collaboration across systems that provide specialized services or training, including workforce development agencies, schools and community colleges, and public and non-profit human services and employment services agencies.

⁴⁵ Michaelides, M., Poe-Yamagata, E., Benus, J., Tirumalasetti, D. (2012). Impact of the Reemployment and Eligibility Assessment (REA) Initiative in Nevada. Impaq International, LLC. Retrieved from http://wdr.doleta.gov/research/FullText_Documents/ETAOP_2012_08_REA_Nevada_Follow_up_Report.pdf.

⁴⁶ McConnell et al (2006). Managing Customers' Training Choices: Findings From The Individual Training Account Experiment. Retrieved from http://wdr.doleta.gov/research/FullText_Documents/managing_customers_choices.pdf.

Training, Education, and Employment Services Combined.

Evidence suggests that comprehensive and integrated strategies to concurrently address employment, training and education can help low-skilled workers in the labor market, including a number of evaluations of job training programs for low-skilled and low-income individuals conducted in the mid- to late 1990s as part of the nation's efforts to reform welfare. Some studies compared the relative effectiveness of programs that focused mainly on immediate job placement to programs that provided training first, before job placement. The job-search-first approach emphasized immediately assigning people to short-term job search activities with the aim of getting them into the labor market quickly. The education-or-training-first approach emphasized basic or remedial education, GED preparation, and to a lesser extent, vocational training (not college) before steering participants toward the labor market.⁴⁷ The job-search-first approach led to more rapid job placement, though after five years, both groups were similar in terms of employment and earnings. However, individuals who received a concurrent mix of training and employment services had better employment and earnings outcomes than either the direct job placement group or the education and training group.⁴⁸

Other evidence on the effectiveness of integrating education and training comes from research on approaches to improve skills of incarcerated individuals to prepare them for successful reentry after their release. Studies have found that education and training for incarcerated adults reduces recidivism

⁴⁷ In the education-or-training-first programs, those who lacked a high school diploma or GED were generally referred to basic education courses, including remedial instruction in reading and math, English as a second language classes, or preparation for the GED test. Those with a high school diploma or GED were generally referred to vocational training, rather than to degree-producing, postsecondary academic courses.

⁴⁸ This finding is also supported by a synthesis of findings across 20 programs examined using random assignment designs, including these 1990s programs as well as some operated in the late 1980s. Of the 20, the two most successful had "mixed strategies" (Gueron and Hamilton 2002).

and increases their rates of post-release employment. A recent meta-analysis by the RAND Corporation of studies on correctional education conducted between 1980 and 2011 found that the odds of recidivating among inmates who participated in correctional education were 43 percent lower than the odds of recidivating among inmates who did not participate in correctional education. They found that inmates who received education pre-release had post-release employment rates 13 percent higher than those who did not.⁴⁹

Another program that integrates education, training, and work supports is vocational rehabilitation (VR), which encompasses a variety of vocational and rehabilitative services for individuals with disabilities, including vocational training, career counseling, on-the-job training, and job search services, to help them prepare for, secure, regain or retain employment. Some state-level quasi-experimental studies examining the impact of vocational rehabilitation services on employment and earnings found positive employment effects, but more rigorous evaluations of these services are needed to be conclusive. Some benefit-cost analyses of the program suggest considerable returns, but there is great variation.

Support Services.

Studies show that, along with work experience, education, and training, a range of supports and services is needed, such as child care and transportation, to enable disadvantaged individuals to participate in job training.⁵⁰

⁴⁹ Davis, L.M., Bozick, R. et al. (2013). Evaluating the Effectiveness of Correctional Education: A Meta-Analysis of Programs That Provide Education to Incarcerated Adults. Santa Monica, CA: RAND Corporation.
⁵⁰ Herbst, C.M. & Tekin, E. (2011a). Do child care subsidies influence single mothers' decision to invest in human capital? *Economics of Education Review*. (30). pp. 901-912. Retrieved from http://www.chris-herbst.net/files/Download/C._Herbst_Subsidies_Human_Capital.pdf.

Financial supports aim primarily to enable, rather than persuade, people to work and go to school. In addition, supports often are designed to increase income in order to improve other aspects of family and child well-being. Examples of financial supports include: financial aid and other income supports for needy students; relatively broad supports for workers (e.g., the earned income tax credit); and financial assistance aimed at helping families cope with emergencies and other specific needs for employment and training.

Since assets also represent an important potential source of support in sustaining work and training, programs that directly contribute to family savings also are important.⁵¹ Several tests of asset-building strategies suggest modest success in increasing assets but little effect on employment and earnings - possibly because savings remained very low.⁵² Recent experimental evidence also suggests that increased access to housing vouchers is not in itself sufficient to affect employment.⁵³ But a more comprehensive approach for public housing residents tested under the Jobs-Plus Demonstration found positive impacts on employment and earnings when earnings were treated more flexibly for rent (i.e., did not lead to rent increase), and individuals received employment and labor market information and supports for training and employment.⁵⁴ These findings suggest the importance of expanding supports and reducing disincentives to work, along with employment and training services.

⁵¹ Again, such programs also typically include an incentive aspect, in that program contributions are conditioned on the amounts that families save.

⁵² Golden, O., Loprest, P., & Mills, G. (2012). Economic Security for Extremely Vulnerable Families: Themes and Options for Workforce Development and Asset Strategies. Urban Institute. Retrieved from <http://www.urban.org/UploadedPDF/412699-Economic-Security-for-Extremely-Vulnerable-Families.pdf>

⁵³ Wood, M., Turnham, J., Mills, M. (2008). Housing Affordability and Family Well-Being: Results from the Housing Voucher Evaluation. Abt Associates Inc. Retrieved from http://www.abtassociates.com/reports/Woods_Turnham_Mills_%5B11%5D_HPDPdf.

⁵⁴ Riccio, J.A. (2010). Sustained Earnings Gains for Residents in a Public Housing Jobs Project. Policy Brief. MDRC: New York.

Job Search and “Soft Skills” Training. Various studies suggest that “soft skills” training (which includes work-related skills like preparing a resume and understanding work expectations, as well as life skills that can be applied more broadly, including household management, financial literacy, and balancing work and parenting responsibilities) is an important complement to training and education. This training aims to develop the workplace competencies that research shows employers want workers to possess, such as good interpersonal skills, honesty, punctuality, and good time management. The importance of these skills was also shown by research from the National Research Council (NRC). In 2012, the NRC developed a taxonomy of “21st Century Skills” that consists of three competency domains: cognitive, intrapersonal, and interpersonal. The NRC found that, among the non-cognitive competencies, conscientiousness - being organized, responsible, and hardworking - has the strongest correlation with positive work and educational outcomes.⁵⁵ This expands upon policies endorsed by the Secretary’s Commission on Achieving Necessary Skills (SCANS) in the 1990s, which focused on developing and teaching specific occupational competencies as well as soft skills.⁵⁶

Job search assistance programs and job clubs typically support the acquisition of soft skills on how to search for a job, create a good resume, and understand job requirements. Programs range from low-intensity job readiness training typically provided at the beginning of a job club to higher-intensity approaches, such as monthly home visits by highly trained staff lasting up to several years. Even basic job search assistance speeds up job placement, although

it has no long-term employment impact. At the intensive end of the scale, some programs have been shown to produce positive impacts. For example, a fairly intensive, theory-based, job search training program, Winning New Jobs (WNJ), which offers a series of structured workshops for unemployed workers that focus on strengthening self-esteem and other coping skills to promote resiliency in dealing with job loss, rejection and financial stress during job search, has been tested in unemployment offices in Michigan and several other countries and had positive findings.⁵⁷ There is little research on other specific soft skills models.

Student Support Strategies.

Other promising strategies for adult job training are those focused on engaging people in jobs and training programs and increasing their persistence and success in these activities. These strategies may be designed to complement particular jobs and training programs, but are conceptually distinct from the jobs and training opportunities themselves. Studies that appear to support the effectiveness of support strategies include an implementation evaluation of the Community-Based Job Training Grant program, which found a need to better prepare and support low-income, low-skill participants so they could succeed in occupational training.⁵⁸ In addition, a recent experimental evaluation of the long-term effects of a learning communities program at a community college appears to support this finding. The study found that students benefited from receiving a single semester of academic support even several years later; participation in the learning communities was associated with the attainment of a greater number of credits

⁵⁵ Pellegrino, J.W. and Hilton, M.L. (2012) *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Washington, DC: National Research Council.

⁵⁶ Kane, M., Berryman, S., Goslin, G., & Meltzer, A. (1990). *The Secretary’s Commission on Achieving Necessary Skills*. US Department of Labor. Retrieved from <http://wdr.doleta.gov/SCANS/idsrw/idsrw.pdf>.

⁵⁷ Caplan et al. (1989). *Job Seeking, Reemployment, and Mental Health: A Randomized Field Experiment in Coping with Job Loss*. Institute for Social Research, University of Michigan. Retrieved from <http://www.isr.umich.edu/src/seh/mprc/PDFs/Job%20Seeking.pdf>.

⁵⁸ Eyster et. al (2012). *Implementation Evaluation of the Community-Based Job Training Grant (CBJTG) Program*. Urban Institute. Retrieved from <http://www.urban.org/uploadedpdf/412890-Implementation-Evaluation-of-the-Community-Based-Job-Training-Grant-Program.pdf>.

over seven years. Effects on employment and earnings, however, were not observed.⁵⁹

Financial Incentives.

Accumulating experimental evidence points to positive impacts of employment and training programs that provide generous financial rewards to those who meet certain work and training performance standards, as well as certain disadvantage criteria.⁶⁰ The approaches

⁵⁹ Weiss, M. J., Mayer, M., Cullinan, D., Ratledge, A., Sommo, C., & Diamond, J. (2014). A Random Assignment Evaluation of Learning Communities at Kingsborough Community College Seven Years Later. MDRC: New York. Retrieved from http://www.mdrc.org/sites/default/files/A_Random_Assignment_Evaluation_of_Learning_Communities_KCC.pdf

⁶⁰ Michalopoulos et al. (2002). Final Report on the Self-Sufficiency Project for Long-Term Welfare Recipients. MDRC. Retrieved from http://www.mdrc.org/sites/default/files/full_435.pdf; and Miller et al. (2008). New Hope for the Working Poor: Effects After Eight Years for Families and Children. MDRC. Retrieved from http://www.mdrc.org/sites/default/files/full_458.pdf; and Riccio et al. (2008). Implementation and Second-Year Impacts for Lone Parents in the UK Employment Retention and Advancement (ERA) Demonstration. MDRC. Retrieved from http://www.mdrc.org/sites/default/files/full_397.pdf.

tested are based on the theory that people seek higher levels of material well-being and thus, can be motivated to behave in specified ways when offered financial rewards for doing so. Some programs have used financial rewards to improve education and training outcomes. These rewards typically involve providing a flat amount contingent on meeting performance standards, such as initial entry to employment, specified levels of weekly work hours, months employed, entering and completing various segments of training, and maintaining some threshold level of performance in training programs (e.g., GPA). These strategies have been used in welfare-to-work programs, student financial aid programs, and pay-for-performance plans rewarding high school achievement.

3. “What Works” for Youth

The evidence on the effectiveness of job training programs for youth is much less extensive than for adults, and the findings are quite mixed. Studies that do exist focus mainly on education outcomes, in large part because for youth under 18 years of age, immediate outcomes of interest are mainly educational and skill-based; employment and earnings results are only observable after several years. In addition, findings from some evaluations that do focus on employment and earnings outcomes for youth have not been very positive, attesting to the challenge schools, communities, and programs that serve youth face in preparing youth for success in the labor market.

Nonetheless, a few key points can be drawn from the evidence about what seems to work for youth, some of which are consistent with what has been found to be effective for adults:

- Early exposure to a range of career and higher education information and opportunities is associated with better post-secondary education outcomes.
- Work experience for youth still in school, including paid summer jobs, has some important results in terms of educational outcomes, particularly if job skills and education are combined.
- Occupation- and industry-based training programs show some promising employment outcomes for youth. Work-based learning, such as paid internships, cooperative education, and some transitional jobs programs suggest that low-income, economically disadvantaged youth are successful in programs where they receive wages. Strategies that allow high school students to accelerate their transition to college or start preparing for a career early, including Career Academies, can also improve youth outcomes.

- Youth disconnected from work and school, including those who also have serious disadvantages such as early-child bearing, homelessness, or involvement with the criminal justice system, have the most difficult challenges succeeding in adulthood, but there is some evidence that they can benefit from comprehensive and integrated models that combine education, occupational skills, and support services.⁶¹

Career Preparation and Career Education

Career preparation strategies for high school students, including career and technical education and career-themed forms of instruction, appear promising. While participation in career and technical education at the secondary level does not appear to have an impact on the likelihood of obtaining employment after high school, it is associated with higher earnings. Among 1992 high school graduates in the U.S., taking one additional occupational course was associated with a 3.2 percent increase in earnings during the first 18 months after high school and a 1.9 percent increase in earnings seven years after high school. In addition, 1992 high school graduates who completed the New Basics academic core (four years of English language arts, and three years each of mathematics, social studies and science) and who also completed occupational courses earned more than graduates who completed the New Basics and did not complete occupational coursework.⁶² One meta-analysis also finds substantial impacts of classroom training for youth, albeit for a limited set of programs.⁶³

⁶¹ MDRC (2013); Roder, A. and M. Elliott (2014).

⁶² U.S. Department of Education, Office of the Under Secretary, Policy and Program Studies Service, National Assessment of Vocational Education: Final Report to Congress, Washington, D.C., 2004.

⁶³ Greenberg et al (2003). A meta-analysis of government-sponsored training programs. *Industrial and Labor Relations Review*, Vol. 57, No. 1, pp. 31-53. Retrieved from http://scholarlyrepository.miami.edu/cgi/viewcontent.cgi?article=1004&context=economics_articles.

Work Experience and Summer Programs

Work experience programs for youth range from simply providing young people with paid employment, to integrating educational components with a paid job. However, the evidence on work experience programs for youth is inconclusive; some studies show strong impacts on education and other outcomes, and other studies find no impact, although there are some promising patterns that suggest how to improve outcomes. Specifically, work experience programs that include some level of academic and vocational training, job search and placement assistance, and other supports have been shown to have strong impacts on school attendance and academic outcomes.⁶⁴

One of the most common work experience programs across the country is summer jobs. There is some emerging evidence from experimental evaluations (e.g., in Boston and Chicago) that suggests that comprehensive summer jobs programs have some positive effect on behavior and on school achievements. Some places, like Chicago, also are testing the added value of behavioral components.⁶⁵ As summer jobs programs typically target high school or high school-age students, the evaluations of these programs have typically focused more on education and behavior/criminal engagement outcomes than on outcomes related to employment. In an effort to address this, the Department of Labor is planning an evaluation to assess the long-term employment and earnings impacts of summer jobs using New York City's lottery, education, and employment data for the past 10 years.

⁶⁴ Samina Sattar (2010). Evidence Scan of Work Experience Programs. Oakland, CA: Mathematica Policy Research.

⁶⁵ Heller, et al. (2013). Preventing Youth Violence and Dropout: A Randomized Field Experiment. NBER. Retrieved from <http://www.nber.org/papers/w19014>; and Sum, A. & McLaughlin, J. (2011). The steep decline in teen summer employment in the U.S., 2000-2010 and the summer 2011 teen job market disaster: another bumper summer. Northeastern University, Center for Labor Market Studies Publications: Boston. Retrieved from http://iris.lib.neu.edu/cgi/viewcontent.cgi?article=1044&context=clms_pub.

Work- and Industry-based Education, Training and Career Academies

As with adults, work- and industry-based education combined with occupational training and preparation appears to be effective for youth. "School-within-a school" sectoral high schools, such as career academies, have been found to be effective when academic instruction is linked to sectoral skills, career preparation, and work-based training (e.g., paid internships).⁶⁶

Evaluations of career academies show large long-term earnings effects on some categories of youth (e.g., highly motivated boys). A report on the long-term effects of nine career academies across the United States showed that the average monthly earnings of young men in the program increased by 17 percent up to eight years after completing high school. Participation in the program also was associated with an increase in the number of months of employment and hours worked per week for young men during this same period. However, career academies did not have statistically significant impacts on the labor market outcomes of young women, nor any effect on enrollment in postsecondary education, or postsecondary completion.⁶⁷

A system-wide variant of the career academy model is California's Linked Learning, which provides support at the district level for career academies and other college-and-career pathways, enabling students to choose from a number of different career paths, holds great promise. This initiative has yet to undergo a rigorous evaluation, but is of interest because it expands the model beyond a single school.⁶⁸

⁶⁶ Kemple & Willner. (2008). Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood. MDRC. Retrieved from http://www.mdrc.org/sites/default/files/full_50.pdf.

⁶⁷ Ibid.

⁶⁸ Stern, D. & Hoachlander, G. (2011). Evidence on Career Academies and Linked Learning. Retrieved from http://casn.berkeley.edu/resource_files/Evidence_acads_LL_11.21.1111-11-21-03-19-06.pdf.

Other potentially promising work- and industry-based education models for youth include programs such as YouthBuild, the Texas Science, Technology, Engineering and Mathematics (T-STEM) Academies, and Year Up:

- YouthBuild, a program in which low-income young people ages 16 to 24 work toward their GEDs or high school diplomas while building affordable housing in their communities, is another promising career-based program. Several qualitative studies have shown that YouthBuild graduates achieve positive outcomes; a survey of 900 graduates from over 30 programs showed that a high proportion re-connected to school or the workforce upon graduation.⁶⁹ The program is currently undergoing a large-scale experimental evaluation and initial findings will be available in 2015.
- T-STEM Academies are secondary schools focused on improving instruction and academic performance in science and mathematics-related subjects and increasing the number of students who study and enter STEM careers—those in science, technology, engineering or mathematics. An outcome evaluation of the academies found that T-STEM students appear to outperform comparison school peers in T-STEM-related subjects, but not across all content areas, grades, or years.⁷⁰
- Year Up is a one-year program that offers 18- to 24-year-olds a comprehensive service package and paid vocational training. The core of the Year Up program includes 21 weeks of training in one of five

occupational areas, classes in business communications and professional skills, supports, guidance, and in-program and post-program connections to employment, including a six-month internship. In 2007, three Year Up sites took part in a small random assignment study conducted by the Economic Mobility Corporation, in which evaluators found the program had positive impacts on participant earnings.⁷¹ Year Up is also part of a larger HHS experimental test under the Innovative Strategies for Increasing Self-Sufficiency Demonstration.

A high-school based approach to better prepare students for college and careers involves streamlining the transition from high school to college. Based on the few studies to-date, it seems some models, including Early College High Schools and Tech-Prep, are able to increase college enrollment, particularly into community colleges.

Early College High Schools give students who are traditionally underrepresented in postsecondary education, the opportunity to enroll in college courses and receive credit while pursuing a high school diploma. A random assignment study at ten sites found that students in these types of high schools were more likely to graduate from high school, enroll in college, and earn a college degree.⁷² Tech-Prep also allows students to begin earning college credits in high school, as early as the ninth grade. Students follow a prescribed sequence of courses in technical or occupational programs that transition into community colleges or apprenticeships and result in a degree. Evaluations indicate that Tech Prep

⁶⁹ Ferguson, R. F., et al. (1996). YouthBuild in development perspective: A formative evaluation of the YouthBuild demonstration. Department of Urban Studies and Planning, Massachusetts Institute of Technology. Retrieved from <http://eric.ed.gov/?id=ED413381>; and Hahn, A., Leavitt, T.D., & Horvat, E. (2004). Life After YouthBuild: 900 YouthBuild Graduates Reflect on Their Lives, Dreams, and Experiences. Heller School at Brandeis University. Retrieved from https://youthbuild.org/sites/default/files/basic_page/2011/08/128/Life%20After%20Youthbuild%20-%20Full%20Rpt.pdf.

⁷⁰ Evaluation of the Texas High School Project: Third Comprehensive Annual Report (2011). SRI International.

⁷¹ Roder, A. & Elliott, M. (2014). Sustained Gains: Year-Up's Continued Impact on Young Adults' Earnings. New York, NY: Economic Mobility Corporation, Inc. Year Up is also one of 9 programs being evaluated by HHS as part of the ISIS evaluation.

⁷² Berger et. al (2013). Early College, Early Success: Early College High School Initiative Impact Study. Retrieved from http://www.air.org/sites/default/files/downloads/report/ECHSI_Impact_Study_Report_Final1_o.pdf.

does increase enrollment in community colleges, although some of that increase may come from a diversion from four-year colleges.⁷³

Comprehensive and Integrated Models

Youth with special challenges and issues that make it difficult for them to succeed at school often also have limited workforce opportunities as adults. Youth with the most serious challenges, sometimes referred to as “disconnected,” are those between the ages of 14 and 24, who are low income and either unemployed, not enrolled in or at risk of dropping out of school, involved in the justice system, homeless, or in foster care. Approximately 6.7 million youth in the United States exhibit one or more of these risk factors.⁷⁴ Evidence shows that disconnected youth benefit from comprehensive, integrated programs, including some intensive residential programs that combine education, job training and preparation, counseling, health and mental health interventions and social services.

For example, Job Corps is an intensive program for disadvantaged youth, which provides integrated education, job training, counseling, health and mental health services in mainly residential settings. In a large-scale random assignment study, Job Corps was found to increase literacy and educational attainment (high school or GED completion), reduce criminal involvement and, at least for the first two years after the program, increase earnings. Longer-term follow-up over 10 years found that the program had positive earnings impacts only for youth who were older when they enrolled (20- to 24-year-olds), but not for those who were younger when they enrolled.⁷⁵ While it

⁷³ Cellini, S. R. (2006). Smoothing the transition to College? The Effect of Tech-Prep Programs on Educational Attainment. *Economics of Education Review*. 25, pp. 394-411.

⁷⁴ Belfield, C.R., H.M. Levin, and R. Rosen (2012). “The Economic Value of Opportunity Youth.” Corporation for National and Community Service. Retrieved from http://www.civicenterprises.net/MediaLibrary/Docs/econ_value_opportunity_youth.pdf.

⁷⁵ Schochet, P., Burghardt, J., & McConnell, S. (2006). National Job Corps Study and Long-term Followup Study: Impact and Benefit Cost

was not possible in that study to determine why impacts varied by age or decayed over time, it is possible that more post-program support, career guidance, and counseling might improve labor market outcomes. It also is possible that the intensive residential approach offered through Job Corps is best suited to older groups. The study did not detect a difference in impacts for residential versus non-residential programs.

Nonetheless, there is increasing evidence that residential programs have some positive potential for economically disadvantaged youth. SEED boarding schools, for example, focus on youth ages 12 to 18 who are economically disadvantaged, need skills remediation, and are at risk of disengaging from school. Students are in school all week (going home only on the weekends and on school breaks) and have access to counselors, tutors, and staff who can assist with support service needs and mental health issues. The program lasts six years, from grades 6-12. A random-assignment study of DC-based SEED boarding schools found a large impact on both reading and math scores of 7th and 8th grade students. This impact appears large enough to close the racial achievement gap in less than five years.⁷⁶

National Guard Youth Challenge is another intensive, highly structured residential program for economically disadvantaged high school dropouts. This comprehensive 17-month program was rigorously evaluated using an experimental design from 2005 to 2006. The employment and education findings were quite positive. After three years, there were no significant differences in health or criminal activity between Challenge participants and a control group of youth who did not go through the program, but employment and earnings and

Findings Using Survey and Summary Earnings Records Data. Mathematica Policy Research: Princeton NJ.

⁷⁶ Curto, V.E., Fryer, R.G. (2011). Estimating the Returns to Urban Boarding Schools: Evidence from SEED, National Bureau of Economic Research: Cambridge. Retrieved from <http://211.253.40.86/mille/service/ers/30000/IMG/00000021953/w16746.pdf>

receipt of a GED among Challenge participants were significantly higher.⁷⁷ Again, it may be that more post-program supports and work preparation could improve long-term outcomes. The Department of Defense and the Department of Labor are initiating a new demonstration to test whether non-violent adjudicated youth will see similar benefits from the program, and whether adding a post-program workforce development component to the program would provide any additional benefit.

There may be some particular benefit of intensive comprehensive residential programming like Job Corps and the National Guard Youth Challenge that could be enhanced by more focused support, reinforcement, and continuous training for participants once they leave the program. It also may be that essential interventions can be provided in residential sessions more efficiently or over a more sustained period of time. For example, researchers are beginning to test cognitive behavioral therapy in conjunction with education and job training to determine the effectiveness of interventions that lead to positive

^{footnote 77} Millenky, M., Bloom, D., Muller-Ravett, S., & Broadus, J. (2011). *Staying the Course: Three Year Results of the National Guard Youth Challenge Program*, MDRC: New York.

behavioral and socio-emotional change for high-risk youth and formerly incarcerated youth.⁷⁸

Much more research on positive youth development and skill-building strategies, including for disconnected youth, is needed to better understand how to improve educational and early employment opportunities for low income youth and strengthen the nation's future workforce. In an effort to improve the evidence base on comprehensive and integrated models for serving youth, the Departments of Labor, Health and Human Services, Education, the Corporation for National and Community Services, and related agencies, are launching Performance Partnership Pilots in 2014. The pilots will empower communities to help improve outcomes for disconnected youth who are not working, not in school or at risk of dropping out, or face the additional challenges of being homeless, in foster care, or involved in the justice system. Pilots will support comprehensive local efforts to address the disparities facing high need youth, encourage the use of evidence-based practices and test promising new practices. Federal agencies will evaluate these pilots and use lessons learned to consider how to expand and improve existing initiatives based on what works.

^{footnote 78} The Department of Labor is piloting and testing various potentially promising strategies for youth who are not in school and not working through the Opportunity Youth Pilot Project, including education and employment "coaching" to strengthen behavioral coping skills and improve educational and employment outcomes.

4. Gaps in Evidence and Action Plan to Fill the Gaps

The previous sections of this paper highlighted a number of strategies for developing job-driven skills that are effective or promising, based on years of research on job training, numerous evaluations of job training programs and strategies, and on the experiences of agencies, training providers, and firms in the field. More evidence is needed to fill gaps in knowledge, improve job training programs, inform practitioners about adopting promising strategies, and expand proven models to address the needs of specific groups of workers, industries, communities and institutions. This section presents a plan for continuing to build the evidence about effective job training.

First, it is important to note that a number of federally-funded, methodologically rigorous evaluations are currently underway that will add to the existing evidence base on job training. These evaluations, grouped into categories based on subject matter, include:

- Governance and Program Innovation:
 - ◊ Workforce Innovation Fund (WIF) Evaluations (DOL)
 - ◊ Pay-for-Performance Pilots Evaluations (DOL, DOJ, CNCS)
 - ◊ Investing in Innovation Fund (i3) Evaluations (Education)
 - ◊ Performance Partnership Pilots (Education, DOL, HHS, CNCS)
- Instructional and Training Models and Innovation:
 - ◊ Workforce Investment Act “Gold Standard” Evaluation (DOL)
 - ◊ Innovative Strategies for Increasing Self-Sufficiency Demonstration (ISIS) Evaluation (HHS)
 - ◊ Health Professions Opportunity Grants Evaluation (HHS)
 - ◊ Trade Adjustment Assistance Community and College Career Training Grants Evaluation (DOL)
- Interventions for Special Populations:
 - ◊ Unemployment Insurance Reemployment and Eligibility Assessment Evaluation (DOL)
 - ◊ YouthBuild Evaluation (DOL)
 - ◊ Enhanced Transitional Jobs Demonstration (DOL)
 - ◊ Subsidized and Transitional Employment Demonstration (HHS)

The findings from these evaluations will begin to be available in 2015.

What We Need More Evidence On

Even when there is fairly good evidence of effectiveness, the brief synthesis in the preceding sections indicates there is much more we need to know to achieve the goal set forth by the President for the Job-Driven Training Initiative. Areas on which evaluation and research are needed include:

- **Measuring long-term impacts.** What are the long-term impacts of promising training strategies, such as receipt of industry-recognized certificates, apprenticeships, and career pathways?
- **Disaggregating subgroup impacts.** How does the impact of the more promising strategies vary by subgroup, including the long-term unemployed, veterans, older workers, women in non-traditional training, dislocated workers, youth, high school dropouts, disconnected youth, formerly incarcerated persons, individuals with disabilities, and workers whose first language is other than English?

- **Evaluating the effectiveness of program components.** How similar or different are effects of variations in program models? What components or pieces of a model make the difference, such as subsidized employment, competency-based job training, sectoral training, residential vs. non-residential for youth, registered apprenticeship vs other internship models.
- **Replicating and testing promising models in different settings.** Several models have been shown to be effective, but often findings are from one study or in a particular location. Can effective models and strategies be replicated in different settings? For example, what types of sectoral training models, apprenticeship models, career pathways, youth development, residential models work best in different places for different populations? Which programmatic factors are essential to ensuring fidelity, and which can vary while still generating positive outcomes?
- **Measuring and evaluating outcomes of employer engagement.** What public investments achieve the best outcomes and results from the perspective of employers? What strategies work best to retrain or advance incumbent workers? How is the return on investment best measured?
- **Evaluating access to and use of labor market information.** What types of data, and types of access to data, are most timely and useful to different consumers (e.g., scorecards on state websites, smartphone applications, real-time labor market information, program and policy planning needs)?

Plan for Building the Evidence

There are three general research activities through which the above issues and questions can be addressed:

1. Expand and improve access to labor market, occupational, and skills data and continue basic research on labor markets and employment.
2. Initiate pilots and demonstrations to test innovative strategies at reduced cost.
3. Improve systems and strategies to share evidence reviews.

1. Expand and improve access to labor market, occupational, and skills data and continue basic research on labor markets and employment.

Expand and improve access to essential databases. In an era of constrained resources, it is crucial that we have reliable data to both measure performance and conduct cost-effective, rigorous evaluations to make sure that Federal investments are getting results. Unemployment Insurance (UI) wage records are a particularly valuable source of data for learning whether policies and programs are leading to better employment outcomes - like whether participants are getting and retaining jobs, and whether those who find jobs are earning good wages. Having cross-state data is especially important for creating national statistics and analyzing results of programs with highly mobile participants, such as programs serving returning veterans.

Without access to reliable, affordable wage data, agencies must either rely on surveys or negotiate separate agreements with individual states to conduct evaluations. Both of these mechanisms are substantially more expensive and time-intensive than accessing administrative wage

data and can make rigorous evaluations prohibitively costly.

To address this challenge, the Administration has proposed to expand access to the National Directory of New Hires (NDNH), which includes State UI wage records and wage records for Federal employees and employer reports of newly-hired employees. The proposal would give specified federal agencies and their contractors access to NDNH data for research and evaluation purposes, with appropriately strong privacy protections.

To improve the analysis of program performance and outcome data, it is also essential to continue to improve the quality of and access to administrative data at the state and local levels. In many cases, the same information is collected in multiple programs and by several agencies, and for many reasons it may not be possible or legal to share data across programs. While technological development is slow, progress is occurring. The Departments of Labor and Education have major efforts underway to encourage and support states to create linked, automated, and secure longitudinal data systems to allow government and the public to better track improvements in workforce outcomes. The Department of Education's Statewide Longitudinal Data Systems (SLDS) Grant Program has awarded competitive, cooperative agreement grants to states since 2005 to encourage the design, development, implementation, and expansion of K12 and P-20W (early learning through the workforce) longitudinal data systems. The Department of Labor's Workforce Data Quality Initiative (WDQI) was created, in part, to accompany the work being done on the education side to gather longitudinal data.

Federal agencies should take more action to encourage the use of data in SLDS and WDQI, speed the establishment of other linked

longitudinal data systems, share and promote feasible strategies for ensuring privacy and confidentiality of individual data, and encourage the development of new technological applications that can be used by individuals searching for jobs or interested in further job training, businesses looking for workers, high schools and parents preparing students for careers and college, and colleges and training institutions which must remain up-to-date on the latest occupational and industrial demands on workers.

Expand and improve access to labor market, occupational, and skills information. Much of the official data on the nation's labor market and occupational trends comes from the Bureau of the Census and the Bureau of Labor Statistics. Census and BLS data are essential for firms, programs, schools, workers, and parents to make informed decisions about jobs, post-secondary education, lifelong training and retraining. The basic research and analysis of trends, patterns and changes in employment, occupations, and income these agencies provide should be expanded to provide regular, updated data on in-demand skills and wages by state, regional and local labor market areas. In addition, data from the Programme for the International Assessment of Adult Competencies (PIAAC), collected by the Organization for Economic Co-operation and Development, are important for assessing, monitoring and analyzing the level and distribution of skills among adults in the workforce, and their use should be encouraged.

Continue basic research on labor markets and employment. Many of the principles underlying the Job-Driven Skills Initiative are derived from statistical and survey analysis of trends and patterns. Basic research, including survey analysis, statistical modeling, and simulations, is an essential component of evidence building. Some of the priority issues on which analysis should continue include:

Lifetime earnings returns to education and credentials;

- Return on investment resulting from education and training (by firms, public sector, individuals and families);
- Income distribution patterns by worker characteristics, education and industry credential attainment, sectors and occupational clusters;
- Identification of pathways individuals have followed and the specific education, training, experiences, skills, and credentials that facilitated or hindered their progression; and
- Industry and occupational trends and patterns, and skills common across occupations.

2. Initiate pilots and demonstrations to test innovative strategies.

Rigorous evaluations of carefully designed pilots and demonstrations, using experimental designs, represent a key element of the evidence-building agenda in most areas of public policy. Building the evidence about what strategies, mix of strategies, and models or programs work for which types of workers and in which types of settings (e.g., different institutions, geographical locations, agencies or organizations, industrial sectors or clusters) is essential. Some priority pilots and demonstrations include:

- Career pathways for particular categories of workers to advance in in-demand jobs (e.g., women in non-traditional occupations, high technology, and advanced manufacturing);
- State Occupational Licensing Pilots to test alternative qualification requirements designed to expand opportunities and increase the number of licensed workers in targeted occupations (e.g. health, trades);

- Variations of models that have proven to be effective with certain populations such as youth (e.g., career academies, and test whether these models are effective with other populations), including disconnected youth;
- Variations of the integrated education and occupational training for disadvantaged youth or youth with disabilities (e.g. those with supplemental services, such as helping parents balance school with childrearing and work responsibilities, those with strong financial management or literacy components, or vocational rehabilitation programs);
- Sectoral training partnerships among firms, industries, unions, government, and training institutions to determine long-term impacts, effective ways to integrate work and training, and career advancement outcomes;
- Refined evaluation and data collection designs that maximize the use of administrative data sets and reduce data collection costs; and
- Technology-based delivery of education and training opportunities and the use of data in associated learning management systems, particularly shorter-term technology innovation evaluations with accelerated evaluation cycles.

3. Improve systems and strategies to share evidence reviews.

Several agencies have followed the lead of the Department of Education's What Works Clearinghouse to develop and maintain internet-based reviews of the vast body of research and evaluations that has been conducted in the past two decades. The ongoing efforts across departments to establish common approaches and guidelines for reviewing the quality of the methodologies used in evaluations and the strength of the findings will help to make

the evidence more useful to policymakers and practitioners. It is not enough to conduct high quality evaluations using the most sophisticated methodologies and designs. It is also critical that the findings and their implications are accurately and clearly communicated to non-technical consumers of the information. Each agency has its own clearinghouse and each discipline and policy area has unique methodological approaches. To the extent possible, the agencies should establish evidence “hubs” or “portals” to easily link across systems, share reviews that

have been done, and translate the technical findings for practical program application.

Building knowledge about what works is a continuous process. By routinely incorporating rigorous evaluations into government programs, applying the most rigorous methodologies possible to evaluations, emphasizing the critical importance or timely and accurate data, and disseminating the results of evaluations and research, the evidence can help programs and policymakers better serve the nation’s workers, communities, and businesses.

Appendix A

Job-Driven Training Initiative: Evidence-Building Plan

| EVIDENCE BUILDING CATEGORY | TYPES OF PLANNED ACTIVITIES | RELEVANT EXAMPLES |
|--|---|--|
| Basic Data Research and Analysis | Regular analysis of demographic and economic trends | Nationally and subnational target areas (e.g., employment/ unemployment, poverty and income by subgroups (race, age, gender), educational achievement by subgroups, growth industries and occupations, regional economic development) |
| | Research on selected topics | Analysis using national data bases, large survey data files, and other sources to conduct basic research analysis on selected topics such as industry trends, skill requirements, educational attainment, occupational clusters and other relevant topics. Analysis projects may be sponsored by government or foundations, or initiated by academics. |
| Pilots, Demonstrations, Evaluations | RCT evaluations of evidence-based strategies implemented as part of special initiatives or with grant-funding; scale-up efforts. (Highest evidence tier evaluations) | Place-based “labs” where RCTs are conducted: (Performance Partnership Pilots, Promise Zones, Workforce Innovation Fund) |
| | Pilots and demonstrations with RCT evaluations to test promising models and add to evidence base (moderate tier evaluations) | Discretionary grant tiered evidence-based evaluations (e.g., Workforce Innovation Funds; i3 grants; DOL Apprenticeship, Unemployed, and Career Connect grants) |
| | Proof of concept testing of innovative approaches (exploratory tier evaluations) | Promising Strategy RCTs (e.g., job search/ labor attachment strategies (HHS/DOL); career pathways (Ed/DOL/HHS); bridge programs) |
| | Systems-change evaluations (place-based saturation models, industry/employer partnerships, social innovation bond models, waiver models) | Innovative Concepts RCTs (e.g., alternative licensing & credentialing; Opportunity Youth Pilots) |
| What Works and Evidence-Based Information Systems | Website Hub and Portal links among related federal evidence/research Clearinghouses (could be developed in 2014) | Linked hubs: Skills portal, My Brother’s Keeper portal, Industry/employer information portal, Labor Market Information portal, Reentry portal, Veterans portal |
| | | Common evidence review guidelines (NSF, HHS/DOL/IES) and common “coding” of quality of methodology |
| | Common evidence review guidelines for Clearinghouses (longer-term activity) | Shared and linked library of evidence reviews |
| | | Shared and linked practitioner resources (e.g., Self-Sufficiency Research Clearinghouse (HHS); Workforce Strategies Solutions (DOL-ETA)) |

Appendix B

Many of the strategies noted were identified as effective or promising based on the findings from formal rigorous impact evaluations. Impact evaluations, which provide the strongest evidence of the effectiveness of programs or strategies, assess the extent to which programs or strategies evaluated result in changes in key outcomes for individuals, households, communities or firms.⁷⁹ The most rigorous impact evaluations use either experimental designs or quasi-experimental designs with high quality statistical and econometric analysis. Experimental designs use random assignment to conduct randomized control trials (RCTs) and this methodology is often referred to as the “gold standard” in evaluation because it produces the strongest statistically valid results of evidence.

Impact Evaluation

Experimental designs, or randomized control trials, involve the random assignment of study participants from the same population into two groups: a treatment and a control group. Participants in the treatment group receive the program or intervention that the study is evaluating, and those in the control do not.

⁷⁹ *Process and Implementation Evaluations*. Mathematica. http://www.mathematica-mpr.com/CIPRE/Process_Implementation_Evaluations.asp

Random assignment means that, statistically, these two groups are equivalent to one another. This means that one can assume that they would have the same outcomes in the absence of any program, and that any differences between their outcomes in the experiment could be convincingly attributed to the treatment.

While experimental design is widely considered the gold standard for evaluating impact, there are some circumstances in which its use is not practical, ethical, or feasible. For example, some evaluations must be conducted after implementation of the program has already begun, when randomization is no longer possible. Strong quasi-experimental designs have strategies for addressing the bias that results when participants are not randomly assigned to treatment and control groups, enabling differences in outcomes to reasonably be attributed to the program or intervention rather than to some other factor. A quasi-experimental method called propensity score matching involves identifying a group of non-participants who are similar to participants in regards to relevant pre-treatment characteristics, and matching them on the estimated probability of being treated (propensity score). Matching makes these groups close to identical in terms of pre-treatment characteristics, mimicking randomization. Other quasi-experimental designs include regression discontinuity, multivariate analysis, and difference-in-differences.