

## REVIEW PROTOCOL FOR CAREER ACADEMIES

### Highlights

- The objective of this systematic review is to determine the quality of existing causal evidence on the effectiveness of Career Academies, describe lessons learned from the implementation of such programs, and provide descriptive information from research about the programs.
- The review focuses on Career Academies, a high school reform intervention with three characteristic components: school-within-a-school learning communities, integrated academic and technical curricula, and partnerships with local employers and postsecondary institutions.
- Research with causal, implementation, and descriptive analyses is included in this topic area. Clearinghouse for Labor Evaluation and Research (CLEAR) reviewers assess the quality of causal evidence presented in impact studies. CLEAR reviewers also evaluate the implementation or process analyses associated with impact studies, if available. Other research is summarized but does not receive a comprehensive review.

### Introduction

The topic area for this review protocol is Career Academies, a high school intervention model first launched in 1969 that, as of 2013, serves approximately one million students in 7,000 schools nationwide.<sup>1</sup> Career Academies became increasingly prominent after the School-to-Work Opportunities Act of 1994 specifically identified them as a preferred approach.<sup>2</sup> Their expansion addressed three broad educational and labor policy challenges at the time—deteriorating labor market opportunities for youth, even for those with a high school diploma; a shifting emphasis within high schools from career and/or college readiness to college readiness alone; and various efforts to make the high school experience more rigorous and relevant, including school-to-work initiatives of the early 1990s and the small schools initiatives of the 2000s.

Like any program model designed to address several different sets of needs for different kinds of students, Career Academies have been implemented in different ways, but evaluators agree on three defining characteristics:<sup>3</sup>

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<sup>1</sup> Stern, D., Raby, M., & Dayton, C. (1992). *Career Academies: Partnerships for reconstructing American high schools*. Hoboken: Jossey Bass and National Standards of Practice for Career Academies. Accessed June 3, 2014 from: [http://www.ncacinc.com/sites/default/files/media/documents/nsop\\_with\\_cover.pdf](http://www.ncacinc.com/sites/default/files/media/documents/nsop_with_cover.pdf).

<sup>2</sup> Kemple, J. & Snipes, J. (2000). *Career Academies: Impacts on students' engagement and performance in high school*. New York, New York: MDRC.

<sup>3</sup> Page, L. (2012). Understanding the impact of Career Academy attendance: An application of the principal stratification framework for causal effects accounting for partial compliance. *Evaluation Review*, 36(2), 99-132. Kemple, J. (2004). *Career Academies: Impacts on labor market outcomes and educational attainment*. New York, New York: MDRC. Elliott, M., Hanser, L., & Gilroy, C. (2002). *Career Academies: Additional evidence of positive student*

1. **School-within-a-school structural reforms**, such as designated cross-disciplinary teams of three to five teachers with joint planning periods, block scheduling of academy students to common classes, and designated liaisons to advise students and solicit parents' and employers' involvement.
2. **Integrated academic and technical curricula**, often focused on a career theme identified in response to local business demand (for example, health, business and finance; electronics; travel and tourism; and information services). From a career perspective, occupational courses are more often designed to offer career exposure than to teach specific vocational skills; from an academic perspective, a career theme provides context, motivation, and relevance (for example, algebra for careers in business and finance).
3. **Work-based learning experiences**, often provided through partnerships. Partnerships with employers can provide students with work-based learning opportunities, such as field trips, job shadowing, and internships, whereas partnerships with postsecondary institutions can provide opportunities for students to obtain marketable licenses, certificates, and other credentials.

Because Career Academies aim to achieve short- and long-term impacts on education and labor market outcomes, the review examines the following research questions:

- Which programs are effective in improving *short-term high school* outcomes, such as attendance, continued enrollment, the number of credits attempted and earned, grade point average, standardized test scores, and high school graduation or general equivalency diploma (GED) attainment?
- Which programs are effective in improving *longer-term postsecondary* outcomes, such as postsecondary enrollment, credits attempted and earned, grades, and certificate, license or degree attainment?
- Which programs are effective in improving *short-term labor market outcomes*, such as employment, wages, hours worked, earnings, benefits, and reported job satisfaction, overall or within the field of Career Academy focus, within six months of scheduled graduation?
- Which programs are effective in improving *longer-term labor market outcomes*, such as employment and employment retention, wages and wage increases, hours worked, earnings and career advancement, benefits, and reported job satisfaction, overall or within the field of Career Academy focus, within 30 or more months of scheduled graduation?

In addition to determining the quality of causal evidence supporting the effectiveness of programs for academy students, CLEAR conducts in-depth reviews of the implementation or process studies associated with these impact studies, when they are available. CLEAR also reviews

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outcomes. *Journal of Education for Students Placed at Risk*, 7(1), 71-90. Maxwell, N. (2001). Step to college: Moving from the high school Career Academy through the 4-year university. *Evaluation Review*, 25(6), 619-54.

the research associated with demonstration projects when there is no associated impact study or the impact study is forthcoming.

The rest of this evidence review protocol sets forth the criteria by which research is determined to be eligible for review, the causal evidence guidelines specific to the topic area used to evaluate the quality of the causal evidence, and an outline of review procedures and study report contents. Appendix A describes the methods used to identify the research for this topic area.

## Eligibility Criteria

CLEAR conducted a broad literature search to identify all the research papers and reports that examined one of the research questions of interest. This included impact studies examining the effectiveness of Career Academies; the implementation studies associated with the impact studies; and related descriptive studies. The identified research was then screened against the eligibility criteria described below; studies meeting these criteria were entered into the citation database and received a first-level review (see the CLEAR policies and procedures for further information about the two levels of review). Additional screening criteria were applied to determine which studies received a second-level review.

The following are the criteria for inclusion used in the citations database and first-level review:

1. **Does it evaluate a Career Academy program?** The research eligible for review under this protocol must evaluate a high school Career Academy program that proposes to implement the three defining characteristics of such academies: school-within-a-school structural reforms, integrated technical and academic curricula, and work-based learning opportunities. Research examining only one of these components, such as school-within-a-school, is not eligible for review because it does not conform to the Career Academy model.
2. **Does it serve at least some students at-risk of becoming disconnected from school?** To be eligible for review, the research must examine a Career Academy that serves at least some high school students who have been identified as being at risk of dropping out of school and/or the labor force.<sup>4</sup>
3. **Was it conducted in a relevant time and place?** To be of most relevance to current practitioners, policymakers, and other stakeholders, the research must have taken place in public high schools within the United States, including the 50 states, the District of Columbia, territories, and tribal entities, following the School-to-Work Opportunities Act of 1994.

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<sup>4</sup> Whether Career Academies should be offered to all students or targeted to at-risk students is an open policy question in the field; proponents of a universal approach emphasize positive peer effects and caution against stigma, whereas proponents of a targeted strategy emphasize the importance of directing limited resources to the greatest need. Recognizing the importance of gaining evidence of both strategies, CLEAR includes studies of universal programs in high-need districts as well as academies serving at-risk students in any district. In addition, CLEAR accepts the authors' assessment of whether academy students have been identified as at risk of dropping out of school.

Research that meets these criteria is included in the citation database accessible at <http://clear.dol.gov>. In addition to the citation of the original research, the website provides a link to help interested users locate the research. Finally, CLEAR reviewers draft *Highlights* of every eligible study. These concisely summarize the research objective, description of the program, research methods, and key findings.

Selected studies also undergo a more comprehensive second-level review. For impact studies, this second-level review includes assessing the quality of the causal evidence presented in the study; this is summarized in a causal evidence rating. For implementation and other descriptive studies using either qualitative or quantitative methods, this includes assessing the technical qualities of the research approach. Criteria for second-level review include the following:

1. **Does it contain an impact analysis?** Research that uses quantitative methods to assess the effectiveness of a program (and other eligibility criteria) receives a second-level review as long as it contains one of the short- or long-term education or employment outcomes mentioned earlier.
2. **If not an impact study, is it an implementation or other descriptive study associated with an impact study that received a second-level review?** To provide information on implementation experiences and other related information relevant to the interpretation of Career Academies impact studies, CLEAR also conducts second-level reviews of the implementation studies associated with those impact studies.
3. **If not an impact study, is it a demonstration project?** To provide information on new programs that might not yet be subject to an impact analysis, or old programs that were not subjected to rigorous analysis, CLEAR conducts second-level reviews of reports associated with demonstration projects. These might contain interim findings from an impact analysis or present outcomes or implementation analyses.

## Causal Evidence Guidelines

This topic area includes reviews of both experimental and nonexperimental causal research. CLEAR assesses the quality of evidence for randomized controlled trials (RCTs) using an adaptation of the Institute of Education Science's What Works Clearinghouse standards.<sup>5</sup> RCTs can receive a *High* causal evidence rating if there are no obvious confounds to the RCT design and if the level of attrition in the RCT is low. This topic area uses the conservative attrition standard, on the presumption that attrition in studies of programs for at-risk youth might be linked with their labor market outcomes. For instance, youth who drop out of school or the labor market could be difficult to track or unresponsive to data collection efforts and also more likely to have poor labor market outcomes; this means that high rates of missing data could yield a skewed comparison of treatment and control groups. If CLEAR determines that an RCT cannot be rated as providing *High* causal evidence, the research is reviewed using the nonexperimental causal evidence guidelines developed by CLEAR.

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<sup>5</sup> See <http://ies.ed.gov/ncee/wwc/InsidetheWWC.aspx> for details.

## Nonexperimental Causal Evidence Guidelines Specific to the Topic Area

In collaboration with a technical work group of experts, Mathematica Policy Research developed a set of evidence guidelines to use in reviewing nonexperimental studies with causal designs. These causal designs include instrumental variables, difference-in-differences, fixed and random effects, and other types of regression analyses.<sup>6</sup> Research designs that meet the causal evidence guidelines receive a *Moderate* causal evidence rating; this rating indicates that there is evidence that the study establishes a causal relationship between the intervention being examined and the outcomes of interest, but other factors not included in the analysis might also affect the outcomes of interest. Designs that do not meet the guidelines receive a *Low* causal evidence rating, which indicates that we cannot be confident that the estimated effects are attributable to the intervention being examined.

Causal evidence guidelines for nonexperimental studies are tailored to the topic area of interest. In particular, the topic area protocol sets forth the specific types of control variables that have to be included in nonexperimental regression analyses (other than those using fixed effects) for a study to receive a *Moderate* causal evidence rating. The topic area protocol also describes whether changes in group composition should be a concern for the review.

### Control Variables

The control variables for the Career Academies protocol include the following:

- Age
- Race/ethnicity
- Sex
- At least one *pre-intervention measure of degree of financial disadvantage*, such as eligibility for school meal programs (for school-age children); family poverty status, public benefit receipt, or family income; parents' education level (or education level of at least one parent); or teen parent status
- At least one *pre-intervention measure of prior academic achievement*, which could include prior grade point average, age for grade, and (preferably) standardized test scores

Regression methods that incorporate a matching design, which uses statistical methods to create a comparison group that is as similar as possible to the group receiving the intervention, must match on the previously listed control variables or, if they do not match on them, must include them as controls in the regression.

### Changes in Group Composition

This is relevant for nonexperimental research designs that use aggregate data. Although uncommon in this topic area, the change in group composition as a result of the intervention is

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<sup>6</sup> The full set of guidelines are available at <http://clear.dol.gov>.

potentially a concern for studies with this type of design. For instance, a difference-in-differences analysis comparing the average change in earnings of program participants to nonparticipants could be biased if the earnings for participants who did not complete the program were not included in the post-intervention outcome measure.

## Review Procedures

For first-level reviews of all types of research, a trained reviewer uses an abbreviated rubric to systematically capture information about the research question of interest, design, setting, data, methods, and key findings. A quality assurance reviewer confirms the accuracy of the information contained in the rubric.

For second-level reviews of all types of research, a trained reviewer reads each report that meets the topic area criteria in detail, applies the full set of relevant review guidelines, and documents all aspects of the review in a comprehensive rubric. In addition to the fields contained in the abbreviated rubric, the comprehensive rubric contains an assessment of the technical aspects of the research and considerations for interpreting the findings. If the research does not have a causal design, and thus no causal evidence rating is assigned, the comprehensive rubric undergoes a quality assurance review by a senior CLEAR staff member to confirm that the information contained in the review rubric is accurate and verifiable.

However, second-level reviews of causal research undergo additional scrutiny to ensure the accuracy of the assigned causal evidence rating. If the first reviewer assesses the quality of causal evidence as *High* or *Moderate*, a second reviewer also reviews the study to confirm such a rating is warranted. To determine a final rating, the principal investigator and/or the content expert (as needed) resolve any discrepancies between the two reviewers' ratings. If the first reviewer assigns a low rating, the principal investigator examines the comprehensive rubric and confirms that the rating is appropriate. When a report containing causal research does not contain sufficient information to determine its causal evidence rating, CLEAR may contact the study authors to gather this information; whether this step is taken depends on the age of the study and the quantity of information that would have to be gathered (so as not to overly burden the study's authors). Authors receive a minimum of four weeks to respond and reasonable requests for extensions are granted. If the authors provide the information, it is incorporated into the review and factors into the causal evidence rating. If the authors do not provide the relevant information, the design receives the highest rating that can be determined with the information available in the report.

## APPENDIX A

CLEAR used the intervention report on Career Academies produced by the What Works Clearinghouse (WWC) to identify relevant studies of career academies. The WWC conducted a systematic literature search for such studies published through 2006. Some studies that were not eligible for review under the WWC eligibility criteria were included in the Clearinghouse for Labor Evaluation and Research (CLEAR) review; others were excluded from the CLEAR review, usually because they fell outside the relevant time period specified in the Career Academy topic area review protocol.

CLEAR supplemented this list by conducting a comprehensive literature search for studies of Career Academies published since 2006. Because we sought to identify a specific intervention, we searched titles for the words *career* and *academ\** (where an asterisk indicates truncation).

The search parameters included the following:

- Limited geographically to the United States
- Limited to the English language
- Limited to articles published from 2006 to the present
- Excluded editorials, letters, newspaper articles, and commentary
- Limited to causal studies; content analysis; descriptive, field, and implementation studies; focus groups; interventions; narratives; and qualitative, quantitative, and thematic analyses
- Excluded results related to drugs and health