

Career Academies

LONG-TERM IMPACTS ON LABOR MARKET OUTCOMES,
EDUCATIONAL ATTAINMENT, AND TRANSITIONS TO ADULTHOOD

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BUILDING KNOWLEDGE
TO IMPROVE SOCIAL POLICY

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Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood

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with

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Overview

Established more than 30 years ago, Career Academies have become a widely used high school reform initiative that aims to keep students engaged in school and prepare them for successful transitions to postsecondary education and employment. Typically serving between 150 and 200 students from grades 9 or 10 through grade 12, Career Academies are organized as small learning communities, combine academic and technical curricula around a career theme, and establish partnerships with local employers to provide work-based learning opportunities. There are estimated to be more than 2,500 Career Academies operating around the country.

Since 1993, MDRC has been conducting a uniquely rigorous evaluation of the Career Academy approach that uses a random assignment research design in a diverse group of nine high schools across the United States. Located in medium- and large-sized school districts, the schools confront many of the educational challenges found in low-income urban settings. The participating Career Academies were able to implement and sustain the core features of the approach, and they served a cross-section of the student populations in their host schools. This report describes how Career Academies influenced students' labor market prospects and postsecondary educational attainment in the eight years following their expected graduation. The results are based on the experiences of more than 1,400 young people, approximately 85 percent of whom are Hispanic or African-American.

Key Findings

- The Career Academies produced sustained earnings gains that averaged 11 percent (or \$2,088) more per year for Academy group members than for individuals in the non-Academy group — a \$16,704 boost in total earnings over the eight years of follow-up (in 2006 dollars).
- These labor market impacts were concentrated among young men, a group that has experienced a severe decline in real earnings in recent years. Through a combination of increased wages, hours worked, and employment stability, real earnings for young men in the Academy group increased by \$3,731 (17 percent) per year — or nearly \$30,000 over eight years.
- Overall, the Career Academies served as viable pathways to a range of postsecondary education opportunities, but they do not appear to have been more effective than options available to the non-Academy group. More than 90 percent of both groups graduated from high school or received a General Educational Development (GED) certificate, and half completed a postsecondary credential.
- The Career Academies produced an increase in the percentage of young people living independently with children and a spouse or partner. Young men also experienced positive impacts on marriage and being custodial parents.

The findings demonstrate the feasibility of improving labor market preparation and successful school-to-work transitions without compromising academic goals and preparation for college. Investments in career-related experiences during high school can produce substantial and sustained improvements in the labor market prospects and transitions to adulthood of youth. In fact, Career Academies are one of the few youth-focused interventions that have been found to improve the labor market prospects of young men. At the same time, Career Academies have proven to be challenging to implement on a large scale with high levels of fidelity, and the evidence from this evaluation may not apply to programs that are partially implemented or that use only selected features of the Academy approach. Further research should be conducted to determine the effects of key Academy components.

Contents

Overview	iii
List of Exhibits	vii
Preface	ix
Acknowledgments	xi
Introduction	1
The Career Academies Evaluation	3
Impacts on High School Experiences and Outcomes	7
Long-Term Impacts on Labor Market Outcomes	11
Impacts on Educational Attainment	25
Impacts on Family Formation and Other Social Adjustment Outcomes	35
Discussion of the Findings	37
References	45
Earlier MDRC Publications on Career Academies	47

**Technical Resources to accompany this report are available at:
www.mdrc.org/publications/482/techresources.pdf**

List of Exhibits

1	Impacts on Average Monthly Earnings and Components of Earnings for the Full Sample	13
2	Month-by-Month Impacts on Total Monthly Earnings for the Full Sample	15
3	Impacts on Average Monthly Earnings and Components of Earnings for Young Men	18
4	Impacts on Average Monthly Earnings and Components of Earnings for Young Women	19
5	Month-by-Month Impacts on Total Monthly Earnings, by Gender	21
6	Month-by-Month Impacts on Total Monthly Earnings, by Risk Subgroup	26
7	High School Completion Rates Eight Years After Scheduled Graduation for the Evaluation Sample and the NELS Sample	28
8	Highest Postsecondary Credential Completed Eight Years After Scheduled High School Graduation for the Evaluation Sample and the NELS Sample	30
9	Impacts on Educational Attainment Eight Years After Scheduled High School Graduation, by Gender	32
10	Impacts on Family Formation and Other Social Adjustment Outcomes Eight Years After Scheduled High School Graduation for the Full Sample	36
11	Impacts on Family Formation Eight Years After Scheduled High School Graduation, by Gender	38

Preface

In urban high schools, too many students who manage to graduate are unprepared for postsecondary education or the world of work. And they often enter a labor market that offers them few opportunities for good jobs. These new findings from MDRC’s long-term study of Career Academies — a popular high school reform that combines academics with career development opportunities — shows that the model produces sustained employment and earnings gains, particularly among young men.

The report is the culmination of a 15-year random assignment study of Career Academies in nine urban high schools around the country that has followed students from when they entered high school until eight years after their scheduled graduation. More than 80 percent of students in the sample are black or Hispanic. The evaluation, which has been funded by the U.S. Departments of Education and Labor and by 18 private foundations and organizations, represents an admirable commitment to objective evidence on the part of the Career Academy “movement.”

This study provides the most rigorous evidence to date that investing in career-oriented programs and experiences for high school students can have a long-term payoff in the labor market. Notably, the employment and earnings gains did not come at the expense of postsecondary enrollment and completion; Academy participants and students in the control group had similar levels of academic achievement. These findings suggest that pitting academic preparation against career development in high schools may be a false dichotomy.

As one of the few high school initiatives with rigorous evidence of effectiveness (albeit concentrated on postsecondary labor market outcomes), the Career Academy model has attained prominent stature in the field. But the programs represented in this study were selected in part because they were judged to be good examples of the model. Of late, organizations that support the development of Career Academies have come under increasing pressure to rely on one or two of the model’s *individual* components — like small learning communities — with the expectation that elements of the program can produce results similar to those found in this study. However, until further research is conducted on the separate effects of specific components, policymakers and practitioners hoping to achieve comparable impacts should look to implement the full model with fidelity.

In sum, the employment and earnings effects of Career Academies are encouraging news, particularly for young men of color, who are often left behind in the labor market. Career Academies appear to offer these young men a boost — comparable to the earnings premium of a year or two of postsecondary education — that puts them on a different earnings trajectory.

Gordon Berlin
President

Acknowledgments

This report reflects more than 15 years of research on Career Academies and is the product of a remarkable collaboration among staff at MDRC and the sites, funders, and advisers who have supported the evaluation. This undertaking would not have been possible without the vision and support of the funding organizations listed at the front of the report. Special gratitude is also due the staff at the participating Career Academies, high schools, school districts, and employer partners, as well as the young people who generously gave of their time to respond to the surveys that MDRC and its partners have administered over the past eight years.

The survey for this report was administered by Survey Research Management (SRM), led by Linda Kuhn and Ashley Bronzon. The survey team at SRM achieved an extraordinary response rate and provided the study and the field with a rich source of information about the young people who agreed to be part of this study. The report benefited greatly from the input of key advisers to the evaluation. Ron Ferguson of the John F. Kennedy School of Government at Harvard University, Harry Holzer of Georgetown University, Richard Murnane of the Harvard Graduate School of Education, David Stern of the University of California at Berkeley, and Andrew Sum of Northeastern University reviewed an early draft of the findings. They provided invaluable advice regarding further analyses and offered insights into the results and their implications. MDRC's Education Studies Committee reviewed an early draft of the report and offered useful advice regarding the context and implications for the findings and guidance on further analysis to be conducted for future papers. The committee includes Richard J. Murnane, Kevin J. Dougherty, Ronald Ferguson, Charles M. Payne, Melissa Roderick, Cecilia Rouse, Susan Sandler, and Susan Sclafani. Formal preparation of this report was preceded by briefings and discussions with the project's funders and several policy and practitioner groups. These exchanges yielded numerous suggestions for additional analyses, provided sources of contextual material, and pointed to implications that the findings may have for policy and practice.

Staff from several organizations concerned with Career Academies have provided useful guidance throughout the study and helpful comments on the findings — including Charles Dayton, David Stern, and Susan Tidyman of the Career Academy Support Network; J. D. Hoye and several of her colleagues at the National Academy Foundation; and Susan Katzman of the National Career Academy Coalition.

Throughout the Career Academies Evaluation, Robert Ivry, MDRC's Senior Vice President for Development and External Affairs, played a pivotal role in building partnerships with the sites, funders, and advisers that form the foundation for the study. This report benefited greatly from his insights and advice on how to sharpen the presentation of the findings and their policy implications. Other MDRC staff members played key roles in acquiring and analyzing

data for this report. In particular, Shirley James and the staff from MDRC's data entry room coordinated the information for the survey administration and data collection process with Survey Research Management.

Gordon Berlin, Rob Ivry, Fred Doolittle, Corinne Herlihy, Janet Quint, and Cynthia Miller reviewed drafts and provided helpful technical and substantive guidance on the presentation of the findings. Thanks are due John Hutchins for his help in guiding the report's organization and production and to Robert Weber for his skillful editing. Finally, we are grateful to David Sobel, who prepared the report for publication.

The Authors

Introduction

For nearly 40 years, Career Academies have offered high schools — particularly those in urban communities — a systematic approach to addressing the challenges young people face as they confront the demands of high school and prepare for postsecondary education and the world of work. Typically serving between 150 and 200 students from grades 9 or 10 through grade 12, Career Academies are defined by three distinguishing features: (1) they are organized as small learning communities to create a more supportive, personalized learning environment; (2) they combine academic and career and technical curricula around a career theme to enrich teaching and learning; and (3) they establish partnerships with local employers to provide career awareness and work-based learning opportunities for students. There are estimated to be more than 2,500 Career Academies across the country, operating either as a single program or as multiple programs within a larger high school.

This report presents findings on the long-term effects of Career Academies on outcomes associated with the transition from adolescence to adulthood — particularly on labor market participation, educational attainment, and family formation — over the eight years following scheduled graduation from high school. In summary, the Career Academies produced sustained employment and earnings gains, particularly among young men. While Career Academies had no impact (positive or negative) on educational attainment, half of the young people in both the Academy and non-Academy groups earned a postsecondary credential. The Career Academies also showed positive effects on increasing family stability.

Since 1993, MDRC has been conducting a uniquely rigorous evaluation of the Career Academy approach in a diverse group of nine high schools across the country. The evaluation is being funded by the U.S. Departments of Education and Labor and by 18 private foundations and organizations.

At least three features of the current educational and labor market landscape make the long-term results presented in this report especially relevant to policymakers and practitioners. First, the labor market for high school-age youth has continued a precipitous decline since the 1990s.¹ While civilian employment rates steadily increased through 2007, young people have failed to capture any share of this overall gain. The decline accelerated when the national job market began to deteriorate. By 2008, only about a third of the population of young people ages 16 through 19 held jobs, compared with 45 percent in 2000. Youth employment has been an important factor associated with many long-term positive

¹See Sum, McLaughlin, and Khatiwada (2008).

outcomes, including staying in school, graduating, preventing teen pregnancy, and making successful transitions to postsecondary education and employment.² Findings from the Career Academies evaluation provide further evidence of the potential effect of positive work-related experiences during high school on successful transitions to adulthood.

The labor market prospects of young men of color, particularly African-Americans, have been especially troubling. First of all, employment rates among all men declined between 1970 and 2000, but the decline was much steeper for men with a high school diploma or less. At the same time, employment among less-educated women rose substantially.³ Employment rates for African-American men ages 20 to 24 have been declining steadily since 1970, from around 77 percent in 1969 to only 56 percent in 2003, and the employment gap between young African-American and white men hovered around 19 percentage points throughout the past decade.⁴ Even in the peak economic period of 1999, African-American and Hispanic males aged 16 to 24 were far more likely to be neither working nor enrolled in school than white males of the same age (22.8 percent and 12.8 percent versus 8.7 percent, respectively).⁵ Because more than 80 percent of the young people in the sample for the Career Academies Evaluation are Hispanic (56 percent) and African-American (30 percent), the findings can shed light on effective strategies for improving their labor market prospects.

A second important trend is the increasing attention paid in high schools to high-stakes testing of academic performance and to preparing students for college. This has been accompanied by a lessening focus on other goals of high schools, including youth development and preparation for postsecondary employment. This shift in emphasis reflects a growing consensus that a high school diploma is no longer a viable terminal credential for long-term success in the labor market and that all students must leave high school with the skills and habits to succeed in some form of postsecondary education. For instance, completing two years of community college, compared to only graduating from high school, was associated with more than a 10 percent increase in annual earnings for young men in 1999.⁶ Unfortunately, it appears that workforce preparation and college readiness have often been positioned as “either/or” choices, suggesting that high schools cannot help students in both areas simultaneously. Evidence from the Career Academies evaluation suggests that these goals do not need to be mutually exclusive.

²See Sum, Fogg, and Mangum (2000); and Gruber (2001).

³Edelman, Holzer, and Offner (2006), Table 5.2.

⁴Sum, Khatiwada, Ampaw, and Tobar (2004).

⁵Edelman, Holzer, and Offner (2006), Table 2.1.

⁶See Marcotte, Bailey, Borkoski, and Kienzl (2005).

Third, the Career Academy model has continued to proliferate across the country both as a comprehensive approach to improving high school opportunities for young people and as a framework for other approaches that incorporate some of the model's component parts. The Career Academy model stands at the crossroads of many recent initiatives aimed at improving low-performing high schools. In fact, it predated many popular reforms, including school-to-work initiatives of the early 1990s, the movement toward small schools and smaller learning communities of the 2000s, and the more recent efforts to combine academic rigor and real-world relevance. Finally, the business community has a reinvigorated interest in supporting high school improvement initiatives and, more specifically, in helping young people gain access to high-quality learning opportunities in the workplace. The new findings from the Career Academies Evaluation presented in this report, as well as reexamination of findings presented in earlier reports, can shed light on the efficacy of these types of reform efforts.

The remainder of this report — the seventh formal report from the study — describes the Career Academy approach and highlights the key features of the evaluation that underlie its rigor and the relevance of its findings.⁷ The newest findings from the study are based on a survey administered 11 to 12 years after the young people in the study sample entered their Career Academies and a full eight years after their scheduled graduation from high school.⁸

The Career Academies Evaluation

Several features of the Career Academies Evaluation make it distinctive. The high schools are located in medium- and large-sized school districts and reflect many of the stressful conditions found in urban settings. The participating Career Academies were able to implement and sustain the core features of the approach, and they served a cross-section of the student populations in their host high schools. The Career Academies Evaluation is one of the few studies of a school reform initiative that uses the design of a randomized, controlled field trial. Because more eligible and appropriate students applied for the Academy programs than could be served, applicants were randomly selected to enroll in the

⁷For a detailed discussion of the history and conceptual framework underlying the Career Academy approach, see Stern, Dayton, and Raby (2003); Kemple (1997); Kemple, Poglinco, and Snipes (1999); and Kemple and Snipes (2000). For a detailed discussion of the research design, the sites, the students in the study sample, and other data sources used in the evaluation, see Kemple and Rock (1996); Kemple (1997); Kemple and Snipes (2000); and Kemple (2001).

⁸For a more detailed discussion of the Career Academies Evaluation Eight-Year Post-High School Follow-Up Survey response rates and analysis issues related to data availability, see Unit 1 in the Technical Resources for this report (Kemple and Willner, 2008), available at www.mdrc.org.

Academy group. The remaining applicants constitute the study's non-Academy control group. Subsequent differences in outcomes between the two groups provide valid estimates of the Academies' impacts. This type of research design is widely considered to be the most reliable way to measure the effectiveness of interventions such as Career Academies. The evaluation is also unusual among studies of school reforms for following both groups of students from the beginning of high school through eight years after scheduled graduation. Following is an overview of the key features of the study.

The Research Design

Using a random assignment research design is the best way to ensure that there are initially no systematic differences between the two groups that make up the study sample. Each of the students in the sample applied for a place in one of the participating Career Academies and was deemed to be appropriate for the programs. Because more applicants were appropriate than the programs could serve, a lottery was used to choose which students would be invited to enroll. Approximately 55 percent of the students in the applicant pool were randomly selected to enroll in a Career Academy, and they constitute the study's Academy group. The remaining students (about 45 percent of the applicant pool) continued or enrolled in the high schools' regular education programs and constitute the study's non-Academy control group. The outcomes for the non-Academy group are the best indicators of how students in the Academy group would have fared if they had not had access to the programs. Therefore, the impacts — that is, the differences in outcomes between the Academy and the non-Academy groups — represent the changes that the Career Academies produced over and above what students were likely to achieve in non-Academy environments.⁹

The Sites

Each of the nine high schools in this evaluation is located in or near a large urban school district with substantially higher percentages of African-American and Hispanic students than exist in school districts nationally, as well as higher dropout rates, higher unemployment rates, and higher percentages of low-income families. The schools were selected strategically on the basis of several criteria:¹⁰

⁹For a detailed description of how the random assignment procedures were implemented for the evaluation, see Kemple and Rock (1996).

¹⁰For a discussion of the criteria and process used to select sites for this study, see Kemple and Rock (1996). The sites are located in the following school districts: Baltimore City School District; East Side Union School District (two sites in San Jose, California); Miami-Dade School District; Pittsburgh Public School District; Santa Ana (California) Unified School District; Socorro (Texas) Unified School District; (continued)

- The schools had implemented and sustained the core features of the Career Academy approach for at least two years.
- There was a clear contrast — along the core dimensions of the Academy model — between the Career Academy and other programs within the high school.
- The Career Academy served a diverse population of students but made explicit efforts to include students who were perceived to be at risk of dropping out.
- The high school and its Career Academy were willing and able to accommodate random assignment and other key features of the evaluation design.

As a group, the participating sites reflect many of the conditions under which Career Academies had been implemented across the country in the mid to late 1990s. They operated as single programs within larger comprehensive high schools, and while they were inclusive of a range of students in their host high schools, they were targeted to students who were seen as being at risk of being disengaged from or even dropping out of school. In addition, each of the participating Academies was able to reach a threshold level of implementation for the three core components of the model: small learning communities, career-themed curricula, and partnerships with employers. Individually the sites also capture much of the variation in the Academy approach as it had been adapted to local needs and circumstances, including variation in the intensity of the three components.

It is important to note, however, that the Career Academies participating in this evaluation may not be representative of Career Academies across the country today. Competing pressures on high schools and on Academies, as well as the increasing focus on academic performance and college preparation, have pushed many Career Academies or Academy-like programs to deemphasize supports for academic and career-related course combinations and to limit the availability of work-based learning and other career awareness and development opportunities both in and outside school.

Students in the Study

The student populations in the participating Career Academies tend to reflect the ethnic, gender, and socioeconomic characteristics of their host high schools, which are diverse. More than 50 percent of the sample are Hispanic, and another 30 percent are African-

Pajaro Valley (Watsonville, California) Unified School District; and Washington, DC, Public School District.

American. Students came to the programs with varying school-related experiences and educational aspirations. For example, based on their high attendance rates and grades in middle school and their reports on a baseline survey of high engagement in school and high expectations for going to college, it appears that some students were doing well in school when they applied for the Academies. Key goals of Academies are to prepare such students for college and to provide them with career-related learning experiences and credentials that will make them more competitive in the labor market. Other Academy applicants, such as those with low middle school attendance rates and grades, appeared to be on a path toward dropping out or ending their education after high school. Academies aimed to “reengage” such students, providing them with more applied learning experiences and encouraging them to develop higher aspirations for education and employment.¹¹

Data Sources

Since the study began in 1993, data for the Career Academies Evaluation were obtained from sample members’ high school transcripts and from surveys administered during high school and at three points during the first eight years following their scheduled graduation from high school. The primary data for the current report were obtained from a survey administered to sample members approximately 96 months after their scheduled graduation from high school (11 to 12 years after they entered the study). The Career Academies Evaluation’s Eight-Year Post-High School Follow-Up Survey focused on the fifth through eighth years following scheduled graduation from high school and asked sample members:

- Whether and when they graduated from high school or received a General Educational Development (GED) certificate and whether and when they enrolled in postsecondary education programs and institutions. Students who were enrolled in postsecondary education programs were asked about the programs’ characteristics, whether they completed the program, and what degree or certificate, if any, they received.
- Information about their work experiences during the previous four years, including which month and year they started each job that they held during this period, which month and year they left each job, the number of hours they worked per week, the number of weeks they worked per month, and the hourly wage they earned.
- Information about the industries in which they worked for each job they held during the previous four years, and the type of work they performed. For the

¹¹For a more complete listing of background characteristics of the full study sample, see Unit 1 in the Technical Resources for this report (Kemple and Willner, 2008).

most recent jobs that respondents held, the survey also asked about the types of skills they used, how their employment might have been connected to high school experiences, and how their work experience might be preparing them for the future.

- Information about marital status, having children, living situations, and other experiences in their lives and their plans for the future.

The newest findings in this report are based on data collected from 1,428 youth who completed the Eight-Year Post-High School Follow-up Survey. This represents 81 percent of the 1,764 young people in the full study sample: 82 percent of the Academy group and 80 percent of the non-Academy group. Response analysis indicates that there were no systematic differences in background characteristics between Academy and non-Academy group members who responded to the survey. The relatively high response rates in both the Academy and the non-Academy group — and the comparability of the Academy and non-Academy group members who responded — afford a high degree of confidence that the survey data yield valid estimates of the Career Academies' impacts.¹²

Impacts on High School Experiences and Outcomes

To provide context for interpreting the impacts that Career Academies had on post-secondary education and labor market outcomes, this section summarizes findings from prior reports about how Career Academies influenced students' high school experiences. The first three reports from the Career Academies Evaluation describe the implementation of the core elements of the Career Academy approach and assess the extent to which these elements provided students, teachers, and employers with the types of supports and learning opportunities promised by the Career Academy model.¹³ The fourth report examines the impacts that the participating Academies had on students' performance and engagement through the end of their twelfth-grade year in high school.¹⁴

The findings from these earlier reports provide an essential context for understanding the pattern of Career Academy effects on postsecondary educational attainment and labor market outcomes that are discussed in this report. In particular, they shed light on the

¹²For a more detailed discussion of the Career Academies Evaluation Eight-Year Post-High School Follow-Up Survey response rates and analysis issues related to data availability, see Unit 1 in the Technical Resources for this report (Kemple and Willner, 2008).

¹³See Kemple and Rock (1996); Kemple (1997); and Kemple, Poglianco, and Snipes (1999).

¹⁴See Kemple and Snipes (2000). Also, Units 3 to 5 in the Technical Resources for this report (Kemple and Willner, 2008) include tables that summarize the impacts on student performance and engagement in high school for the Eight-Year Post-High School Follow-Up Survey sample.

facets of students' high school experiences and outcomes that Career Academies affected or did not affect. Differences (and the lack of differences) in the experiences of students in the Academy group and the non-Academy group are fundamental antecedents to the effects that Career Academies might have had as these young people moved beyond high school into postsecondary education programs and the world of work.

Several findings reported previously indicate that the Career Academies in the evaluation changed students' experiences during high school in ways that are strongly consistent with the short-term goals of the Academy approach. For example, compared with their non-Academy counterparts:

- Students in the Academy group reported higher levels of interpersonal support from teachers and peers.
- Academy students were more likely to build a high school transcript that combined academic and career or technical courses.
- Academy students were substantially more likely to be exposed to a range of career awareness and development activities, both in and outside school, and to work in jobs that were connected to school (for instance, they got a job as part of a class or through a school connection).
- For students who entered the programs at high risk of dropping out, the Academies increased the likelihood of staying in school through the end of the twelfth-grade year, improved attendance, and increased the number of credits earned toward graduation.
- For students at medium or low risk of dropping out, the Academies increased career and technical course-taking and participation in career development activities without reducing academic course-taking.

Previously reported findings also indicate several potential limitations of the Academies' implementation and effectiveness:

- Nearly one-third of the students who initially enrolled in the Academies left the programs before the end of their twelfth-grade year.
- The curricula and instructional strategies used in the Academies (in both academic and career or technical courses) were generally similar to those offered in the rest of the high school and did not typically include integration of academic content and knowledge with career-related applications.

- The Academies had no impact on scores from a standardized test administered as part of the evaluation’s data collection effort.
- Some Academies that did not substantially increase interpersonal supports from teachers and peers led to reduced attendance rates and academic course-taking for some students.

Not surprisingly, the Academies appear to have been most effective at influencing those aspects of school functioning and student and teacher experiences that are closest to the core features of the approach. For example, the Academies’ school-within-a-school organization appears to have created communities of support for teachers and students. In this context, students were more highly engaged in school, which was reflected in high attendance rates, low dropout rates, and — in the words of several students — a sense of being in a “family-like” atmosphere. Teachers, too, saw the Academies as a “learning community” in which they collaborated with colleagues and were able to give students more personalized attention. The findings suggest that the school-within-a-school structure and the interpersonal supports that evolved from it may have been important preconditions for the implementation and effectiveness of other features of the Career Academy approach. In and of themselves, however, these interpersonal supports do not appear to have had a direct impact on student performance.

The Career Academies in this evaluation had the strongest and most pervasive effects on the engagement of high-risk students during the high school years. For these students, the Academies increased attendance and credits earned in both academic and career or technical courses, and they kept a higher proportion of those students enrolled in school through the end of twelfth grade. For medium- and low-risk students, the Academies were able to increase exposure to career-related courses and career development experiences without reducing the likelihood of completing at least a basic academic core curriculum.

Employer partnerships — another key feature of the Career Academy approach — offered employers structured, concrete opportunities to engage in the educational mission of high schools. These partnerships provided students with a broad array of career awareness and development experiences both in and outside school, including work-based learning internships. Academy students were much more likely than their non-Academy counterparts to be exposed to such experiences as job-shadowing, career fairs, guest speakers from local businesses, and instruction in how to look for and apply for a job, prepare a résumé, and interview. Academy students were also provided with increased exposure to individual employers as well as to information about the types of career opportunities in a given field.

The Academies in this evaluation appear to have had less influence on curricular content and teachers’ instructional practice than on the measures mentioned above. Acade-

my students were more likely to take career-related courses than their non-Academy peers, but the academic and career-related courses that they took were generally typical of those offered in the regular school environment — probably because Academy teachers were bound by the same requirements as their non-Academy counterparts regarding the scope and sequence of the curriculum.

Similarly, although the Academies were more likely to expose students to applied and work-related learning activities, they typically did not truly integrate academic and career-related curricula and instructional practice in ways consistent with practices that have been identified in other research.¹⁵ Such integration requires offering more extensive professional development opportunities to teachers — over and above the in-service workshops normally available through school and district resources — than most of the Academies could provide. Other professional development opportunities, such as shared planning time for teachers, were focused on student-related concerns and on coordinating the career development and employer-related activities.

Given the similarity between Academy and non-Academy academic curricula and instructional practice, it is not surprising that the Academies did not affect students' standardized test scores. Still, Academy students performed at least as well as their non-Academy counterparts on standardized tests, and they received the added benefits of participating in a combined academic and career-related curriculum and in a series of career development activities.

Finally, only 55 percent of students who were selected to enroll in the Career Academies remained in those programs through their scheduled graduation. About 15 percent of the applicants who were randomly assigned to the Academy group never enrolled at all, and another 30 percent enrolled but subsequently left the programs before their scheduled graduation. Only a small percentage of those who left the Academies dropped out of high school altogether. It is unclear how much of the attrition from the Academies could have been influenced or avoided by the programs themselves. Over 90 percent of the students who were selected for the Academies but who never enrolled in one or who left the Academy before graduation remained enrolled in other high school programs or high schools. Approximately 54 percent said that they did not enroll or left the programs because they did not like the Academy or because they preferred other classes or programs that better suited their interests and needs. Student mobility — usually due to family circumstances beyond the control of the programs — accounted for another 25 percent of students who either never enrolled

¹⁵For a review of research on approaches for integrating academic and vocational education, see Grubb (1995a, 1995b).

or left before graduation. The remaining students were asked to leave the Academies or dropped out of high school altogether.

The high attrition rates may suggest, however, that there is not great demand for Academies, at least under circumstances where students can choose to leave and staff can ask them to leave. In any case, these are the circumstances under which Career Academies typically operated in the 1990s and many continue to operate today. As a result, Academies may be able to influence students' behavior and performance for only a year or two before students move on to other opportunities. In an effort to provide the most rigorous and policy-relevant information about Academies' potential to affect students' behavior, this evaluation takes the reality of attrition squarely into account by including in the analysis all students who were randomly assigned to Academies, whether they enrolled or not.

Long-Term Impacts on Labor Market Outcomes

This section of the report begins with a summary of the impacts that the Career Academies had on labor market outcomes for the full study sample. The key labor market outcomes include average monthly earnings and the core sources of monthly earnings: months employed during the follow-up period, hours worked per week, and hourly wages.¹⁶ It includes information about impacts throughout the eight years following each sample member's scheduled graduation from high school and focuses special attention on the characteristics of jobs held at the end of the follow-up period.¹⁷ The section then discusses in

¹⁶All information on job characteristics is self-reported. Monthly earnings were calculated by multiplying each sample member's reported hourly wage by the hours worked per week and by the number of weeks worked per month. For months in which sample members did not report being employed, zero values were used for monthly earnings and the components of earnings. For all jobs except the current or most recent job, hourly wages and weekly hours at the conclusion of the job were applied to the full duration of the job. Thus, if wages or hours increased or decreased during the job, these measures may over- or underestimate true monthly earnings. Analyses conducted on the four-year post-high school data indicated that the pattern of impacts was not sensitive to various assumptions about changes in wages or hours.

¹⁷Information about labor market outcomes during the first four years following scheduled high school graduation is derived from the Career Academies Evaluation Four-Year Post-High School Survey and the sample of students who completed that survey (N = 1,458). Information about labor market outcomes during the second four years following scheduled high school graduation is derived from the Career Academies Evaluation Eight-Year Post-High School Survey and the sample of students who completed that survey (N = 1,428). The estimates derived from these two samples are the most representative of findings for the full sample of students in the evaluation for the respective time periods. Averages are calculated across the two time periods, but, because of the different samples from which estimates were derived, tests of statistical significance were not performed for these averages. Results using a common overlapping sample from the two follow-up surveys (N = 1,275) yielded a similar pattern of results. See Unit 1 of the Technical Resources for this report (Kemple and Willner, 2008).

more detail the labor market impacts for the subgroups of young men and young women. It concludes with a brief review of the labor market impacts for subgroups defined by the background characteristics associated with the risk of dropping out of high school. All dollar values presented in this report are inflation-adjusted and are expressed as 2006 dollars.¹⁸

- The Career Academies produced positive and sustained impacts on average monthly earnings throughout the eight-year follow-up period.

Exhibit 1 displays the impacts that Career Academies had on average monthly earnings and on each of the key components of earnings (months employed, hours worked per week, and hourly wages).¹⁹ The bars on the left side of each figure reflect averages over the first four years following scheduled high school graduation. The bars on the right side of each figure reflect averages over the next four years. The bar graph on the left side of the exhibit shows that the Career Academies produced an increase in earnings of \$132 per month during the first four years of the follow-up period and \$216 per month in the final four years. Both of these results are statistically significant, meaning that it is unlikely that the differences arose by chance.²⁰ On average, this represents an increase of \$174 per month over the full eight years following scheduled high school graduation and an 11 percent increase in monthly earnings over the non-Academy group's average of \$1,561 per month. Over the eight-year follow-up period, this reflects an additional \$2,088 in earnings per year for the Academy group — or a total of \$16,704 (in 2006 dollars).²¹ The three figures on the right side of Exhibit 1 indicate that the impact on monthly earnings during both phases of

¹⁸Values are adjusted for inflation using the 2007 Consumer Price Index for All Urban Consumers, unadjusted for seasonal variation, from the U.S. Department of Labor, Bureau of Labor Statistics (www.bls.gov/CPI).

¹⁹Unit 3 of the Technical Resources for this report (Kemple and Willner, 2008) includes supplementary tables that provide more detailed labor market impact findings for the full study sample over the eight-year follow-up period.

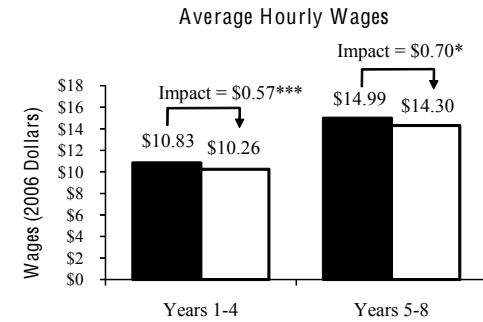
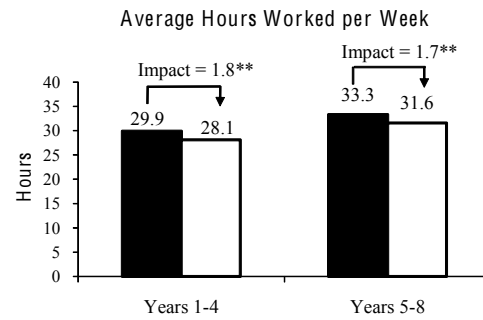
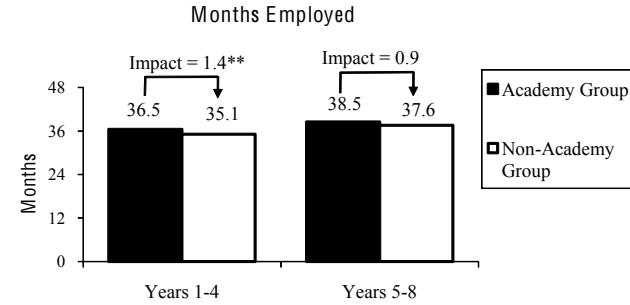
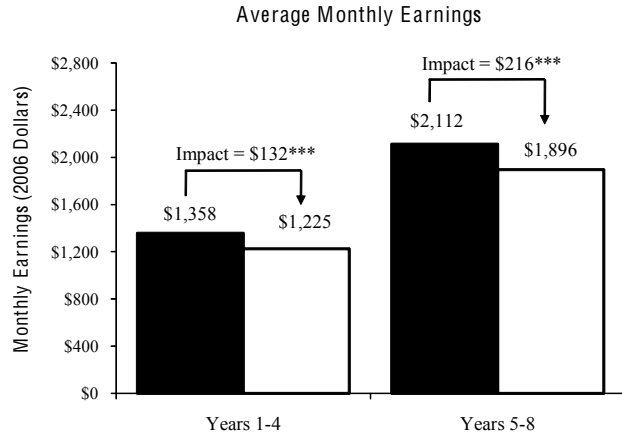
²⁰In the exhibits, the number of asterisks next to a particular impact estimate indicates the confidence one should have that the margin of error around that estimate does not include zero. One asterisk indicates that there is a probability of less than 10 percent that the given result would be observed if the impact is truly zero; two asterisks indicates a probability of less than 5 percent; and three asterisks, a probability of less than 1 percent. The actual probability that random chance could have produced the given result in the event that the impact is truly zero is shown in the “p-value” column in the tables.

²¹Results using the smaller, common overlapping sample from the two follow-up surveys (see footnote 17) yielded a similar pattern, although the size of the impacts is somewhat smaller, especially for the first four years. For the common sample, the Career Academies produced an increase of \$104 per month during the first four years of follow-up and \$212 per month during the last four years. Over the entire eight-year follow-up period, the Career Academies produced an impact of \$158 per month, which amounts to an increase of \$1,898 per year and an accumulated \$15,185 over all eight years (in 2006 dollars). The earnings impacts for all phases of the follow-up period are statistically significant. Unit 1 of the Technical Resources for this report (Kemple and Willner, 2008) includes additional details about the robustness of the earnings impacts across samples.

Career Academies Evaluation

Exhibit 1

Impacts on Average Monthly Earnings and Components of Earnings for the Full Sample



SOURCES: MDRC calculations from the Career Academies Evaluation Four-Year and Eight-Year Post-High School Follow-Up Surveys.

NOTES: Earnings and wages are reported in 2006 dollars. Measures reflect averages over the first and second 48-month periods following scheduled high school graduation. Measures for the first 48 months are derived from the Four-Year Post-High School Follow-Up Survey sample (N = 1,458); measures for the second 48 months are derived from the Eight-Year Post-High School Follow-Up Survey sample (N = 1,428).

Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; and * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

the follow-up period was driven by a combination of increases in the number of months employed, hours worked per week, and hourly wages.

Exhibit 2 shows that the Career Academies' impacts on average monthly earnings persisted throughout the eight-year post-high school follow-up period. Monthly earnings for both the Academy and the non-Academy group increased substantially in real terms over the eight years after scheduled graduation. In 2006 dollar values, monthly earnings for both groups increased by roughly \$1,700 over the follow-up period. The solid line in the exhibit, however, shows that the study's Academy group earned more, on average, than those in the non-Academy group (represented by the dashed line) during each month. In fact, impacts on monthly earnings were statistically significant in 87 of the 96 months shown in the exhibit, and they persisted through the eighth year of the follow-up period. As a further point of comparison, average earnings for members of the non-Academy group in the eighth year following scheduled graduation from high school (\$26,043) were somewhat higher than those for a nationally representative group of young people with similar background characteristics who attended urban high schools around the same time (\$25,231).²² Thus, even though the study's non-Academy group had somewhat stronger earnings potential than similar students nationally, the Career Academies were able to give these young people a meaningful boost in the labor market.

The survey that was administered to the study sample for this report also asked the sample members to provide more detailed information about the jobs that they held near or at the end of the eight-year post-high school follow-up period, when most of them were about 26 years old.²³ There are several potentially important differences between the jobs held by Academy and non-Academy group members who were employed during the follow-up period. For example, even though nearly 90 percent of both of these groups were employed in the last three months of the follow-up period, Academy group members had been working at their current or most recent job for about three months longer than their

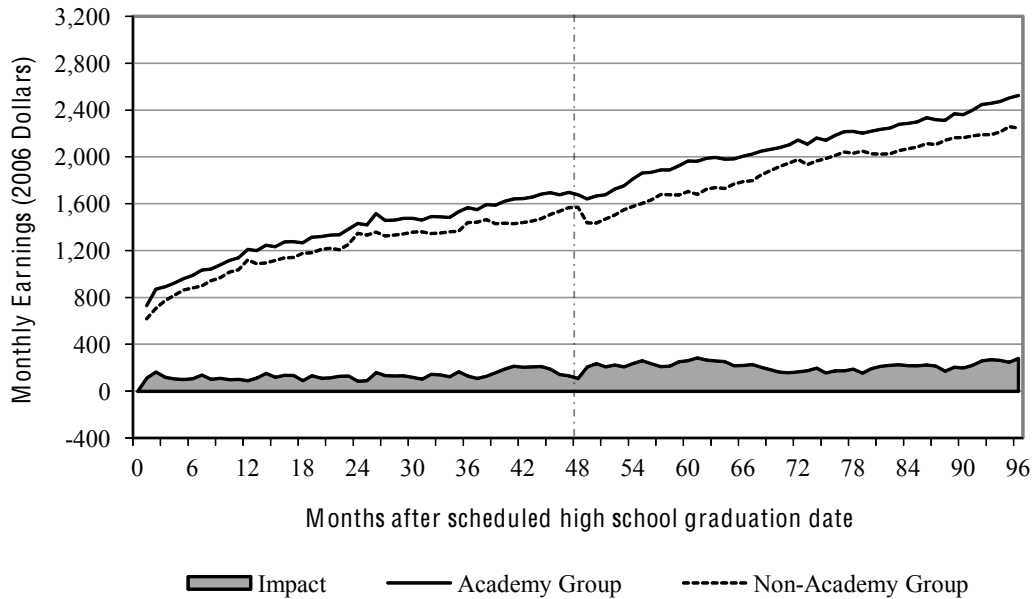
²²Unit 2 of the Technical Resources for this report (Kemple and Willner, 2008) presents comparisons between outcomes for the Career Academies Evaluation sample and similar students from the National Education Longitudinal Study of 1988 (NELS:88) through 2000. Dollar values from both samples are inflation-adjusted and are expressed in 2006 dollars. The values for the NELS sample are regression-adjusted and mean-centered to reflect outcomes for students who had the same distribution of background characteristics as students in the Career Academies Evaluation sample.

²³Unit 3 of the Technical Resources for this report (Kemple and Willner, 2008) provides a list of these job characteristics for both groups. The information on job characteristics that is discussed in this section of the report and presented in the Technical Resources is based only on the sample members who were employed during the follow-up period and focuses only on the characteristics of the last job they held. As a result, the data do not allow for experimental comparisons, and differences in job characteristics between Academy and non-Academy groups do not represent valid indicators of Career Academy impacts (or lack of impacts).

Career Academies Evaluation

Exhibit 2

Month-by-Month Impacts on Total Monthly Earnings
for the Full Sample



SOURCES: MDRC calculations from the Career Academies Evaluation Four-Year and Eight-Year Post-High School Follow-Up Surveys.

NOTES: Earnings are reported in 2006 dollars.

Measures reflect the 96-month period following scheduled high school graduation for each sample member (Month 0 is June of the scheduled graduation year). Measures for Months 1 to 48 are derived from the Four-Year Post-High School Follow-Up Survey sample (N = 1,458). Measures for Months 49 to 96 are derived from the Eight-Year Post-High School Follow-Up Survey sample (N = 1,428). The dotted line at Month 48 illustrates the cutpoint between the Four-Year and Eight-Year Post-High School Follow-Up Survey samples.

Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups. Differences in monthly earnings are significant at a level of 10 percent or less in 87 of the 96 months.

control group counterparts. Monthly earnings for the Academy group outpaced the earnings of the non-Academy group at both the start and end of the job, and the Academy group experienced a 23 percent increase in real earnings over the time that they held their jobs (from \$2,272 per month to \$2,798 per month), compared with about 21 percent for the non-Academy group (from \$2,106 to \$2,547 per month). Just over 74 percent of workers in both groups held jobs that provided a health insurance plan, and just over 81 percent of both groups (81 percent of the Academy group and 82 percent of the non-Academy group) reported working in a job that provided other benefits, such as sick and vacation days and a retirement plan.

There were modest differences in the distribution of jobs across occupational sectors. Nineteen percent of the Academy group, compared with 16 percent of the non-Academy group, were employed in a management, business operations, or financial operations occupation (although this difference is not statistically significant), and 7 percent of the Academy group, compared with less than 4 percent of the non-Academy group, were employed in a computer, engineering, or media technology occupation. There was a slight trend for Academy group members to have lower employment in other sectors, including education, social services, law, and science occupations (8 percent versus 11 percent) and sales, food, and personal services occupations (12 percent versus 14 percent). Overall, the largest proportion of the Academy group, 24 percent, worked in an office or administrative support occupation; 15 percent worked in a construction, production, maintenance, or transportation occupation; and 9 percent worked in a health care, medical support, or medical technology occupation. Similar percentages of the non-Academy group worked in each of these sectors as well.

In addition to monthly earnings, hourly wages, and occupational sector, two other characteristics differentiated the jobs held by the Academy group from those held by the non-Academy group. First, sample members in the Academy group were more likely to be working in a job that was directly related to the subjects and themes that they studied during high school: 39 percent of the Academy group reported this to be the case, compared with 31 percent of the non-Academy group. Second, 46 percent of the Academy group indicated that their current choice of occupational field was influenced by their high school experiences, compared with 36 percent of the non-Academy group. Note, however, that the majority of those in the Academy group were *not* working in jobs related to the career theme of the Academy program for which they were selected.

- The impacts on labor market outcomes were concentrated among young men in the study sample.

Exhibit 3 displays the Career Academies' impacts on average monthly earnings (and the key components of earnings) for young men in the study sample, and Exhibit 4 displays impacts for the young women.²⁴ Exhibit 3 shows that, for both phases of the follow-up period, the Academies produced statistically significant increases in monthly earnings, months employed, and hours worked per week for young men. The programs also produced increases in hourly wages, but only the estimate for the first four years of the follow-up period is statistically significant. During the first four years, the Career Academies produced an average increase of \$260 in real monthly earnings for young men, which grew to an impact of \$361 in real monthly earnings during the last four years of the follow-up period. Across the two phases of the follow-up period, therefore, the Career Academies produced an average increase of \$311 in real monthly earnings for young men. This amounts to a 17 percent increase over and above the average earnings of \$1,792 per month for young men in the non-Academy group — or an increase of \$3,722 in annual earnings and a total of nearly \$30,000 in additional real earnings (in 2006 dollars) for males in the Academy group over the eight-year post-high school follow-up period.²⁵

Exhibit 3 also shows that, for young men, the Academy programs produced sizable increases in the number of months employed, hours worked per week (including full-time employment), and hourly wages. Over all eight years, the young men in the Academy group were employed during nearly 80 months (83 percent of the 96-month follow-up period), compared with 74 months (77 percent of the follow-up period) for young men in the non-Academy group. Though not shown in the exhibit, young men in the Academy group were employed full time during 70 of the 80 months that they were working, compared with only 63 of 74 months for the non-Academy group. Over the eight-year follow-up period, young men in the Academy group worked an average of about 36 hours per week, compared with 32 hours per week for young men in the non-Academy group.

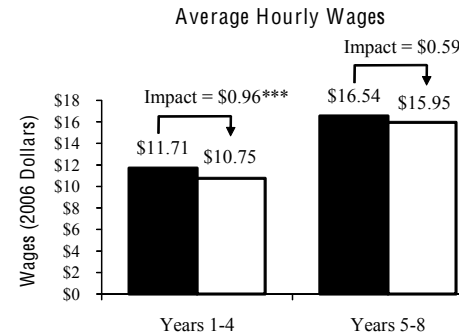
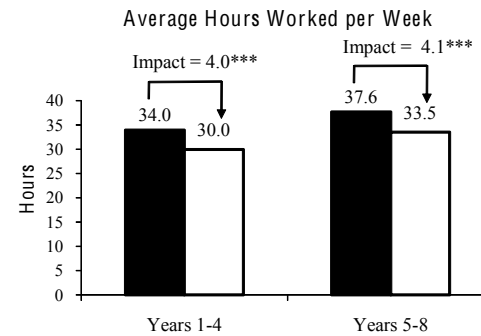
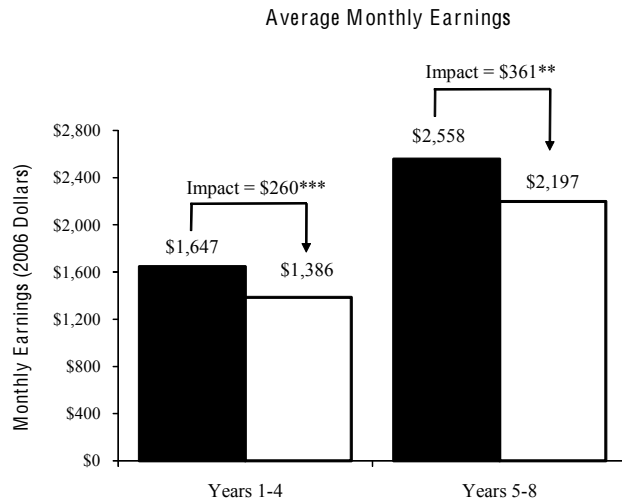
²⁴Unit 4 of the Technical Resources for this report (Kemple and Willner, 2008) includes supplementary tables that provide detailed impact findings for young men and young women in the study sample over the eight-year follow-up period.

²⁵These estimates are averaged across the four-year and eight-year follow-up samples of young men (N = 604 and 587, respectively). The pattern of impacts obtained using the common overlapping sample of young men from the two follow-up surveys (N = 513) is similar to that obtained using the separate survey samples, although the size of the impacts is somewhat smaller. For the common sample, the Career Academies produced an increase in young men's earnings of \$196 per month during the first four years of follow-up and \$302 per month during the last four years. Over the entire eight-year follow-up period, the Career Academies produced an impact of \$249 per month for young men, which amounts to an increase of \$2,989 per year and an accumulated \$23,912 over all eight years (in 2006 dollars). The earnings impacts for all phases of the follow-up period are statistically significant for this sample. Unit 1 of the Technical Resources for this report (Kemple and Willner, 2008) includes additional details about the robustness of the earnings impacts across samples.

Career Academies Evaluation

Exhibit 3

Impacts on Average Monthly Earnings and Components of Earnings for Young Men



SOURCES: MDRC calculations from the Career Academies Evaluation Four-Year and Eight-Year Post-High School Follow-Up Surveys.

NOTES: Earnings and wages are reported in 2006 dollars.

Measures reflect averages over the first and second 48-month periods following scheduled high school graduation. Measures for the first 48 months are derived from the Four-Year Post-High School Follow-Up Survey sample of young men (N = 604); measures for the second 48 months are derived from the Eight-Year Post-High School Follow-Up Survey sample of young men (N = 587).

Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; and * = 10 percent.

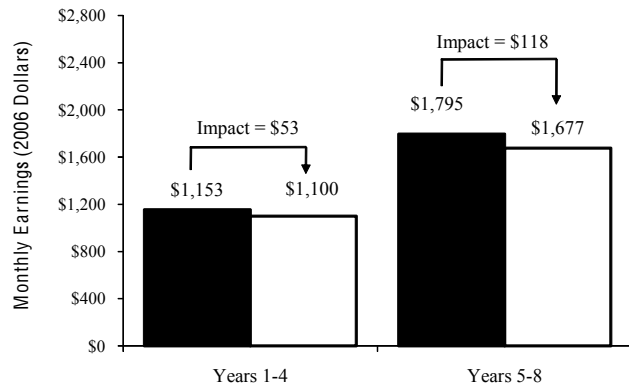
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Career Academies Evaluation

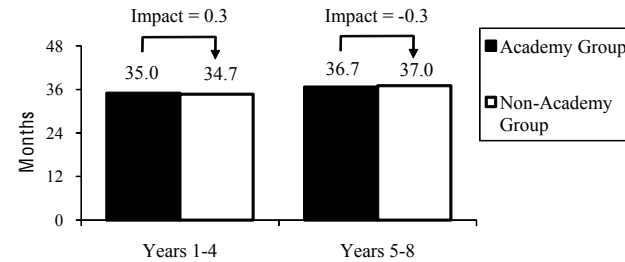
Exhibit 4

Impacts on Average Monthly Earnings and Components of Earnings for Young Women

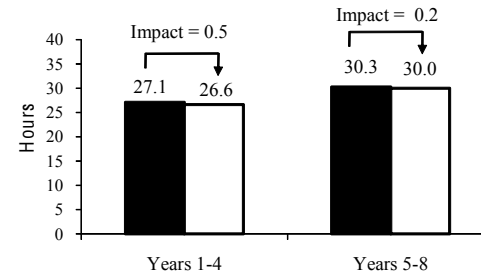
Average Monthly Earnings



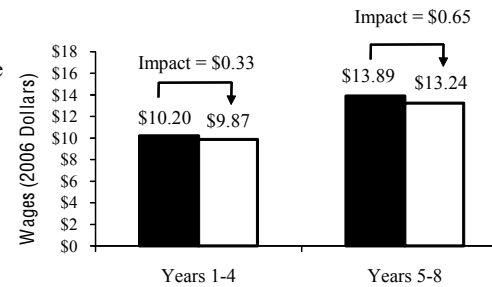
Months Employed



Average Hours Worked per Week



Average Hourly Wages



SOURCES: MDRC calculations from the Career Academies Evaluation Four-Year and Eight-Year Post-High School Follow-Up Surveys.

NOTES: Earnings and wages are reported in 2006 dollars.

Measures reflect averages over the first and second 48-month periods following scheduled high school graduation. Measures for the first 48 months are derived from the Four-Year Post-High School Follow-Up Survey sample of young women (N = 854); measures for the second 48 months are derived from the Eight-Year Post-High School Follow-Up Survey sample of young women (N = 841).

Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; and * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

Finally, the top graph in Exhibit 5 shows that the Career Academies' impact on monthly earnings for young men persisted throughout the eight-year post-high school follow-up period. It shows that while real monthly earnings more than tripled for both groups, young men in the Academy group consistently earned more throughout the period. In fact, during the last year of the follow-up period, the young men in the evaluation sample earned substantially more than a nationally representative group of young men at a similar point in their lives, with similar characteristics, who also attended urban, public high schools.²⁶

Furthermore, the magnitude of the impact of Career Academies on annual earnings during the eighth year after high school for young men — a 16 percent increase over the non-Academy group's earnings — is larger than the earnings premium that other researchers have calculated for two full-time-equivalent years of enrollment in a community college. These researchers estimate that completing two years of community college, relative to having a high school diploma but no postsecondary education, was associated with an 11 to 12 percent increase in annual earnings for young men in 1999.²⁷ Similarly, an unadjusted analysis of 2006 census data reveals that young men ages 25 to 28 who had completed some college were earning about 16 percent more than their counterparts with only a high school diploma or GED.²⁸ While this does not mean that Career Academies can or should serve as a substitute for postsecondary education for young men, the comparison helps frame the magnitude of the labor market impacts for young men.

- **The Career Academies' impacts on labor market outcomes for young women varied somewhat over time but, on average, are not statistically significant.**

²⁶Young men in the study's Academy group earned an average of \$35,304 (2006 dollar values) during the eighth year following scheduled graduation from high school. This compares with \$31,576 (2006 dollar values) during 1999 for young men with similar background characteristics from the National Education Longitudinal Study of 1988 (NELS:88/2000) who also attended urban, public high schools. This is based on MDRC calculations from the NELS:88 database. See Unit 2 of the Technical Resources for this report (Kemple and Willner, 2008) for a description of the analyses that form the basis of these findings.

²⁷Marcotte, Bailey, Borkoski, and Kienzl (2005) analyzed data from the NELS:88/2000 database to estimate the contribution of various levels of postsecondary education (controlling for work experience, urbanicity, ethnicity, high school dropout/GED status, and other demographics) on earnings in 1999, eight years after the sample was scheduled to graduate from high school. Due to data limitations, the analysis excluded sample members whose first enrollment in a postsecondary institution occurred more than two years after their scheduled graduation from high school.

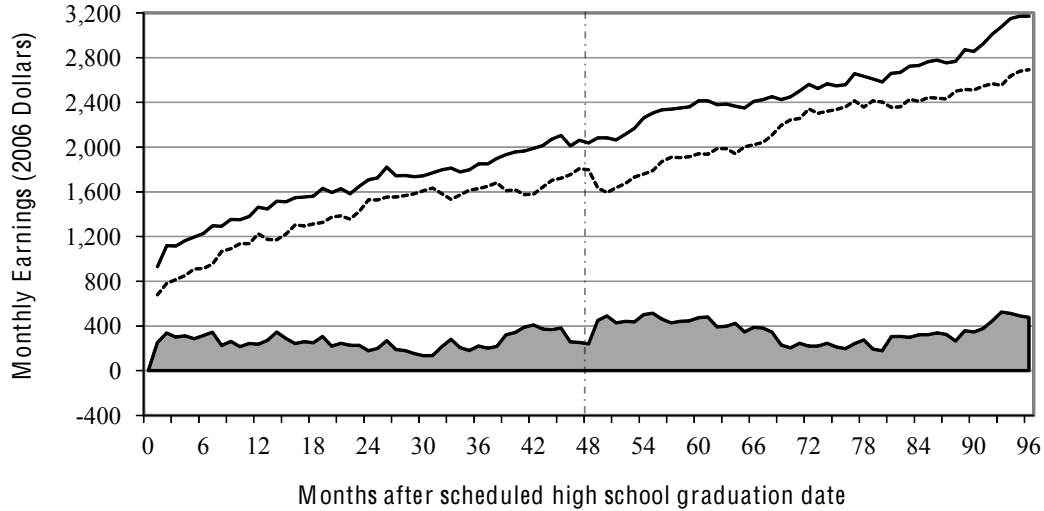
²⁸These numbers are based on 2006 American Community Survey (ACS) public use files from the U.S. Census Bureau and include men who were not employed in 2006. (Calculations were performed by Andrew Sum, Northeastern University, Center for Labor Market Studies.)

Career Academies Evaluation

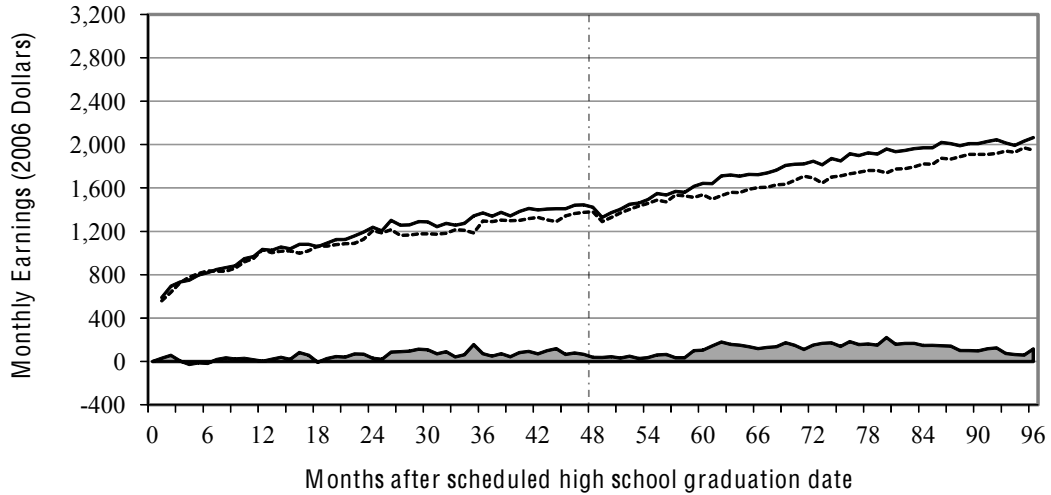
Exhibit 5

Month-by-Month Impacts on Total Monthly Earnings,
by Gender

Young Men



Young Women



■ Impact — Academy Group - - - Non-Academy Group

(continued)

Exhibit 5 (continued)

SOURCES: MDRC calculations from the Career Academies Evaluation Four-Year and Eight-Year Post-High School Follow-Up Surveys.

NOTES: Earnings are reported in 2006 dollars.

Measures reflect the 96-month period following scheduled high school graduation for each sample member (Month 0 is June of the scheduled graduation year). Measures for Months 1 to 48 are derived from the Four-Year Post-High School Follow-Up Survey sample (young men: N = 604; young women: N = 854). Measures for Months 49 to 96 are derived from the Eight-Year Post-High School Follow-Up Survey sample (young men: N = 587; young women: N = 841). The dotted line at Month 48 illustrates the cutpoint between the Four-Year and Eight-Year Post-High School Follow-Up Survey samples.

Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups. Differences in monthly earnings are significant at a level of 10 percent or less in 73 of the 96 months for young men and in 6 of the 96 months for young women.

Exhibit 4 and the bottom graph in Exhibit 5 depict substantially different patterns of labor market outcomes and impacts for young women in the study sample, compared with those for the young men. First, Exhibit 4 shows that monthly earnings and each of the components of monthly earnings were lower for young women in the sample than for young men (see Exhibit 3). This was true in both the Academy and the non-Academy group. For example, over the eight-year follow-up period, young men in the non-Academy group earned an average of \$403 more per month than young women in the non-Academy group. This accumulated to nearly \$39,000 (29 percent) more in earnings for young men than young women in the non-Academy group. The gender difference in the Academy group was even larger: During the 96-month follow-up period, young men in the Academy group earned about \$60,000 (43 percent) more than young women in the Academy group.

The difference in average monthly earnings between young men and young women was due, in large part, to differences in employment patterns. Comparing Exhibits 3 and 4 shows that the young women in both groups worked during fewer months and that they worked fewer hours per week than did the young men; there are also gender differences in hourly wages. Finally, as shown in Exhibit 5, real monthly earnings for young men increased much more steeply than they did for young women over the follow-up period.

Exhibit 4 shows, on average, that the Academies produced consistently positive but not statistically significant impacts on labor market outcomes for young women. Average monthly earnings and hourly wages were only slightly higher for young women in the Academy group than for young women in the non-Academy group, and there was no difference in

months employed or hours worked per week.²⁹ It should be noted that differences in impacts between young men and young women are statistically significant during the first four years of the follow-up period but are not statistically significant during the last four years of the follow-up period. In other words, although impacts on monthly earnings were larger in magnitude for the young men, the margin of error around the difference in impacts was even larger, at least in the last four years of the follow-up period. This indicates that the differences in impacts could be due to chance. Nonetheless, a consistent pattern of positive and statistically significant impacts for young men but not for young women indicates that the program's impact on labor market outcomes is concentrated among young men.

It is not clear why the Career Academies had only a marginal impact on labor market outcomes for young women. The evaluation did not find evidence that the Career Academy experience was systematically different for young women than for young men. Nor does it appear that the Career Academies had systematically different impacts on the high school experiences of young women and young men. One hypothesis, however, is that the lack of post-high school labor market impacts for young women may be an artifact of their somewhat shorter and more intermittent employment spells associated with having children or attending postsecondary education programs. This will be explored in nonexperimental analyses to be presented in a future paper.

- **Differences in impacts on labor market outcomes among three subgroups defined by students' risk of dropping out narrowed over time.** The most consistently positive impacts accrued to the high-risk subgroup.

Because prior reports from this evaluation focused on the impacts that Career Academies had on educational outcomes, they examined three subgroups defined by background

²⁹These estimates are averaged across the four-year and eight-year follow-up samples of young women (N = 854 and 841, respectively). The pattern of impacts obtained using the common overlapping sample of young women from the two follow-up surveys (N = 762) is similar to that obtained using the separate survey samples, although the size of the earnings impact for the last four years is slightly larger and statistically significant at the 10 percent level. For the common sample, the Career Academies produced an increase in young women's earnings of \$37 per month during the first four years of follow-up and \$149 per month during the last four years. Over the entire eight-year follow-up period, the Career Academies produced an impact of \$93 per month for young women, which amounts to an increase of \$1,117 per year and an accumulated \$8,935 over all eight years (in 2006 dollars). The earnings impacts for the last four years and averaged across all eight years are statistically significant at the 10 percent level for this sample. Unit 1 of the Technical Resources for this report (Kemple and Willner, 2008) includes additional details about the robustness of the earnings impacts across samples.

characteristics that are associated with dropping out of high school.³⁰ The student populations in Career Academies tend to reflect the ethnic, gender, and socioeconomic characteristics of their host high schools, which were diverse. However, little is known about the relative effectiveness of Academies for key subgroups. For example, some students who applied for Academies at the end of the eighth or ninth grade were already highly engaged in school. The Academies aspired to prepare these students for college and to provide them with career-related learning experiences and credentials that would make them more competitive in the labor market. At the other extreme, some Academy applicants were already on a path toward dropping out or having their education end with high school. Academies hoped to “reengage” such students, providing them with more applied learning experiences and encouraging them to develop higher aspirations for both education and employment.

In order to learn more about the suitability of the Academy approach for meeting the needs of students in different subgroups, the study examined three *risk subgroups*, which are defined below. Each of the characteristics used to define these subgroups was measured at the time that students applied for a Career Academy — that is, before they were randomly selected to be in the Academy or the non-Academy group.³¹

- **High-risk subgroup:** Students in the study sample (approximately 25 percent of both the Academy and the non-Academy group) who had the combination of characteristics, measured prior to random assignment, that are associated with the highest likelihood of dropping out
- **Medium-risk subgroup:** Students in the study sample (approximately 50 percent of both the Academy and the non-Academy group) who had characteristics, measured prior to random assignment, indicating that they were not particularly likely to drop out but were not highly engaged in school
- **Low-risk subgroup:** Students in the study sample (approximately 25 percent of both the Academy and the non-Academy group) who had the combination of characteristics, measured prior to random assignment, that are associated with the lowest likelihood of dropping out

³⁰Unit 5 of the Technical Resources for this report (Kemple and Willner, 2008) provides detailed impact findings for the risk subgroups in the study sample.

³¹The definition of these subgroups is based on analyses using background characteristics to predict dropping out among students in the non-Academy group. These analyses yielded an index that expresses dropout risk as the weighted average of selected background characteristics, including eighth-grade attendance rates and grades, falling behind on progress toward graduation, being retained in a prior grade, having transferred schools two or more times, and having a sibling who dropped out of high school. For a detailed discussion of the method used to define the risk subgroups, see Kemple and Snipes (2000).

Exhibit 6 shows the impacts that Career Academies had on average monthly earnings over the eight-year follow-up period for each of the risk subgroups. It indicates that the Career Academies produced impacts on monthly earnings for all three subgroups at various points in the follow-up period. Impacts on average monthly earnings (and on many of the components of earnings) are statistically significant for the high- and medium-risk subgroups during the first four years of the follow-up period. During the last four years, impacts on average monthly earnings are statistically significant for the high- and low-risk subgroups. For the high-risk subgroup, the Academies increased real earnings by an average of \$237 per month over the course of the eight-year follow-up period, or 17 percent, compared with the non-Academy group's average monthly earnings of \$1,436. Impacts on monthly earnings for the medium- and low-risk subgroups averaged about 10 percent. Overall, however, differences in impacts on monthly earnings across the three risk subgroups are not statistically significant. Thus, differences in impacts across the subgroups may be due to chance.

Impacts on Educational Attainment

This section of the report focuses on sample members' educational attainment through the end of the eight-year follow-up period. The key outcomes include high school completion status and postsecondary education enrollment and completion. High school completion statuses include receipt of a high school diploma and receipt of a General Educational Development certificate (GED). Postsecondary programs include bachelor's degree programs, associate's degree programs, and training certificate or licensing programs. To help place the educational attainment levels of the young people who are in the study sample in context, this section of the report offers a comparison with the educational attainment levels eight years after scheduled high school graduation for a representative sample of similar students from urban school districts across the country. The section then proceeds to a discussion of educational impacts for the subgroups of young men and young women. It concludes with a brief review of the impacts on educational attainment for subgroups defined by the background characteristics associated with the risk of dropping out of high school.

- Overall, the Career Academies had no impact (positive or negative) on high school completion rates, although the rates were higher than national averages.

The left side of Exhibit 7 shows the high school completion status of students in the Academy and non-Academy groups. Approximately 84 percent of the students in both

Career Academies Evaluation

Exhibit 6

Month-by-Month Impacts on Total Monthly Earnings,
by Risk Subgroup

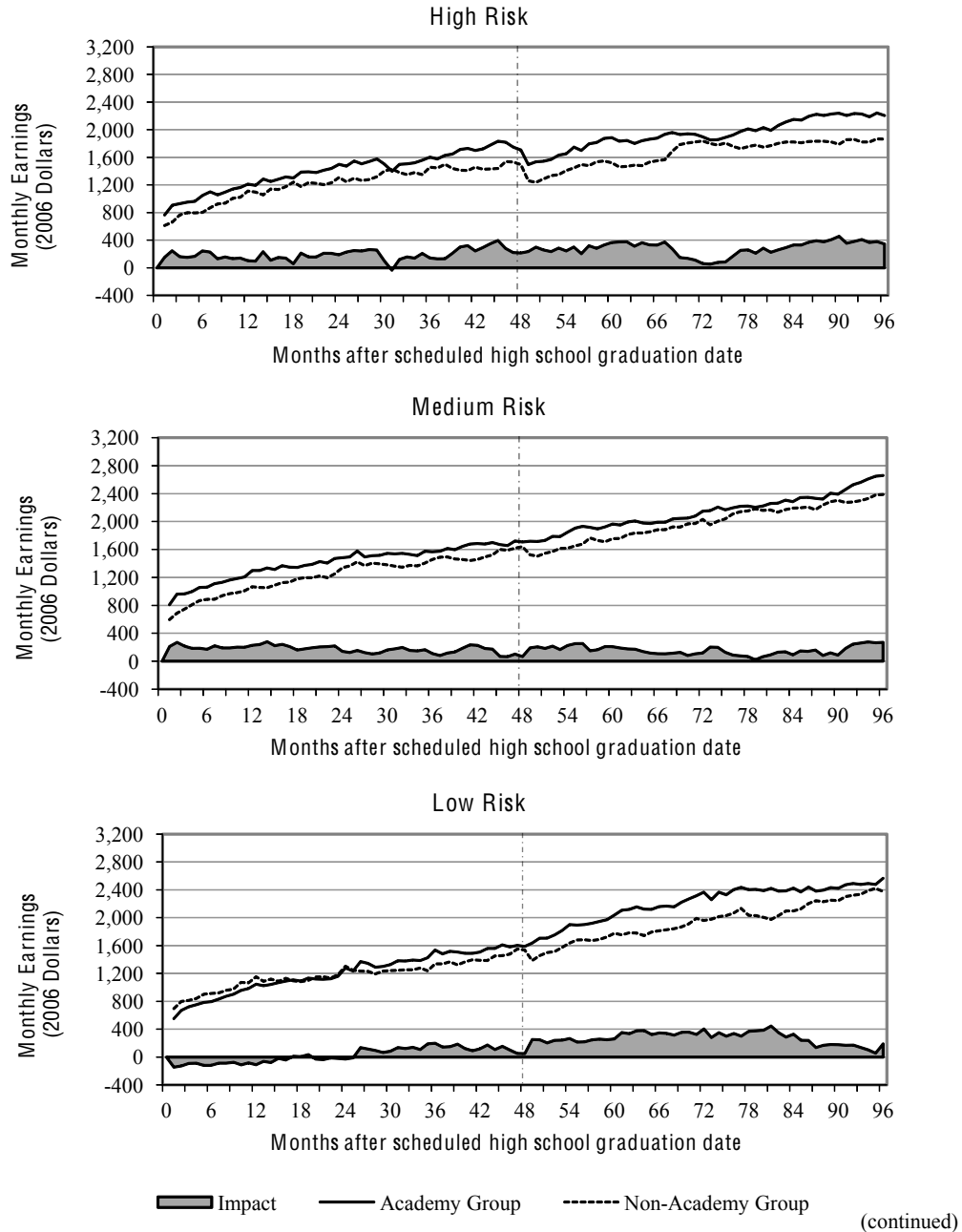


Exhibit 6 (continued)

SOURCES: MDRC calculations from the Career Academies Evaluation Four-Year and Eight-Year Post-High School Follow-Up Surveys.

NOTES: Earnings are reported in 2006 dollars.

Measures reflect the 96-month period following scheduled high school graduation for each sample member (Month 0 is June of the scheduled graduation year). Measures for Months 1 to 48 are derived from the Four-Year Post-High School Follow-Up Survey sample (high risk: N = 360; medium risk: N = 722; low risk: N = 376). Measures for Months 49 to 96 are derived from the Eight-Year Post-High School Follow-Up Survey sample (high risk: N = 343; medium risk: N = 721; low risk: N = 364). The dotted line at Month 48 illustrates the cutpoint between the Four-Year and Eight-Year Post-High School Follow-Up Survey samples.

Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups. Differences in monthly earnings are significant at a level of 10 percent or less in 37 of the 96 months for the high-risk subgroup, in 39 of the 96 months for the medium-risk subgroup, and in 22 of the 96 months for the low-risk subgroup.

groups had earned a high school diploma, and an additional 10 to 12 percent had received a GED.³²

To help place these outcome levels in a broader context, the right side of Exhibit 7 shows the high school completion status of a nationally representative group of students who had similar background characteristics and who came from school districts that are similar to those represented in the study sample.³³ The figure illustrates several important points about the performance of students in the study sample and about the conclusions one

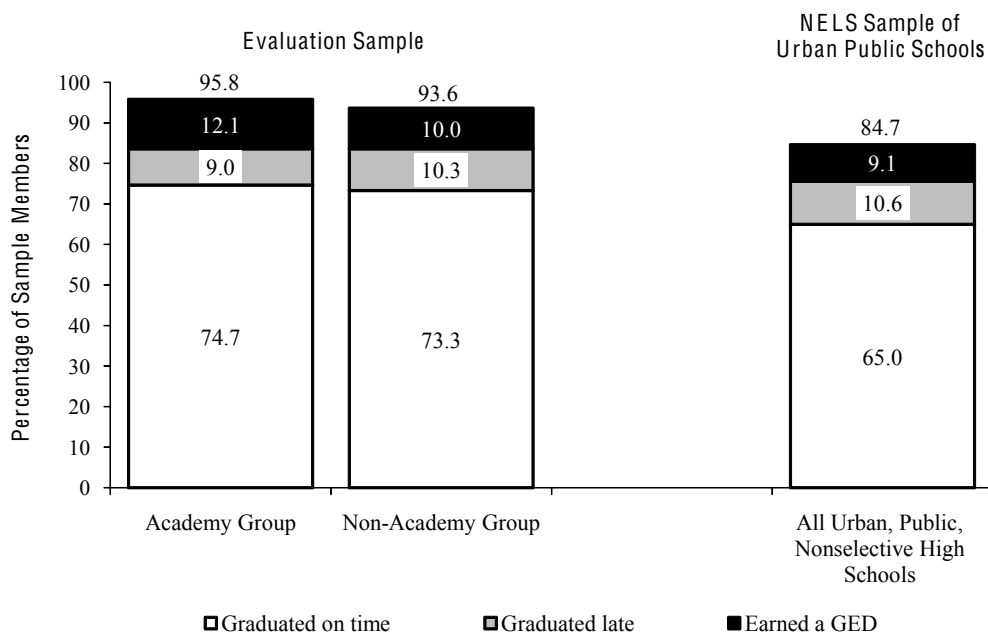
³²Unit 3 of the Technical Resources for this report (Kemple and Willner, 2008) provides detailed findings on the Career Academies' impacts on educational outcomes for the full study sample. Differences between estimates presented in this report and those presented in previous reports may be due to differences in sample composition and to attempts to reconcile conflicting reports about the specific timing of the credentials that sample members earned.

³³The percentages on the right side of Exhibit 7 are based on a sample of students from the National Education Longitudinal Study (NELS) of 1988 through 2000 (Curtin et al., 2002). NELS administered surveys in 1988, 1990, 1992, 1994, and 2000 to a nationally representative group of students who were eighth-graders in the spring of 1988 and who were scheduled to graduate from high school in 1992. Because virtually all the students in the non-Academy group completed the ninth grade, the analyses presented here include only students from the NELS sample who were tenth-graders in 1990 (that is, who did not drop out before the tenth grade). Also, to maintain comparability with the schools in the Career Academies Evaluation, only NELS students from nonselective public comprehensive high schools in urban school districts were included in the comparisons presented here. The values are regression-adjusted and mean-centered to reflect outcomes for students who had the same distribution of background characteristics as students in the Career Academies Evaluation sample. For a more detailed description of the analyses that form the basis of these findings, see Unit 2 of the Technical Resources for this report (Kemple and Willner, 2008).

Career Academies Evaluation

Exhibit 7

High School Completion Rates Eight Years After Scheduled Graduation for the Evaluation Sample and the NELS Sample



SOURCES: MDRC calculations from the Career Academies Evaluation One-Year, Four-Year, and Eight-Year Post-High School Follow-Up Surveys and the National Education Longitudinal Study (NELS), 1988-2000, public-use data files.

NOTES: All measures reflect completion status eight years after scheduled high school graduation. Students were considered on-time high school graduates if they received their diploma by the end of June in the year they were scheduled to graduate.

Measures for the evaluation sample are derived from the full Eight-Year Post-High School Follow-Up Survey sample (N = 1,428). Measures for the NELS sample are derived from the sample of youth who attended urban, public, nonselective high schools and who responded to all four waves of NELS postbaseline follow-up surveys (N = 2,042).

The NELS estimates incorporate weights that account for nonresponse and project to the population of students who were enrolled in tenth grade in 1990. In addition, the NELS estimates are adjusted to reflect a sample of students with the same distribution of background characteristics as the non-Academy eight-year follow-up evaluation sample. No tests of statistical significance were performed on differences between the evaluation sample and the NELS sample.

Impact estimates for the evaluation sample are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups within each category. There are no statistically significant differences in rates of high school graduation (overall, on-time, or late) or GED receipt.

Rounding may cause slight discrepancies in calculating sums and differences.

should or should not draw from these outcome levels. For example, students in both the Academy and the non-Academy group were substantially more likely to graduate from high school on time than similar students from similar districts across the country. Most notably, approximately 75 percent of the Academy group graduated from high school on time, compared with only 65 percent of similar students from similar school districts nationally. Though not shown in the exhibit, this difference is even more dramatic when comparing students in the evaluation sample with students in the national sample who reported being enrolled in the general curriculum track of their high school — the option typically taken by students in the study’s non-Academy group.³⁴

If the evaluation were only able to compare the performance of students in the Academy group with the performance of similar students from similar high schools across the country, one might be led to the conclusion that the Career Academies produced meaningful increases in high school graduation rates. In fact, however, the differences in high school completion rates are due to differences in other characteristics that are associated with the students’ initial motivation to apply for a Career Academy program.

In short, Exhibit 7 illustrates that the Career Academies did not have an impact (positive or negative) on high school completion rates. At the same time, the completion rates (particularly on-time graduation rates) for students in both the Academy and the non-Academy group would be considered high relative to national averages for similar students in similar schools. This suggests that Career Academies may have been attracting somewhat better prepared or more highly motivated students, as seen by superior performance by both the Academy and the non-Academy group, in relation to similar students in a nationally representative sample of similar urban public schools. Thus, the Career Academies served as a viable strategy to keep students on course toward high school completion, although they were not better at this than the alternatives available in the high schools and communities where they were located.

- Overall, the Career Academies had no impact (positive or negative) on postsecondary education enrollment and attainment rates.

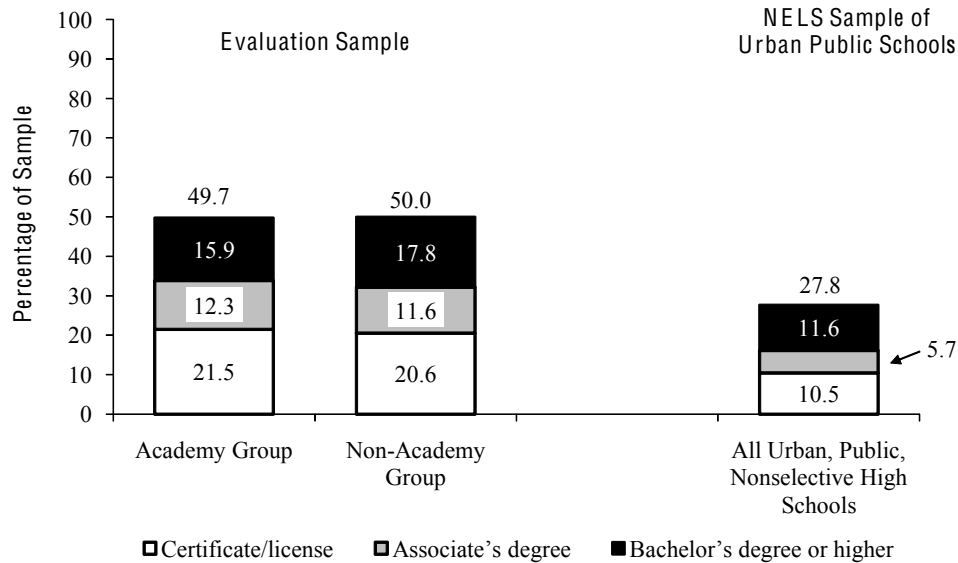
Exhibit 8 shows the percentage of Academy and non-Academy group members who had completed a postsecondary education credential by the end of the eight-year post-high school follow-up period. By the end of the follow-up period, about 50 percent of the Academy group had earned a postsecondary credential. In all, 16 percent had completed a bachelor’s degree or higher; 12 percent had completed a two-year associate’s degree; and 22 per-

³⁴See Unit 2 of the Technical Resources for this report (Kemple and Willner, 2008).

Career Academies Evaluation

Exhibit 8

Highest Postsecondary Credential Completed
Eight Years After Scheduled High School Graduation
for the Evaluation Sample and the NELS Sample



SOURCES: MDRC calculations from the Career Academies Evaluation Eight-Year Post-High School Follow-Up Survey and the National Education Longitudinal Study (NELS), 1988-2000, public-use data files.

NOTES: All measures reflect completion status at the time of the interview. Interviews for the evaluation sample began in June of the eighth calendar year following scheduled high school graduation (Month 96, assuming a June graduation) and extended through December of that year. Interviews for the NELS sample began in January of the eighth calendar year following scheduled high school graduation (Month 91, assuming a June graduation) and extended through September of that year. Thus, the NELS sample estimates may exclude some programs that were completed between January and June of the eighth year following scheduled high school graduation, whereas the evaluation sample estimates include all programs completed by June of the eighth year.

Some sample members who have completed a certificate or license have not earned a high school diploma or GED.

Measures for the evaluation sample are derived from the full Eight-Year Post-High School Follow-Up Survey sample (N = 1,428). Measures for the NELS sample are derived from the sample of youth who attended urban, public, nonselective high schools and who responded to all four waves of NELS postbaseline follow-up surveys (N = 2,042).

The NELS estimates incorporate weights that account for nonresponse and project to the population of students who were enrolled in tenth grade in 1990. In addition, the NELS estimates are adjusted to reflect a sample of students with the same distribution of background characteristics as the non-Academy eight-year follow-up evaluation sample. No tests of statistical significance were performed on differences between the evaluation sample and the NELS sample.

(continued)

Exhibit 8 (continued)

Impact estimates for the evaluation sample are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups within each category. There are no statistically significant differences in the highest postsecondary credential completed.

Rounding may cause slight discrepancies in calculating sums and differences.

cent had earned a skills training certificate or license. The non-Academy group had similar educational outcomes, and none of the minor differences between the Academy group and the non-Academy group is statistically significant. Though not shown in the exhibit, roughly 20 percent of sample members in both groups were still enrolled in a postsecondary program at the end of the follow-up period.

The postsecondary completion rates for the study sample are quite high compared with national averages for similar students from similar urban school districts. Exhibit 8 indicates that 50 percent of the students in the Academy and non-Academy groups had earned a postsecondary credential within eight years of scheduled high school graduation, compared with 28 percent of similar students nationally. Both the Academy group and the non-Academy group outpaced similar students nationally in each of the three categories of postsecondary credentials. Note that this does not imply that the participating high school and their Career Academies are better at preparing students for postsecondary education than the average urban high school. Rather, the difference in attainment levels is due, in large part, to the Academies' attracting students who are likely to do well regardless of whether they end up in an Academy program.

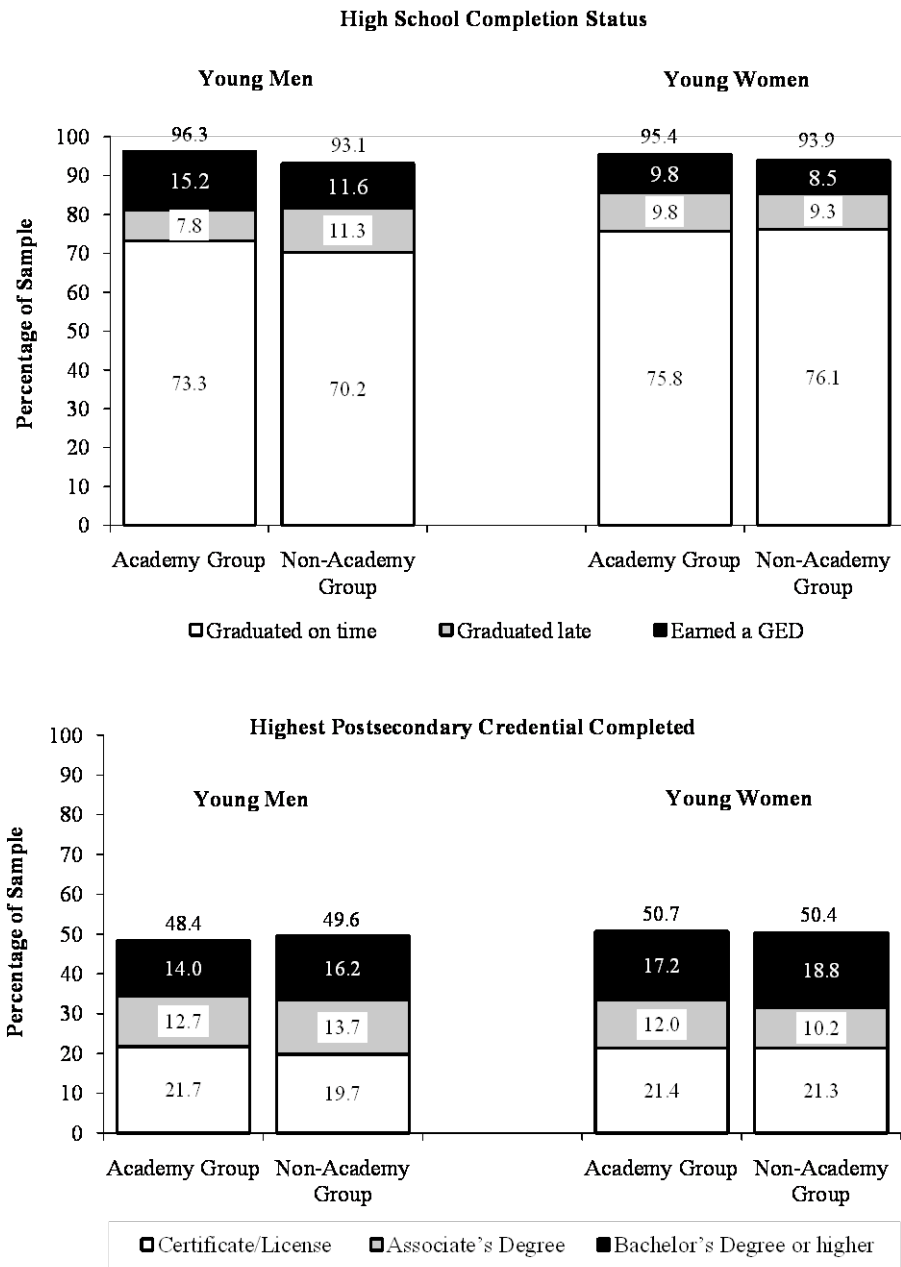
- Educational attainment levels and impacts were generally similar for young men and young women in the study sample. The Career Academies did not have systematic impacts on educational attainment for either young men or young women, although over 80 percent of both groups earned a high school diploma, and roughly 50 percent earned a postsecondary credential.

Exhibit 9 shows the Career Academy impacts on high school completion status and on postsecondary education credentials earned as of the end of the eight-year post-high

Career Academies Evaluation

Exhibit 9

**Impacts on Educational Attainment
Eight Years After Scheduled High School Graduation,
by Gender**



(continued)

Exhibit 9 (continued)

SOURCES: MDRC calculations from the Career Academies Evaluation One-Year, Four-Year, and Eight-Year Post-High School Follow-Up Surveys.

NOTES: All measures reflect completion status eight years after scheduled high school graduation. Students were considered on-time high school graduates if they received their diploma by the end of June in the year they were scheduled to graduate. Some sample members who have completed a certificate or license have not earned a high school diploma or GED.

Measures are derived from the Eight-Year Post-High School Follow-Up Survey sample (young men: N = 587; young women: N = 841).

Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values.

A two-tailed t-test was applied to differences between the Academy and non-Academy groups. There are no statistically significant differences in rates of high school graduation (overall, on-time, or late) or GED receipt or in highest postsecondary credential completed.

Rounding may cause slight discrepancies in calculating sums and differences.

school follow-up period for the young men and young women in the study sample.³⁵ The top half of the exhibit indicates that there were only small differences in the high school completion rates of both the young men and the young women in the Academy and the non-Academy groups.³⁶ For both genders, the Academy group was equally as likely to earn a high school diploma as the non-Academy group and was slightly more likely to earn a GED. Young men were slightly less likely to earn a high school diploma than young women, and they were somewhat more likely to earn a GED instead. None of the differences between the two groups is statistically significant.

The bottom half of Exhibit 9 indicates that roughly 50 percent of young men and young women in the Academy group earned a postsecondary credential. Although the young men in the non-Academy group were somewhat more likely to have earned a credential than their Academy group counterparts, the difference is not statistically significant. The distribution of postsecondary credentials was also similar for young men and young women and across the Academy and non-Academy groups. For young men in the Academy group, for example, 14 percent completed a bachelor's degree or higher; 13 percent earned an associate's degree; and 22 percent earned a skills training certificate or license. For

³⁵Unit 4 of the Technical Resources for this report (Kemple and Willner, 2008) includes supplementary tables that provide detailed findings on the Career Academies' impacts on educational outcomes for young men and young women.

³⁶None of the differences that are displayed in Exhibit 9 are statistically significant.

young women in the Academy group, 17 percent completed a bachelor's degree or higher; 12 percent earned an associate's degree; and 21 percent earned a skills training certificate or license. None of the differences between the Academy and non-Academy groups is statistically significant.

One implication of the pattern of findings on educational attainment for the young men is that the substantial impacts on labor market outcomes did not come at the expense of reducing their access to and completion of postsecondary education credentials.

- The Academies had no systematic impact (positive or negative) on educational attainment for the high-, medium-, or low-risk subgroups.

Although there were striking differences in educational attainment among the three risk subgroups that have been a focus of the Career Academies Evaluation, the attainment levels of students in the Academy groups were very similar to those of the non-Academy groups.³⁷ For example, while 70 percent of the high-risk Academy group earned a high school diploma, 84 percent of the medium-risk subgroup and 97 percent of the low-risk subgroup did so. Despite these differences in outcome levels across subgroups, the Career Academies did not increase or decrease the likelihood of receiving a high school diploma for any of the subgroups. Specifically, 68 percent of the high-risk non-Academy group earned a high school diploma, as did 85 percent of the medium-risk and 99 percent of the low-risk group. None of the differences between the Academy and non-Academy groups is statistically significant.

Similarly, among those in the Academy group, 38 percent of the high-risk group had earned a postsecondary credential, while 50 percent of the medium-risk subgroup and 61 percent of the low-risk subgroup did so. By comparison, among those in the non-Academy group, 39 percent of the high-risk subgroup earned a postsecondary credential, as did 51 percent of the medium-risk subgroup and 57 percent of the low-risk subgroup. Again, none of the differences between the Academy and non-Academy groups is statistically significant.

There was also variation across the three risk subgroups in the percentage of sample members who were still enrolled in a postsecondary education program at the end of the eight-year follow-up period. This was the case for about 14 percent of the high-risk Academy group and for approximately 18 percent of the medium-risk subgroup and 27 percent of the low-risk subgroup. The percentages for the respective non-Academy groups were simi-

³⁷Unit 5 of the Technical Resources for this report (Kemple and Willner, 2008) includes supplementary tables that provide detailed findings on the Career Academies' impacts on educational outcomes for the risk subgroups.

lar, and differences between Academy and non-Academy groups are not statistically significant.

Finally, there were slight differences in specific patterns of postsecondary educational attainment across the risk subgroups, although the individual impacts are not generally statistically significant. For example, for the high-risk subgroup, Career Academies produced a slight decrease in the likelihood of earning a bachelor's degree and a slight (though not statistically significant) increase in earning a skills training certificate or license.³⁸ For the low-risk subgroup, the Academies produced a slight increase in earning an associate's degree.

Impacts on Family Formation and Other Social Adjustment Outcomes

The final set of findings addressed in this report focuses on several indicators of social adjustment, including marital status, parenting status, living arrangements, public assistance receipt, access to health insurance, voter registration, and involvement with the criminal justice system. Career Academies may be able to improve these types of outcomes because of their focus on forging strong interpersonal supports for students during high school and their investment in facilitating healthy transitions to productive opportunities after high school.

- The Career Academies produced an increase in the percentage of young people living independently with children and a spouse or partner. While these impacts were similar for both young men and young women in the study sample, young men also experienced positive impacts on marriage and being custodial parents.

Exhibit 10 lists several indicators of social adjustment reported by sample members on the follow-up survey.³⁹ Career Academies had their most striking impact on indicators of family formation. In all, one-third of the Academy group were living independently with their children and a spouse or partner, compared with 27 percent of the non-Academy group. This impact of 6 percentage points from the Career Academies represents a 23 percent increase in two-parent households over and above the rates for the non-Academy

³⁸For the high-risk subgroup, the impact on earning a bachelor's degree is statistically significant. Readers should be cautious when interpreting this isolated statistically significant result because of the overall pattern of small and not statistically significant impacts.

³⁹Supplementary tables that provide detailed findings on the Career Academies' impacts on social adjustment indicators for the gender subgroups and the risk subgroups can be found in Units 4 and 5, respectively, of the Technical Resources for this report (Kemple and Willner, 2008).

Career Academies Evaluation

Exhibit 10

Impacts on Family Formation and Other Social Adjustment Outcomes
Eight Years After Scheduled High School Graduation
for the Full Sample

Outcome (%)	Academy Group	Non-Academy Group	Impact	P-Value	Percentage Change
Marital status					
Married and living together	38.0	33.7	4.3 *	0.081	12.8
Single	55.6	60.0	-4.5 *	0.076	-7.4
Divorced, separated, or widowed	6.4	6.3	0.1	0.914	2.3
Parental status					
Custodial parent	50.8	43.9	6.9 ***	0.006	15.7
Noncustodial parent	5.1	7.8	-2.7 **	0.026	-34.5
Not a parent	43.9	48.0	-4.1	0.112	-8.5
Living situation					
Lives independently with child/children and partner	33.1	26.9	6.2 **	0.010	23.1
Lives independently with no children	30.0	32.4	-2.4	0.319	-7.5
Lives independently with child/children but not partner	10.1	9.4	0.7	0.647	7.2
Lives with parent(s) or guardian(s), with or without children	26.8	31.3	-4.5 *	0.062	-14.3
Ever gone without health insurance in past year	29.1	31.7	-2.6	0.296	-8.1
Received TANF or cash assistance in past year	6.8	6.6	0.2	0.851	3.7
Received food stamps in past year	12.2	12.2	0.0	0.987	0.2
Registered to vote	73.7	72.4	1.3	0.565	1.8
Any recent illegal or drug-related activity ^a	10.3	9.7	0.5	0.733	5.5
Any recent illegal activity, excluding drug use	5.6	5.4	0.3	0.809	5.5
Sample size (N = 1,424)	781	643			

SOURCE: MDRC calculations from the Career Academies Evaluation Eight-Year Post-High School Follow-Up Survey.

NOTES: Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values. A two-tailed t-test was applied to differences between the Academy and non-Academy groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; and * = 10 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

^aThis measure includes illegal drug use, breaking the law (other than traffic violations), and any arrests or convictions in the past year.

group. The exhibit also shows that 38 percent of the Academy group were married and living with their spouse and that 51 percent were custodial parents eight years after scheduled graduation from high school. This represents an increase in marriage rates of 4 percentage points and an increase in being a custodial parent of 7 percentage points, relative to the non-Academy group. Both of these impacts are statistically significant.

Exhibit 11 indicates that the Career Academy impacts on marriage and being a custodial parent were somewhat larger for young men than they were for young women. Specifically, the Academies increased marriage rates for young men by 9 percentage points (from 27 percent for the non-Academy group to 36 percent for the Academy group) and increased custodial parenthood by nearly 12 percentage points (from 25 percent for the non-Academy group to nearly 37 percent for the Academy group). By contrast, marriage rates for young women increased by about 1 percentage point (from 38 percent to 39 percent), and custodial parenthood rates increased by about 4 percentage points (from 57 percent to 61 percent); neither of these increases is statistically significant. The Career Academies did significantly decrease the percentage of young women who were still living with a parent or guardian by 9 percentage points; only 24 percent of these young women were living with their parents, compared with 33 percent of the young women in the non-Academy group.

The Career Academies did not have a systematic impact (positive or negative) on the other social adjustment indicators listed in Exhibit 10. Members of both groups were very unlikely to have received public assistance or to be involved with the criminal justice system. These findings are consistent with the very high rates of engagement in either education or employment throughout the follow-up period. In fact, although not shown in the exhibit, those in the Academy group were either attending school or working during 83 of the 96 months in the eight-year follow-up period. The high rates of engagement in productive activities and the low rates of risk-taking behaviors suggest that the sample members, on average, were making quite successful transitions to adulthood.

Discussion of the Findings

The findings discussed above suggest several potentially important implications for education policy and practice.

- The findings provide convincing evidence that increased investments in **career-related experiences during high school can improve students' postsecondary labor market prospects.**

A growing body of descriptive analysis suggests that increases in vocational course-taking and engagement in higher-quality work-based learning programs during high school

Career Academies Evaluation
 Exhibit 11
 Impacts on Family Formation
 Eight Years After Scheduled High School Graduation,
 by Gender

Outcome (%)	Academy Group	Non-Academy Group	Impact	P-Value	Percentage Change
<u>Young men</u> (N = 586)					
Marital status					
Married and living together	36.0	27.0	9.0 **	0.020	33.4
Single	59.3	65.6	-6.3	0.114	-9.6
Divorced, separated, or widowed	4.7	7.4	-2.7	0.157	-36.8
Parental status					
Custodial parent	36.6	25.2	11.5 ***	0.003	45.6
Noncustodial parent	11.5	17.9	-6.4 **	0.023	-35.9
Not a parent	51.9	56.6	-4.7	0.242	-8.3
Living situation					
Lives independently with child/children and partner	30.2	23.2	7.0 *	0.058	30.4
Lives independently with no children	35.8	45.7	-9.9 **	0.015	-21.6
Lives independently with child/children but not partner	2.8	1.9	0.9	0.476	44.6
Lives with parent(s) or guardian(s), with or without children	31.2	29.2	2.0	0.609	6.7
<u>Young women</u> (N = 838)					
Marital status					
Married and living together	39.4	38.0	1.5	0.655	3.9
Single	52.9	56.5	-3.5	0.284	-6.2
Divorced, separated, or widowed	7.6	5.6	2.1	0.250	36.9
Parental status					
Custodial parent	60.8	57.1	3.7	0.279	6.5
Noncustodial parent	0.7	0.4	0.2	0.681	51.3
Not a parent	38.3	42.4	-4.0	0.238	-9.5
Living situation					
Lives independently with child/children and partner	35.1	29.0	6.0 *	0.064	20.8
Lives independently with no children	25.9	23.3	2.6	0.387	11.3
Lives independently with child/children but not partner	15.3	15.1	0.1	0.956	0.9
Lives with parent(s) or guardian(s), with or without children	23.7	32.5	-8.8 ***	0.005	-27.0

(continued)

Exhibit 11 (continued)

SOURCE: MDRC calculations from the Career Academies Evaluation Eight-Year Post-High School Follow-Up Survey.

NOTES: Impact estimates are regression-adjusted to control for background characteristics of the sample and for the clustering of students within schools and random assignment years. Values shown for the Academy group are unadjusted mean values; values shown for the non-Academy group are calculated by subtracting the impact estimate from the Academy group's unadjusted mean values.

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

Rounding may cause slight discrepancies in calculating sums and differences.

are associated with better labor market outcomes after high school.⁴⁰ Much of this research focuses only on the correlation between high school course-taking patterns or work experiences and later labor market experiences, making it difficult to make valid causal inferences about the relationships.

The findings discussed in this report provide some of the most convincing evidence yet that a high school-based intervention can produce substantial and sustained improvements in postsecondary labor market prospects. In fact, the magnitude of the impacts on monthly earnings for young men exceed differences in earnings that have been found in other research comparing young workers who have two years of community college with those who have only a high school diploma.⁴¹ While one should not conclude from this that Career Academies can substitute for postsecondary education below the level of an associate's degree, the findings seem to suggest that Academies do produce benefits in the labor market that are commensurate with those associated with continuing investment in postsecondary programs.

While this report provides strong evidence that the Career Academies produced real improvements in labor market prospects (particularly for young men), preliminary analyses are now being conducted to examine *how* the programs produced these effects and *which features* were likely to have contributed most to the impacts.⁴² Preliminary findings shed

⁴⁰See Stern et al. (1992); Urquiola et al. (1997); Stern et al. (1994); Stern, McMillion, Hopkins, and Stone (1990).

⁴¹See Marcotte, Bailey, Borkoski, and Kienzl (2005).

⁴²To explore these and other issues, MDRC will conduct further analyses using the data that have been collected for the Career Academies Evaluation. These analyses, involving both experimental and quasi-experimental methods, will include a synthesis of findings across the full eight years of follow-up for the study and a deeper examination of the sources of the impacts that the programs produced (or explorations for why the programs did not produce impacts — for example, on labor market outcomes for young women).

some light on these issues. The analyses focus on the relationship between Career Academy impacts on high school experiences and subsequent impacts on postsecondary earnings. This comparison provides suggestive evidence that substantial increases in students' exposure to career awareness and development activities were associated with more substantial labor market impacts. Such career awareness and development activities included job-shadowing, work-based learning activities, career fairs, guest speakers, and career-related guidance. In other words, cohorts of students in the study sample who experienced substantial increases in exposure to these types of activities were also more likely to have experienced strong, positive labor market impacts.

It is important to note, however, that these findings are only suggestive and do not account for other high school experiences that may be affected by the Career Academies, which may, in turn, have an impact on postsecondary earnings. For example, longer-term earnings were also associated with measures of personalized support that students reported during high school and with their completion of a curriculum consisting of both academic core courses and a sequence of career-related courses. However, it is not clear whether the personal relationships are further proxies for the Academies' overall effect on high school experiences or whether the relationship between career awareness and development activities and postsecondary earnings may be muted or enhanced depending on the level of personalization or whether the Academies enabled students to complete a basic academic core curriculum. For example, some Academies may have produced substantial increases in vocational and career-related course-taking that were accompanied by a reduction in academic course-taking. These programs may exhibit small or negligible impacts on labor market outcomes.

In addition to further analysis of the data collected for this study, it is important that policymakers and practitioners continue to invest in building evidence about how best to implement the core components and underlying principles of the Career Academy model. For example, it seems especially important to learn more about whether and how the Academies' employer partnerships and accompanying career awareness and development activities provide students with added leverage in the postsecondary labor market, over and above the benefits students may gain from postsecondary education. Toward this end, it may be useful to conduct systematic tests of initiatives aimed at strengthening employer partnerships and expanding student access to work-based learning opportunities and work-related experiences.

- The Career Academies in this study demonstrate the feasibility of accomplishing the goals of school-to-career and career-technical education without compromising academic goals.

Like most approaches to education reform, the Career Academy model has many and varied goals. Career Academies aspire to prevent students from dropping out of high school and to prepare them for college and other postsecondary education opportunities. At the same time, Career Academies provide students with an explicit introduction to the world of work and try to furnish them with skills and connections to help them navigate the transition from high school to successful employment. Many critics of school-to-work transition initiatives and career-technical programs contend that programs like Career Academies track students into classes and work experiences that orient them toward immediate entry into the labor market. Such criticism sometimes suggests that this orientation comes at the expense of preparation for and opportunities to attend college.

In this study, however, the high rates of completing postsecondary education credentials and the sustained impacts on employment and earnings suggest that such tradeoffs need not occur. At the same time, the findings indicate that although the Academies provided a viable pathway to postsecondary education, they did not create better opportunities than those offered in the regular high school environment. This is consistent with previous findings from the evaluation, which indicate that Career Academies offered essentially the same set of academic courses and course requirements as those offered in the rest of the high school. In addition, Career Academy students were typically assigned to the regular high school guidance counselors and college placement services if they were interested in going on to postsecondary education. With the continued emphasis on academic performance and college preparation, Career Academies face a special challenge to increase academic rigor while maintaining their distinctive contribution to students' preparation for the labor market. Rigorous evidence is beginning to emerge that suggests that integrating academic content with applied learning activities can improve student achievement. Career Academies can provide a unique platform for such integration, but high-quality integration is likely to require intensive professional development for teachers and careful coordination of shared planning time and student scheduling. In addition, the Academies' partnerships with local employers can also offer students unique guidance about the education and skill requirements of various occupations in their career field. These experiences may serve to increase students' aspirations and motivate them to pursue postsecondary education.

- The findings suggest that Career Academies can make special efforts to serve students who are at risk of dropping out of high school without compromising their capacity to provide college access opportunities, as well as labor market impacts, for all students.

Earlier findings from the Career Academies evaluation indicated that high-risk students experienced modest reductions in dropout rates and increases in attendance and course-taking (although these did not translate into impacts on graduation or postsecondary

enrollment rates). Earlier findings also showed that the Academies' labor market impacts were particularly strong among the high- and medium-risk subgroups. In fact, throughout the eight-year post-high school follow-up period, the high-risk subgroup experienced the most consistent and positive impacts on labor market outcomes. All of this occurred without a systematic decline in access to postsecondary education opportunities for the low-, medium-, or high-risk students.

While the Career Academies in this study did serve a range of high-, medium-, and low-risk students, comparisons with national samples of similar youth suggest that, on average, the Academies tended to attract students who were highly likely to graduate from high school and go on to complete a postsecondary education credential even if they were not selected to enroll in the programs. At the same time, even though they tended to benefit most from the Academy experience, higher-risk students were the most likely to leave their Career Academies before the end of their twelfth-grade year. This may have diminished the potential for strong effects on academic achievement and educational attainment and an even larger impact on labor market outcomes. These findings suggest that Career Academies should sustain their commitment to serving a diverse group of students, but that they can make greater efforts to reach out more systematically to recruit and retain a larger proportion of high-risk students. At the same time, however, it will be important to avoid the potential stigma and lowered expectations from teachers, students, and parents if Academies were to target higher-risk students exclusively.

Several school districts and school reform initiatives around the country are now attempting to convert entire high schools into clusters of Career Academies. Instead of giving students the option of enrolling in traditional general or vocational programs, these wall-to-wall Academies offer students a choice among different Academies that combine academic and career-related curricula. This approach may have the greatest potential for maximizing high-risk students' access to the programs (because all students would be required to enroll in an Academy) while ensuring that the Academies include a broad mix of students. These high schools and reform initiatives, however, face the related challenges of preventing high-risk students from being tracked into poorly implemented Academies and of ensuring a high level of implementation on a larger scale.

- The findings from this study are most likely to apply to Career Academies, like those in the study sample, that are able to reach a threshold level of fidelity to the core elements of the model. Until further research is available about the specific components and variations in program implementation strategies, policymakers and practitioners should be sure to implement the full model with fidelity if they hope to achieve comparable effects.

As noted at the outset of this report, the Career Academies in this study were selected, in part, because they had reached at least a threshold level of fidelity to the core features of the Career Academy model — smaller learning communities, academic curricula combined with career-themed course sequences, and employer partnerships. Over the past 10 years or so, however, the Career Academy model has been called upon to serve an increasing variety of high school reform goals, and its components have been touted as potential solutions to many problems facing low-performing high schools. As one of the few high school initiatives with rigorous evidence of effectiveness (albeit concentrated on postsecondary labor market outcomes), the Career Academy model has attained a particularly prominent stature in the field of high school reform. In fact, organizations that support the development of Career Academies have come under increasing pressure to expand the use of the model's individual components with the expectation that elements of the program can produce effects similar to those found in this study. In fact, it is not clear that modified versions of the Career Academy approach can produce impacts on postsecondary labor market outcomes, much less improvements in academic achievement or educational attainment.

The continued expansion of Career Academy programs presents the model and its supporters with both opportunities and risks. For instance, in the past five years or so, efforts to convert large comprehensive high schools into smaller learning communities have increased dramatically. Because of the positive findings from this evaluation, many schools and districts have looked to the Career Academy model and its supporters to help them with this conversion process. With the Career Academy moniker, schools can claim that they have undertaken an evidence-based reform initiative, even though this research does *not* indicate that direct long-term effects come from the smaller learning community component of the model or from programs that do not attempt to implement the full complement of Academy features.

On the other hand, the available evidence does suggest that Career Academies that faithfully implement the three core components of the model are well positioned to have effects on labor market outcomes and may provide an adequate foundation for enhancements that might have an impact on educational attainment. In the final analysis, although this evaluation provides solid evidence regarding the potential impact of Career Academies, further demonstrations and evaluations of Academy variants should be undertaken to determine which elements might be most critical to the model's effectiveness and which elements can be improved or enhanced to further improve its effectiveness.

- The Career Academies Evaluation demonstrates the feasibility, benefits, and challenges of conducting a longitudinal random assignment evaluation of a prominent high school reform approach.

The Career Academies Evaluation is one of the few longitudinal random assignment evaluations of a school-based education intervention. Without the random assignment research design and the extended follow-up period, it is likely that an alternative approach to the study would have yielded very different and potentially misleading findings and conclusions. For example, the statistical comparisons with national data might suggest that the Career Academies represent a substantially better educational opportunity than many alternatives available to similar students from similar schools and school districts across the country. The availability of a valid control group — determined by the random assignment design of the evaluation — shows that the Career Academies in this study tended to attract students (by a combination of self-selection and program selection) who were likely to do well in high school and postsecondary education even if they had not been exposed to the Career Academies. This is the best counterfactual against which to assess the true added value of interventions like Career Academies that allow for student or program self-selection.

This study also benefited from the commitment of funders who sustained their investment in a unique 15-year knowledge-building endeavor. The long-term follow-up provided insights into many factors that influence the transition from adolescence to adulthood and enabled the study to determine the extent to which young people's experiences in the Career Academies changed the nature of this transition. This type of follow-up is rare for any type of study but is even more unusual in the context of a rigorous random assignment study. Given the changing pattern of findings on educational attainment and the emergence of impacts on labor market outcomes well into the postsecondary years, a short-term study would likely have left policymakers and practitioners with a very different — and potentially misleading — set of implications.

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EARLIER MDRC PUBLICATIONS ON CAREER ACADEMIES

The Career Academy approach to high school reform calls for restructuring large schools into smaller learning communities, improving instruction, and preparing students for transitions to further education or work. Career Academies have been implemented in an estimated 2,500 high schools across the United States. Begun in 1993, MDRC's evaluation of Career Academies — the first to use a random assignment research design — aims to produce reliable evidence about the approach's effects on students' performance and their move from high school into the workforce and postsecondary education.

Career Academies

Impacts on Labor Market Outcomes and Educational Attainment

2004. James J. Kemple with Judith Scott-Clayton

Career Academies

Course Taking, Test Preparation, and Career Academy Programs — Findings from a Field Study

2002. Thomas J. Smith

Career Academies

Getting Connected: A Resource Directory for Career Academies

2002. Career Academy Support Network and MDRC

Career Academies

Impacts on Students' Initial Transitions to Post-Secondary Education and Employment

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Career Academies

Impacts on Students' Engagement and Performance in High School

2000. James J. Kemple, Jason C. Snipes

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MDRC is a nonprofit, nonpartisan social and education policy research organization dedicated to learning what works to improve the well-being of low-income people. Through its research and the active communication of its findings, MDRC seeks to enhance the effectiveness of social and education policies and programs.

Founded in 1974 and located in New York City and Oakland, California, MDRC is best known for mounting rigorous, large-scale, real-world tests of new and existing policies and programs. Its projects are a mix of demonstrations (field tests of promising new program approaches) and evaluations of ongoing government and community initiatives. MDRC's staff bring an unusual combination of research and organizational experience to their work, providing expertise on the latest in qualitative and quantitative methods and on program design, development, implementation, and management. MDRC seeks to learn not just whether a program is effective but also how and why the program's effects occur. In addition, it tries to place each project's findings in the broader context of related research — in order to build knowledge about what works across the social and education policy fields. MDRC's findings, lessons, and best practices are proactively shared with a broad audience in the policy and practitioner community as well as with the general public and the media.

Over the years, MDRC has brought its unique approach to an ever-growing range of policy areas and target populations. Once known primarily for evaluations of state welfare-to-work programs, today MDRC is also studying public school reforms, employment programs for ex-offenders and people with disabilities, and programs to help low-income students succeed in college. MDRC's projects are organized into five areas:

- Promoting Family Well-Being and Child Development
- Improving Public Education
- Raising Academic Achievement and Persistence in College
- Supporting Low-Wage Workers and Communities
- Overcoming Barriers to Employment

Working in almost every state, all of the nation's largest cities, and Canada and the United Kingdom, MDRC conducts its projects in partnership with national, state, and local governments, public school systems, community organizations, and numerous private philanthropies.