

**The National Academy Foundation's
Career Academies:
Shaping Postsecondary Transitions**

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TABLE OF CONTENTS

INTRODUCTION.....	1
THE RATIONALE FOR CAREER ACADEMIES.....	3
METHODOLOGY.....	9
OVERVIEW.....	9
STUDY POPULATION AND SAMPLES.....	10
Site Selection.....	10
Senior Samples.....	13
Alumni Sample.....	16
PROCEDURES.....	17
Measuring Outcomes.....	18
Analyzing Program Outcomes.....	20
FINDINGS.....	21
STUDENT SELECTION AND MOTIVATION.....	21
COMPARISON OF THE EXPERIENCES OF ACADEMY AND NONACADEMY STUDENTS.....	24
PROGRAM IMPACT ON STUDENTS IN SCHOOL AND BEYOND.....	29
PERCEPTIONS OF TEACHING AND PROGRAM PARTICIPATION BENEFITS OF THE ACADEMY EXPERIENCE..	29
SCHOOL ENGAGEMENT.....	31
ACADEMIC ACHIEVEMENT.....	34
POSTSECONDARY EDUCATIONAL PLANS.....	36
INITIAL COLLEGE-GOING ACCEPTANCE AND EXPERIENCES.....	37
COLLEGE ACCEPTANCE BY THE END OF THE SENIOR YEAR AND INITIAL COLLEGE ENROLLMENT AMONG ALUMNI.....	40
EXPLORING THE ACADEMY INFLUENCE ON FOUR-YEAR COLLEGE PLANS AND ACCEPTANCE.....	42
COLLEGE ACCEPTANCE DIFFERENCES FOR ACADEMIES OF FINANCE AND TRAVEL AND TOURISM SENIORS	45
EDUCATIONAL EXPERIENCES OF ACADEMY ALUMNI.....	48
EMPLOYMENT EXPERIENCES.....	50
INITIAL EMPLOYMENT OUTCOMES.....	51
ALUMNI EMPLOYMENT OUTCOMES.....	52
EMPLOYMENT IN ACADEMY-RELATED OCCUPATIONS AND INDUSTRIES.....	54
CONCLUSIONS.....	55
REFERENCES.....	65
APPENDIX A: ADDITIONAL TABLES.....	69
APPENDIX B: ANALYSIS OF CHANGES IN STUDENTS’ CAREER INTERESTS BETWEEN NINTH AND TWELFTH GRADES.....	83

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INTRODUCTION¹

The career academy model—a school-within-a-school, career-focused program of study often with related work experience—has spread rapidly throughout the United States in the last 20 years, in large part because educators and policymakers believe it to be a promising approach for encouraging academic achievement and facilitating students' transition to college and careers. Advocates argue that the integrated curriculum and contextualized academics promoted by the academy model can improve student learning and engagement, while work-based learning² and business involvement broaden the boundaries of high school and provide students with the opportunity to enrich and apply their academic coursework outside of the classroom.

Career academies generally include school-based and work-based components; make use of an industry-themed, contextualized curriculum; and have a paid summer internship and supplemental career readiness and exploration activities. However, with the expansion of career academies, there is considerable variation in implementation. The National Academy Foundation (NAF), which sponsors hundreds of academies nationwide, endeavors to limit variation and control quality. Career academies in the NAF network are to implement all recommended elements of the career academy model, elements that are designed to support students academically, help them prepare for their postsecondary career and college transition, and support them personally while in school.

NAF was established in 1989 as a central organization to facilitate the quality and expansion of academies of finance and of travel and tourism nationwide. Presently, NAF sustains a national network of career academies focusing on finance, travel and tourism, and information technology, providing curricular support, professional development, and

technical assistance.³ NAF is one of the largest career academy networks in the country and the only one that is national in scope. The other two large-scale academy networks are the Philadelphia Academies and the California Partnership Academies. In addition, several whole school reform models—Talent Development and High Schools That Work—include elements of the career academy model.

NAF-affiliated career academies are distinctive, however, because of NAF's emphasis on: (1) inclusion of all core career academy components and provision of quality contextualized curriculum to its network members; (2) business involvement through high-profile national-level firms as well as local advisory boards who provide paid student internships; (3) professional development through NAF conferences, materials and local activities. For the NAF career academy program, the primary program experiences are four or more core academy courses that are career-contextualized, project-based and offer student-centered instructional practices during the junior and senior years (although some programs begin earlier); a computer or technology course; a paid six-week summer internship with a private company; a college-level course; and exposure to a variety of college and career planning activities.

NAF acts as an intermediary between schools and businesses, and supports the implementation of all the components noted above in its programs. As a result of their membership in a national network, and their agreement to adhere to common program characteristics, NAF-affiliated academies are likely to offer a more homogeneous and comprehensive experience than non-affiliated, stand-alone academies.

While other studies have examined academies in general, this is the first that looks specifically at NAF academies. This report summarizes the findings from a study of

ten⁴ longstanding NAF academies using multiple sources of information and evidence. Using data from extensive interviews with academy administrators and faculty, we describe the NAF academy experience. From surveys of academy seniors and interviews of academy alumni, we present participants' assessments of their own academy experiences; their post-high school college plans and employment; their perceptions of the influence of the academy experience on career interests; and we describe the employment and educational experience of NAF alumni. Using a comparison group of other (nonacademy) graduating seniors, we examine differences in their educational experiences and post-high school educational plans. Finally, we examine these outcomes in light of student GPA and attendance information.

THE RATIONALE FOR CAREER ACADEMIES

Current national concerns about high school curriculum, structure, and purpose make close examination of the academy model critical. Perhaps the most prominent concern is related to curriculum content and is reflected in the current emphasis on raising academic standards and creating clearer academic priorities for all students (The Education Trust, 2001). Building on the call for higher standards in the early 1980s (National Commission on Excellence in Education, 1983), and recent research showing that the quality of the high school curriculum is the best predictor of students' college success (Adelman, 1999; The Education Trust, 2001), the current trend has been to promote high academic standards for all students, including those not traditionally college bound.

Another concern is engagement—how to keep students motivated and interested in doing well in school. Educators have been exploring ways to create more options for

high school students, in the hopes of engaging them in school and increasing their academic achievement, particularly during the senior year of high school when interest seems to flag the most (National Commission on the High School Senior Year, 2001a; 2001b). Curricular and organizational options such as magnet programs, academic houses, and career academies appear to be promising ways to add variety and challenge to the secondary curriculum, and have been advocated by many high school reform models (see McPartland, Belfanz, Jordan, & Legters, 1998). The promise of such models appears to be bolstered by research indicating that students learn most effectively if they are taught skills in the context in which they will use those skills (Collins, Brown, & Newman, 1989; Lave, 1988; Lave & Wenger, 1991; Resnick, 1987). Thus, it is presumed that the organizing themes and applied nature of the academic coursework promoted by the career academy model would contribute to student learning and achievement at least in the contextualized courses.

Third, there has been concern about how the organization and structure of high schools may contribute to or inhibit student learning. Much research has already demonstrated the benefits of smaller high schools for student retention (Natriello, McDill & Pallas, 1990; Wehlage et al., 1989) and academic achievement (see Lee & Smith, 1995). A growing movement to replicate these benefits by implementing small learning communities in high schools is occurring.

Facilitating young peoples' transition from secondary to postsecondary education has also been a growing educational priority (as exemplified by the inter-institutional consortium, Pathways to College⁵). While the college-going rate has increased, the college completion rate has not (U.S. Department of Education, 1998; Jennings &

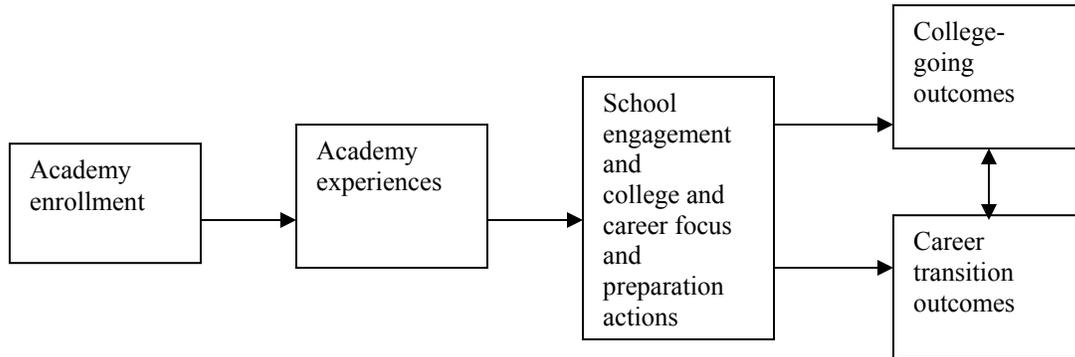
Rentner, 1998). Almost two-thirds of high school graduates enter postsecondary schools immediately after high school (National Center for Education Statistics, 2001). Yet, 37 percent of those who entered postsecondary education for the first time in the 1995-96 school year had left two years later without having earned a degree or certificate (National Center for Education Statistics, 2001). These findings suggest that high school students may be under-prepared for college level work or lack commitment to completing their studies.

Yet, at the same time, it is becoming increasingly difficult for young people, particularly those without postsecondary education, to transition into well-paying, stable careers (see Bernhardt et al., 2001; Halperin, 1998; Sum, Fogg, & Taggart, 1996; Commission on the Skills of the American Workforce, 1990). Thus, college completion is increasingly critical for an economically self-sufficient future.

Career academies have the potential to address several of these concerns because they already operationalize many of the recommended learning and school organization theories and developments—emphasizing academic work through contextualized instruction; making schooling more meaningful through work-based learning and career focused studies; and creating a partial school-within-a-school structure to foster greater instructional intimacy and support. The career focus helps students gain early insight into promising opportunities that could both shape their college studies and motivate them to complete their college degree in order to pursue gainful employment. Thus, through academies, educators hope to strengthen student engagement and facilitate transition into college and careers, to enable students to be more focused in their plans and to encourage

students to consider the academy-affiliated industries as career choices. Figure 1 illustrates these relationships.

Figure 1: Program theory of the career academy model



There has been rapid growth of career academies in recent years. The first academy was established in 1969 in Philadelphia, and several thousand are thought to exist now, with many affiliated with one of three national networks (Stern, Dayton, & Raby, 2000). The first NAF academy was founded in the 1982, and the NAF network has since flourished to 619 academy programs (including year-of-planning sites).

Despite the assumption that career academies meet many education reform goals, there is limited research on the model's benefits to students, particularly beyond high school graduation. There is evidence that career academies promote a close and personal academic experience for students and teachers (Kemple, 1997), provide quality academic experiences (Kemple, 1997; Orr & Fanscali, 1995; Orr et al., 1987), and can help improve student achievement (Elliott, Hanser & Gilroy, 2000; Foothill Associates, 1997) and post-high school success (Maxwell, 2001; Orr, 1990; Orr & Fanscali, 1995; Reller,

1987).⁶ Much of this research was conducted in the early years of program implementation or on career academy programs that vary in purpose, structure and focus.

Moreover, recent research on short-term educational outcomes found somewhat contradictory results. Maxwell (2001), for example, found that a career academy program supported by a single California high school district facilitated postsecondary educational outcomes. Academy program participation reduced the participants' need for English remediation in college, and increased their chances of graduating, compared with students who had not graduated from academies. (The researcher points out, however, that remediation rates were still high and graduation rates still low.) This study examined the postsecondary outcomes of individuals who applied to a local university from 1990 to 1998 for a degree program (excluding those who applied on a temporary basis to take courses). Maxwell focused on a subset of program completers and comparison individuals from one school district's multiple career academy programs (that were not affiliated with NAF).⁷ The district's career academy model included three years of academy related coursework, a summer internship after the junior year, and supplemental career exposure and college planning activities, but the program model was not implemented uniformly across all of the academies. The research did not address whether college-going was influenced by academy status, but asked how experiences in college might be affected. Thus Maxwell looked backwards from a sample of college applicants and considered the effect of enrollment in a diverse set of academies.

A longitudinal random-assignment study being conducted by MDRC (see Kemple, 1997; Kemple & Snipes, 2000) found no academy effect on standardized achievement test scores or on initial postsecondary outcomes. Interestingly, the study

found that both the academy students and those who applied to the academies (the control group) had relatively high levels of high school graduation, college enrollment and employment when compared to national samples of high school students. The MDRC study compared two samples of students all of whom applied to an academy. Students were allocated at random to the academy programs or to a control group, and for the purposes of the evaluation, students were retained in the two groups regardless of whether the academy students stayed in the academy or whether the control students eventually obtained an academy-like experience. Two of the academies in the MDRC sample were in the NAF network.

The study reported here differs from other academy studies in that the sample is drawn entirely from academies affiliated with NAF. Thus the student participants are likely to have had a more common educational experience. In this study we make comparisons between seniors who were completing the NAF program and other seniors who did not receive an academy-like experience. Thus the three studies provide different perspectives on the academy experience and taken together help us understand the nature of the academy model and its relationship to high school and post-secondary experiences.

METHODOLOGY

Overview

To analyze the NAF career academy program and participants' high school and college experiences, we conducted a multi-method, multi-site study.⁸ Survey and interview data on program experiences and postsecondary outcomes were compiled for three samples that were drawn from ten career academy programs—graduating career academy seniors, a comparison group of graduating nonacademy seniors, and career academy alumni who had graduated five and ten years before the study began. This study, undertaken at the request of NAF, is part of a multi-pronged examination of the NAF model that looks at the experiences of students, employers, and teachers. Here we report only on the student experiences.⁹

The study was undertaken to answer several questions about the role of the career academies in shaping students' experiences while in high school and facilitating their transitions and directions in subsequent college and career experiences. These questions are:

- Did the academy create a distinctive experience for participating students in contrast to other students in the same schools?
- Did participating students perceive this experience to be beneficial for them as a high school experience and as a foundation for their college and career futures?
- Was the academy experience positively related to students' engagement and achievement in high school?
- Was the academy experience positively related to students' college and career aspirations, plans and experiences?

Using written surveys, career academy and nonacademy graduating seniors assessed their high school experiences, school engagement, and college career plans. Through telephone interviews, academy alumni provided similar assessments and described their college and career history since high school graduation five or ten years prior.

We use these data to describe the experience and post-program plans of seniors who had completed a NAF program and to compare the experiences and plans to those of seniors who had not been enrolled in an academy or an academy-like program. The responses, perceptions, and outcomes of these two groups of seniors are then compared to information gathered from NAF academy alumni who completed the program five to ten years earlier.

Study Population and Samples

We selected the academy and student samples through a two-step process. First we chose a sample of ten NAF academies, limiting our search to programs that were considered fully-implemented by the NAF staff. Within those schools, we chose samples of NAF seniors, NAF alumni, and a comparison sample of non-NAF academy seniors. The comparison sample was chosen in such a way as to increase the comparability of the two groups of seniors on important characteristics other than whether they had been in the academy. The samples and the selection methods are summarized below.

Site Selection

To select high school sites, we limited the site population to those that were most likely to have seniors and alumni who had had full program experiences and comparison seniors who had not. We thus limited the sites to those schools with fully-implemented academy programs, defined as containing the core programmatic features of the NAF

model. The sites also had to have programs in existence long enough to have had alumni who graduated five or ten years earlier. By focusing solely on long-running programs, the results do not generalize to all NAF academies or all academies, nor do the results necessarily generalize to more recently started programs.

According to NAF officials, 150-NAF affiliated career academies had been in operation a minimum of five years and approximately 50 had been in operation for ten years by 1999, when the study was initiated. Many urban districts, such as New York City, Seattle, Miami, and Los Angeles, sponsor several programs. With the assistance of NAF staff, ten programs in nine locations were chosen (two programs were in New York City) to reflect geographic and racial and ethnic diversity. Seven were Academies of Finance (AOF) and three were Academies of Travel and Tourism (AOTT). Seven of the ten had been in existence long enough to have had alumni from 1990, while three had alumni only from 1995. Table 1 describes the ten sites, listed and referenced in this report by letter rather than name.

Table 1: Characteristics of Sampled Sites				
Sites	Type of Academy	First Year of NAF Operation	State	Predominant Racial/Ethnic Group Served
A	Academy of Finance	1988	WA	White
B	Academy of Finance	1988	CA	Asian/Pacific Islander
C	Academy of Finance	1989	FL	White
D*	Academy of Finance	1982	NY	multi-ethnic
E	Academy of Finance	1988	UT	White
F	Academy of Finance	1986	NY	African-American
G**	Academy of Finance	1987	MD	African-American
H	Academy of Travel and Tourism	1991	FL	Hispanic
I	Academy of Travel and Tourism	1991	CA	Hispanic/White
J*	Academy of Travel and Tourism	1987	NY	multi-ethnic

* Not included in analyses with GPA or attendance data, because transcripts were not provided, incomplete or unusable.

**Did not provide a comparison sample.

Our fieldwork revealed that there was additional variability among the sites, in their setting and focus, which could influence both samples of students' high school experiences and their subsequent college and career planning. For example, the programs were located in high schools with student enrollments ranging from 800 to 3,000, which could influence perceived school support and engagement generally. Two sites were career magnet programs in comprehensive neighborhood high schools, one site was in an academic magnet high school, and a fourth was considered an honors program in a suburban high school. Some of the sites were academically focused, while others were more vocationally focused. Four of the high schools offered a variety of other career-focused academic options— academy programs, career pathways, or others.

Senior Samples

The study used two samples of seniors—graduating seniors who were completing a NAF career academy program experience and graduating seniors who were not. These two samples were purposefully selected to contrast the experiences of students who had received the full NAF academy experience to students who had not received that or any similar experience.

For the sample of graduating academy seniors, we included the population of graduating career academy seniors from all ten selected high schools. School staff were asked to provide transcripts for all academy students and we used the total number of transcripts as a measure of the size of the study population (n=306).

Program staff members administered surveys to these students in academy classes and were encouraged to re-administer the survey to students who had been absent. A total of 233 usable surveys were returned from respondents. Since the survey was voluntary and we assume that 100 percent of the sample was contacted, we have concluded that any difference between the numbers of transcripts and surveys is due to refusal to participate and errors in record-keeping. (A summary of the transcripts and surveys collected is included in Appendix Table A-1.) Using the transcript and survey response information, we concluded that we had obtained a 76 percent response rate.¹⁰

To construct a comparison group of graduating seniors who were not academy participants, we selected a comparable number of classes of seniors in each site; the classes were in academic fields (English or social studies) that were neither advanced, remedial or part of a career-focused program of study. We relied on local program staff to select comparison groups of nonacademy students according to our criteria. We then

compared the two groups on selected demographic and achievement attributes to evaluate the quality of these matches.

In all ten selected schools, both samples of students attended classes in the same building and had the opportunity to take several courses together throughout their high school career, use the same support services, and participate in the same extra-curricular activities. Only in one of the ten schools were the career academy students separated for all their core academic courses as well (and this site was later dropped from analysis because they would not provide a comparison group). Using our program site visits and student survey and interview feedback, we verified whether the academy seniors actually had the full career academy experiences available and whether the nonacademy senior samples did not.

To ensure that the samples selected were complete, NAF staff encouraged local site staff assistance in fielding the surveys.¹¹ They were better able to know who had completed the survey and follow-up on sampled students who had been absent when the surveys were administered. In addition, we sampled comparison groups by class, rather than individually, to reduce the likelihood of refusal and increase cooperation, since they completed the surveys during class time, rather than personal time.

We received completed surveys from 215 nonacademy comparison seniors, from nine of the ten sites. Officials in one school, G, could not select a comparison group because other school staff refused to use one group of students to show that another group performs better.¹² Therefore, we did not use this site in any of the analyses. Given our sampling method, we chose to use the completed surveys from the nine schools as our population sample. We received transcript information for 175 nonacademy seniors

from seven schools, with 172 completed surveys coming from those schools. From some schools we received more transcripts than surveys; from others the opposite was true.

We restricted our sample further in order to have complete measures for statistical comparisons. We dropped 48 senior surveys—23 academy seniors and 25 regular seniors (11 percent of the sample)—because of missing demographic information that was needed for some of the analyses.¹³ With these adjustments, our final sample was 199 academy seniors, of whom 66 percent were in high schools with Academy of Finance programs, and 190 nonacademy seniors, of whom 67 percent were in schools with an Academy of Finance (see Table 2).

For some of our analyses that required transcript data, we restricted our sample even further, eliminating the groups from two other sites, D and H, because their transcript data was either incomplete or not usable for our purposes.¹⁴ For the analyses using just the seven sites our samples were 164 academy students and 150 comparison students, as shown in Table 2, of whom 66 and 65 percent respectively are in high schools with Academy of Finance programs.

Program	Completed Surveys		Completed Surveys and Transcripts	
	Academy	Comparison	Academy	Comparison
Academy of Finance	132	127	109	97
Academy of Travel and Tourism	67	63	55	53
Total	199	190	164	150

Alumni Sample

Our alumni sample consisted of all persons who had completed an academy program at one of the ten selected high schools and had graduated from high school in 1990 or 1995 (although for one program we used the 1991 alumni cohort because no 1990 cohort existed). We selected these two alumni cohorts to learn about the post-high school experiences of program graduates. We used the current graduating seniors and national outcome data as sources of comparison. Differences between alumni outcomes and national data cannot necessarily be attributed to the effects of the academies since the alumni sample is not representative of the national population, but these comparisons provide a context for understanding the relationship between program participation and subsequent employment and educational experiences.

To construct the career academy alumni sample, all ten sites provided a list of graduates in 1995 and, for seven sites, in 1990, generating an alumni population of 442. While these lists provided a population estimate, it was a difficult basis for data collection. Some sites had no contact information readily available and others only had information collected at the time the students graduated. Over time, we worked with the sites and with other sources (such as internet person locators, college directories, and other alumni) to find alumni. Through this effort, we were able to obtain telephone numbers for 52 percent of the alumni graduates, representing all ten sites, ranging from 11 percent to 83 percent per site.¹⁵

Non-responders were primarily unreachable; without contact it is unclear whether these non-responders were unavailable, uninterested, or not at the telephone number used. In all, there were 177 completed interviews (78 percent of those with viable contact

information). To make this sample comparable to the senior samples, however, we dropped all respondents from School G. Our final sample was 157 alumni, 108 of whom graduated in 1995-96, and 49 in 1990-91. This group represented 77 percent of those with viable contact information from the nine sampled schools.

Procedures

Our primary methods of data collection were the following: site visits to the sample academies, including interviews with teachers, administrators, and employers; a survey of academy and nonacademy seniors administered in school by program staff in late spring 2000; their high school transcripts as compiled by program staff in spring and summer 2000; and a telephone interview of alumni during summer and fall 2000.

To ensure that we were accurately measuring program characteristics, IEE and NAF staff collaborated in designing the survey questions to identify the core program components and intended program outcomes. In addition, IEE staff conducted this research with two related studies—surveys of career academy and other teachers about their teaching and college and career planning work with students, and interviews of participating employers. These studies generated other sources of evidence that confirmed the nature of the program experiences and plausible association between program participation and participants' college and career planning outcomes.

The site visits for this study occurred during the spring and fall of 2000. The researchers interviewed the program coordinator, a sample of academy teachers (individually or in groups), groups of students (where possible), a selection of employers (individually or in groups), the principal, and other relevant staff. They observed two or more academy classes and collected academy program documentation. The site visit

findings enabled us to document the program components and further investigate the relationship between program features and possible participant outcomes.

Demographic data were gathered through the surveys on the seniors' gender, race/ethnicity, school, parents' educational attainment, and number of times they had moved or changed schools (see Table A-2). The seniors and alumni were asked to indicate whether or not they had experienced the various program components. We created a list of internship attributes based in part on research by Kemple and Snipes (2000) and Orr and Fanscali (1995). Seniors rated, on a Likert scale, their experiences with these attributes. Similarly, seniors rated the student-centered qualities of the teaching in their academy courses (or for nonacademy seniors their regular academic courses) based on attributes derived from Kemple and Snipes (2000). Unfortunately, we were not able to match the demographic and outcome data that we collected on the surveys to the grades and attendance information contained in the transcripts. Transcript data only contained gender, school, and academy status.

For the alumni, we collected similar information, using similar measures modified for their recall. For both the seniors and the alumni, we relied upon students' recall of their early decision making, aspirations, and subsequent high school course-taking (see Tables A-3 through A-6).

Measuring Outcomes

One goal of this project was to understand the possible influence of the academy experience on student outcomes. In order to do this, we needed to be able to identify the desired effects of the program. While there is general agreement that career academy programs should improve student achievement and their transition into college and

careers, there is not agreement about what are appropriate measures, although several have been used in other studies. Alternatives include:

- Academic achievement: Should the program be expected to influence students' overall school achievement, as measured by their total GPA, or just the GPA in academy-related courses? Or, would the program's impact be reflected instead on the rigorousness of students' academic course-taking patterns in high school, or not needing remedial courses when starting college?
- College transition: Is the program's college transition influence reflected in whether participants go to any college—making two- and four-year colleges equivalent options? Or, does the program have a more significant impact if students choose to enroll in four-year colleges instead of two-year colleges, as a reflection of different levels of achievement? Or, does the program have a significant college transition impact if students enroll in a college program that continues their preparation in the academy industry (for example, a four-year college program for Academy of Finance students and a two-year college program for Academy of Travel and Tourism students).
- Career transition: While the program's aim is to foster a smooth transition into careers, it is unclear what are preferable and measurable early pathways into careers—working full-time after high school or not; working full-time and going to school part-time; being employed full-time in a job that is highly rated for its career potential and benefits; being employed in a career field that is related to the academy industry.

Given these ambiguities and the multiple options encouraged by program officials and staff, we designed the study to examine a variety of possible outcomes, particularly for alumni.

Analyzing Program Outcomes

Using data collected from the academy seniors and alumni we report on the extent to which these students actually experienced the academy model, how they perceived the quality and effects of their academy experiences, what they planned to do after graduation (for the seniors), and what they did after high school (for the alumni).

We also conducted analyses of academy and nonacademy seniors to determine whether participation in the academy influenced college plans, GPAs, or attendance. For the college-plan analysis we conducted logistic regressions in which the dependent variable was whether or not the student planned to attend a four-year college in the summer or fall after graduation.¹⁶ In that analysis, we were able to use the demographic data collected in the survey to control for some of the factors other than academy status that might influence college plans. Although we were able to control for many factors, differences in academy and nonacademy outcomes still might be caused by factors such as motivation that we were not able to measure.

For our analysis of GPAs and attendance, we used OLS regressions in which GPA and attendance were the dependent variables. For these regressions we were able to control for gender and school (which of the sample schools the student attended). But we were also able to control for pre-academy GPAs and attendance.

To further refine our analysis we discussed the preliminary results with the career academy program directors, and with NAF staff, who raised issues, confirmed findings, and offered possible interpretations of the results. In addition, in the absence of a

longitudinal comparison group study of career academy and nonacademy participants, we triangulated our findings among several samples and comparison data sources. While there are weaknesses to each sample, as noted, the plausibility of the conclusions is strengthened because the analyses of the relationships between academy participation and career and college-related outcomes are generally consistent across data sets.

Finally, the study was purposefully designed to investigate the relationship between full program treatment and participant outcomes. Consequently, the results cannot be generalized to all career academy participants' experiences or to all types of career academy programs. Instead, it was designed to determine—as well as possible—the relationship between participation in a fully-implemented, career academy program with a paid, private sector summer internship (compared to the absence of this), and plans for and transition into college and careers.

FINDINGS¹⁷

Student Selection and Motivation

What were the characteristics of academy students and were there any initial differences between them and the nonacademy students? It is important to determine this as context for understanding any differences in outcomes for these two groups of students. In this section we describe the process through which students chose to apply for and were accepted into the academies in our sample.

Enrollment in all of the academies in the sample was voluntary; students chose to enroll. In order to be admitted, students had to submit written applications in the spring of their freshman or sophomore year (or eighth grade for admission to a four-year program),

and obtain parental permission and letters of recommendation from teachers. Program staff reviewed the applications and selected students who they thought had the potential to succeed in the program. Thus, program enrollment required active selection by both students and teachers.¹⁸

By design, the NAF-affiliated career academy program targets students in the academic middle who may be interested in careers in finance or travel and tourism.¹⁹ The program is not viewed as exclusively for either college-bound or non-college-bound students. It also targets youth who, as one teacher said, need a “hook” to stay engaged in school. Thus the program is not intended to recruit the most or least academically able students, but instead seeks students who could benefit from a career-focused program of study that is believed to be motivating and enriching. Finally, students have to be on track for graduation in terms of credits earned, since much of the academy coursework uses up elective credits.

Interviews with academy staff revealed that teachers play an important role in encouraging students to apply, often recruiting prospective students from their courses. Some teachers deliberately recruited students who they believed would benefit from the program (such as the “reluctant learners” described by one principal) while others focused on students who would “gel” with the program staff and fit the program’s goals. Thus, teachers’ encouragement may contribute as much to the likelihood of enrollment as students’ own initial motivation.

What influence, then, does a mutual selection process have on the characteristics of the academy students and how does the process (and its implications for motivation)

relate to other demographic and academic characteristics of academy and nonacademy students?

A comparison of survey data for the academy and nonacademy seniors showed no statistically significant differences between the two groups with respect to age, gender, race, and measures of stability such as whether the student had moved or changed schools. The comparison group did have more students who had at least one parent whose education had not gone beyond high school, yet the academy seniors were more likely to be unsure of their parents' educational backgrounds (Appendix Table A-2).²⁰ We also measured the most commonly identified personal and family risk factors (Natriello et al., 1990) for their possible independent influence on the seniors' outcomes, and found that career academy seniors were as likely as nonacademy seniors to have had any of nine family or personal changes or issues over the last two years (as shown in Appendix Table A-6).²¹ These results were somewhat similar for the alumni based on gender, parents' educational attainment, and how much they had moved while in high school. We did find some difference based on gender, in part due to the fact that a higher percentage of the alumni sample were from the Academy of Finance which tends to serve proportionally more male students than the Academy of Travel and Tourism.

The academy seniors also had a statistically significant higher pre-academy GPA than the comparison seniors (3.00 vs. 2.52, which is between a B- and C+).²² This difference was in part due to program selection criteria—having passing grades and being on target with their high school credit accumulation. Thus, the academy sample would not include students with poor grades, while the nonacademy senior group would include students whose GPAs ranged more widely. Taken together, it appears that the two senior

samples were similar on many critical personal attributes, but that the academy seniors were somewhat more academically prepared than the comparison seniors.

Comparison of the Experiences of Academy and Nonacademy Students

The sampled career academies delivered the important academy components called for in the NAF guidelines. Most academy seniors reported having had the core program components, of which the other seniors generally did not have as part of their programs of study. In particular, academy students were more likely to have had school organized work-based learning experiences and more structured college and career planning experiences and support than was typical for high school seniors. The career academy alumni reported having had similar academy experiences.

First, the NAF model is designed to give academy students unusual as well as typical high school learning experiences.²³ Responses from our sampled students reflected these differences. As shown in Table 3, most career academy students had all the primary career academy program experiences—four or more career focused courses, paid private sector summer internship, at least one college-level course, and at least one year of computer technology, along with a greater number of career-, college- and job-related planning activities. As would be expected, they were statistically significantly more likely than other seniors to have had any of them.

Table 3: Career Academy and Other Seniors Having the Core Program or Equivalent Experiences (Percentage and number)		
Academy Components	Academy Seniors	Other Seniors
<i>Primary Components</i>		
Four or more career academy courses	83%	
Paid summer internship, connected to school	65%	8**
Unpaid summer internship, connected to school	5%	6
One or more college-level courses	67%	33**
One or more years of computer technology	96%	67**
<i>Strongly Encouraged Enhancements</i>		
Number of career-related activities and classes in school	5.3	3.0#
Number of college-planning activities	5.8	5.0#
Number of school-related job seeking activities	2.6	1.5#
N=	199	190

**statistically significant at $p < .01$, chi-square test.

#statistically significant at $p < .01$, t-test of independent sample means.

The internship, a six-to-eight week paid position within the industry, usually held during the summer between the junior and senior years of high school, is a fundamental characteristic of the NAF career academy model.²⁴ As shown in Table 4, 65 percent of academy seniors had a paid summer internship, while another 5 percent had an unpaid summer internship and 15 percent had an alternative experience, which was more individualized (for students ineligible for paid positions because they lacked proper documentation). Taken together, 85 percent of the academy seniors had a school-sponsored internship or work experience. This is in contrast to the nonacademy seniors, only 34 percent of whom had a school-based internship or work experience (and only 8 percent had a paid, summer internship). Academy students in our sample were also more likely to have a work-based learning experience than are career academy students in

general. In another sample of career academies nationwide that reflect a variety of types of career academies, about 45 percent of students still enrolled in an academy at the end of the twelfth grade had had a work-based learning experience, and about one-quarter of all the students had had a job with high work-based learning content (Kemple, Poglinco, & Snipes, 1999).

Attribute	Alumni	Academy Seniors	Nonacademy Seniors
Internship or school-based work experience	81%††	85%	34%**
Paid, summer	NA	65	8**
Unpaid, summer	NA	5	6
Other school-based work Experience	NA	15	20
No school-based work experience	19	16	65**
<i>Quality of the internship†</i>			
Sometimes or always spent at least half time in training	--	62	62
Rotated across several jobs	--	60	38**
Completed one or more projects for the business	--	75	57*
Received a performance evaluation	--	91	83
Had school-based supervision	--	74	27**
Learned new things	--	85	70*
Was meaningful and important	--	82	52**
N=	157	190	199

*statistically significant at $p < .05$, chi-square test of independence between academy and nonacademy seniors

**statistically significant at $p < .01$, chi-square test of independence between academy and nonacademy seniors

† Quality ratings are based on samples of 140 Academy seniors and 48 other seniors who had some type of internship or school-related work experience. The percentages reflect those who sometimes or always had these qualities in their internship.

†† Includes paid and unpaid summer internships, because these were not separated in the survey; according to NAF guidelines, they were likely mostly paid.

Note: Percentages may not add up to 100 due to rounding.

As shown in Table 4, the NAF-affiliated internships appear to differ qualitatively from more typical school-based work experiences as reported by the comparison seniors. Most NAF career academy students reported having someone from their school visit their work sites and to have rotated across several jobs for broader career exposure. Most academy students stated that they found their internship to be meaningful and important, while only half of the nonacademy seniors who had an internship did.

These results are consistent with the alumni's experience. Eighty-one percent of the alumni reported having had an internship through their career academy. In addition, 83 percent of the alumni said that their internship had increased their interest in working in the field (see Appendix Table A-7).

The program also encourages teachers to incorporate a wide variety of related work-based learning experiences and co-curricular activities into their courses in order to help students learn about the industry, explore careers, plan for college, and develop their social and interpersonal skills. Consequently, academy students should perceive that there are more work-based learning experiences in their career academy courses than do other students in their regular courses. The survey results confirm these findings. Career academy seniors had more of these activities infused by their teachers into their career academy courses than did other seniors in their regular courses (as shown in Appendix Table A-8). First, career academy seniors had a greater variety of career-related work-based learning experiences. In addition, career academy seniors were more likely than other seniors to indicate that these activities were "somewhat" to "very helpful": school-based businesses or enterprises, employer talks at school, and job shadowing. Second, the academy seniors reported having more college planning assistance than other seniors. In

particular, career academy seniors were much more likely than the comparison seniors to talk about colleges in class, learn about financial aid, and visit colleges.²⁵

Third, academy seniors were more likely than other seniors to actively plan post-high school work and careers, particularly in talking with teachers and the academy coordinator about careers, and securing a job offer by graduation. They were also much more likely to use several types of job seeking services, especially career exploration activities, job fairs, mentors, and practice interviews.²⁶

Fourth, teaching and relationships with teachers were different for academy students in their academy courses than they were for nonacademy students in regular courses. The academy seniors rated their academy course teaching significantly higher than did other seniors for their regular courses on how the subject matter was contextualized and how teachers supported their learning, as shown in Table 5.

Table 5: Career Academy Senior Ratings of their Teachers in Academy Courses, and Nonacademy Senior Ratings of their Teachers in Regular Academic Courses (Percentage rating “Somewhat” or “Very true”)		
<i>Contextualized teaching, student centered instruction, and college and career foci</i>	Academy Seniors	Nonacademy Seniors
Teachers apply course content to problems and situations in the industry or real life	96%	80%**
Teachers talk about job opportunities	92	50**
Students work on multi-day projects	73	81
Teachers help with college planning	72	42**
Teachers make sure students understand what they study	89	77**
Teachers take the time to get to know students	85	54**
Average rating of course and teaching quality (based on the above six items)	5.0	3.7#
N=	199	190

**statistically significant at p<.01, chi-square test

#statistically significant at p<.01, t-test of independent sample means

Program Impact on Students in School and Beyond

We explored the influence of the program on participants in five ways: (1) students' assessment of the quality and benefits of their career academy experience, (2) student engagement in schooling, (3) overall academic achievement in high school, (4) postsecondary educational outcomes, and (5) postsecondary employment outcomes.

The primary goals of the NAF career academy model—improving students' postsecondary and employment planning, so that students have a smoother and better transition into further education and careers—can be thought of both broadly and narrowly. In general, academy teachers and administrators want to help students think more consciously about their futures, to help them make more explicit educational and career plans for achieving their goals. The academy model is designed to promote college attendance. More narrowly, academy staff and, especially, employer partners, also encourage students to consider careers in the particular industries around which the academies are organized: finance or travel and tourism in the case of the academies that we studied.

Perceptions of Teaching and Program Participation Benefits of the Academy Experience

The NAF model calls for a student-centered project-based pedagogy and for program features designed to help students make plans for college and careers. Survey responses from seniors and alumni provided information about these program features and their perceived effectiveness.

Most career academy seniors believed that they had had high quality academy experiences that were meaningful and beneficial. The majority of academy seniors stated

that their academy experiences motivated them to achieve academically (72 percent), and encouraged them to seek challenging educational experiences (75 percent) (Appendix Table A-9). Most academy seniors thought that they were more prepared for their future than their nonacademy friends (Appendix Table A-10).

Alumni reported similar assessments. They reported that the program helped prepare them for college and for a career (Appendix Tables A-11-12). More specifically, the vast majority of alumni said the program prepared them well or very well for college-level work, and motivated them to complete a college degree. Almost all of the alumni agreed that the program improved their ability to work with others, take direction, communicate, lead, and be more confident generally. And the large majority (91 percent) thought that the program experience motivated them academically and encouraged them to pursue challenging postsecondary educational and career options.

Academy seniors agreed that their academy experience influenced their career plans: it helped them to prepare for a career in the field (82 percent), encouraged them to seek a challenging career path (75 percent), and generally increased their interest in a career in this field (69 percent) (Appendix Table A-9). Academy seniors rated the academy classes (57 percent) and their internships (43 percent) as among the most significant influences on their career direction (Appendix Table A-13).

We asked the alumni if they had had a significant experience that had influenced their career direction. Of the 58 percent of the alumni who said they had, 40 percent cited their academy classes, and 40 percent thought this about their internship, while few identified anything else, even college or other work experience (Table A-12). Most

working alumni (88 percent) agreed that they were able to apply in their careers what they had learned in the academy (not shown).

Career academy seniors and alumni consistently agreed that they had had a high quality and beneficial career academy experience that had provided an engaging learning experience and prepared them well for their college and career transitions. For many, the education in the academy had had a pivotal influence on their career direction and had taught them crucial work place skills.

School Engagement

In addition to its academic and career influences, the program's thematic focus and structure as a partial school-within-a-school aim to foster a supportive learning environment for students and, in turn, improve their engagement in school. The NAF model is designed to give the students a more personal educational experience than is typical in high school. It accomplishes this by having a cohort of students enroll together in several commonly focused courses and by fostering closer relationships with individual adults by having one or more teachers teach at least two courses to each cohort. In a previous study of NAF Academy of Travel and Tourism (AOTT) seniors, students attributed their greater incentive to attend school regularly and apply themselves to academic work to the sense of community and support they received from their fellow AOTT students and their AOTT teachers (Orr & Fanscali, 1995).

Most of the academy seniors and the alumni felt that their teachers knew them, while fewer other seniors felt the same (not shown).²⁷ Most seniors agreed that the program created a supportive and encouraging high school experience (86 percent, Appendix Table A-9) and were more likely than nonacademy students to agree that other

students encouraged them to work hard (Table 6). As can be seen in Table 6, academy seniors were significantly more likely to feel motivated by and engaged in schooling generally than were the other seniors, although we cannot say for sure whether some of these academy students may have brought these characteristics with them when they enrolled.

Table 6: Student Agreement with Various School Engagement and Importance Measures (Percentage who agree or strongly agree)		
Measures	Career Academy Seniors	Nonacademy Seniors
Doing well in school is important	96%	96%
The things learned in school are going to be important later in life	90	85
Did not think about dropping out	92	84*
Enjoys coming to school	75	64*
Felt like they belonged in this school	73	60**
Students feel connected to this school	54	46
Average school engagement and importance scale score (1-6)	3.13	2.95##
Other students (in the academy for academy students) encourage you to work hard and do well	58%	38%**
N=	199	190

*statistically significant at $p < .05$, chi-square test

**statistically significant at $p < .01$, chi-square test

#statistically significant at $p < .05$, t-test of independent sample means

##statistically significant at $p < .01$, t-test of independent sample means

Note: the average scale score is based on a four-point scale, with strongly agree=4.

Student attendance patterns also give some sense of their engagement in school. Six schools provided yearly attendance data for the academy and the comparison students. Our analyses show that academy students had slightly higher attendance than nonacademy students in earlier high school grades before either group were enrolled in

the academies. But if participation in the academy increased student engagement, we would expect that attendance of academy students would increase more (or decrease less) than the attendance of other students. There is evidence that this is what happened, as shown in Table 7. This table displays the results of an OLS regression in which the dependent variable is the number of days students had attended twelfth grade and the independent variables are pre-academy attendance, whether the student was in an academy or not, and the student's school.²⁸ The results show that after controlling for pre-academy attendance rates and school-level effects, academy students were in school six more days (out of a school year of 180 days) than nonacademy seniors. This suggests that participation in the academy did positively influence attendance.²⁹

Table 7: Student Attendance and Predicting Twelfth Grade Attendance and GPA				
Note: Only six schools had attendance data for analysis purposes. These results are presented in column i. One additional school had GPA data for analysis purposes; the results for these schools are in column ii.				
Note: The reference school in the above analysis is School A. The coefficients for the other schools represent the change in attendance and GPA compared to this school.				
10th grade average daily attendance	170		167##	
12th grade average daily attendance	169		162##	
N=++	171/177		154/157	
	(i)		(ii)	
	Twelfth grade attendance (six schools)		Twelfth grade GPA (seven schools)	
	Coefficient		Coefficient	
Academy Seniors	6.269	**	0.490	
PREATTEND	0.617	**		
PREGPA			0.598	**
School B	11.489	**	-0.328	**
School C	-2.704		0.045	
School E			0.043	
School F	-5.800	**	-0.477	**
School H	-5.586	*	0.010	
School I	5.723	**	-0.284	*
Constant	58.443		1.257	
R-squared (adjusted r-squared)	0.535 (0.525)		0.602 (0.593)	
N=	334		381	

*significant at <.05

**significant at <.01

##statistically significant at p<.01, t-test of independent sample means

++The first figure shown represents the number of 10th grade observations and the second 12th grade.

PREATTEND=number of days attended the year before the academy seniors began their academy program.

PREGPA=Grade Point Average (GPA) for the year before the academy seniors began the academy program.

Academic Achievement

Research has found mixed results concerning the effect of academy enrollment on a student's GPA. Hanser and Stasz (1999) found positive academic outcomes for academy students, at least in the short term, while others did not (see Bishop, Mane, &

Ruiz-Quintinella, 2000; Kemple & Snipes, 2000). Any presumed academy effect on GPA would be indirect, working through the greater motivation or focus provided by the contextualized pedagogy, and more personalized educational experience with closer relationships to adults. Other than this indirect influence, the academies did not take any specific steps to increase student GPAs.

In this study, we compared preacademy to twelfth grade GPAs for academy and nonacademy students using transcripts provided by seven of the schools in our sample (summary means are shown in Table 8), thereby evaluating achievement differences while controlling for initial GPA differences. We did this analysis in two ways—(1) for academy and nonacademy students overall and (2) for Academy of Finance and Academy of Travel and Tourism students separately—to see if academy focus contributed to differences in GPA. The second set of findings on Table 7 shows the analysis in which we regressed the twelfth grade GPA on the preacademy GPA and included dummy variables indicating whether the student was in an academy or not and their school. This analysis suggests enrollment in the academy had no independent influence on student GPAs.

Table 8: Comparison of Academy and Nonacademy Seniors on their Initial and Senior GPA and Their College-Going Plans		
	Academy seniors	Nonacademy seniors
Initial GPA, pre-academy	3.0 (.06)	2.5 (.08)#
Senior year GPA	2.9 (.06)	2.6 (.07)#
N=++	196/198	180/183
Planning to go to college in the summer or fall by having applied already	87%	73%**
Planning to go and accepted to a four-year college	64	45**
Planning to go and accepted to a two-year college	13	19
Planning to work and not go to college	13	27**
N=	199	188

**statistically significant difference $p < .01$, chi-square test

#statistically significant difference $p < .01$, t-test for independent means; standard error are reported in the parentheses

++the first figure shown represents the number of observations with pre-academy GPA and the second are from 12th grade

Postsecondary Educational Plans

To what extent is the career academy experience related to post-high school college plans for graduating seniors? A majority of the academy seniors agreed that the academy program focused their college plans (68 percent), increased their college-going confidence (59 percent), and caused them to believe that college was a realistic option (54 percent) (see Appendix Table A-14). These seniors took significantly more college planning actions and reported that they had completed slightly more, although not statistically different, AP or college level courses by graduation than did the comparison seniors (as shown in Table 9). Most (84 percent) academy seniors aspired to complete at least a four-year college degree. In addition, academy seniors were more likely than other seniors to aspire to an advanced degree, and to believe that they would actually achieve this goal as things stand now, although these differences were not statistically significant.

While these differences suggest that academy participation encouraged more focused college planning, academy students may have been somewhat more college-oriented when they initially enrolled.

Table 9: Comparison of Career Academy and Nonacademy Seniors on Their College Preparation and Long Range Plans		
Preparation and Long-Range Plans	Academy Seniors	Nonacademy Seniors
Number of college planning actions	5.9	5.1**
Average number of AP courses already completed	0.73	0.82
Average number of college-level courses already completed	1.05	0.61**
Average number of colleges applied to	2.85	2.65
Believe they will complete a four-year college degree or more	84%	77%
Aspire to an advanced degree	69	52
Believe they will achieve their educational goals as things stand now	55	46

**statistically significant difference $p < .01$, chi-square test

Initial College-Going Acceptance and Experiences

Academies can potentially have a variety of influences on students' post-high school plans and as we have noted, there is some ambiguity about optimal outcomes and goals for academy students. Academies orient students towards particular industries, but they also are intended to improve post-secondary educational opportunities. By providing students with knowledge about an industry and contacts with businesses in that industry, the academy experience might give students some interesting opportunities for employment immediately after high school. Alternatively, students may learn that there are good employment opportunities for them if they complete an associates degree at a

community college. Or the academy experience may prepare and motivate a student to go on to complete a bachelor's degree. The optimal plan may also depend on the industry with which the academy is associated. Thus the academy experience should help students plan a post-high school course that is appropriate for them, not necessarily to push them towards one particular future.

We did find differences between the two types of academies that we studied. The Academy of Finance focuses on the financial services industry, which offers a wide range of skilled and semi-skilled employment opportunities within largely clearly-defined industry segments (such as accounting, investment banking, and financial planning). Without a college degree, employees in this industry have limited promotion opportunities and earning potential. In contrast, the Academy of Travel and Tourism focuses on a very broad industry, including positions in hotels, event and meeting planning, spas and other health resorts, cruise lines, entertainment, airlines, travel planning, sports and recreation, restaurants, and tourist attractions. This industry also offers a wide range of skilled, semi-skilled and unskilled employment opportunities. Many professional positions in this industry require only a two-year college degree or professional certification. It is also considered a common practice in this industry for companies to hire high school graduates and then pay for college as long as the employee maintains a good work record and attains at least a "B" in each course. Consequently, attending a two-year college may very well be considered an appropriate college outcome for graduates of the Academy of Travel and Tourism, while attending a four-year college would be a preferable college outcome for graduates of the Academy of Finance. NAF

does not emphasize four-year college-going over two-year college-going because of these industry differences.

Is post-high school employment a positive or a negative outcome for academy graduates? Certainly academies emphasize college, but they also teach industry-specific skills and put students in contact with employers in those industries. Therefore, even though on average college graduates earn much more than high school graduates, academy graduates would be expected to have more attractive employment opportunities immediately after high school than the average high school graduate, because of their academy experience and contact with employers. Moreover, these opportunities might look particularly attractive to lower-income students who would have trouble financing college (both the tuition and the living expenses). Given the short-term opportunities open to academy graduates, a period of full-time employment followed by full- or part-time enrollment in college might be an good option. This might contrast to a graduate of a regular high school program who might have fewer attractive post-high school employment opportunities and therefore might be more likely to enroll in a community college or perhaps a local public four-year college. Therefore, the academy experience could both increase the student's preparation for and orientation towards college and provide advantageous opportunities for post-high school employment. Thus, working immediately after high school is not necessarily a negative outcome.

With these ambiguities and options in mind, we analyzed the college-going patterns of the two groups of seniors, and compared these patterns between the finance and travel and tourism academy seniors for program-related differences. We narrowed our outcome analysis to whether seniors had applied to and been accepted at two-year or

four-year colleges, to learn what differences may actually exist that could be related to career academy participation.

College Acceptance by the End of the Senior Year and Initial College Enrollment Among Alumni

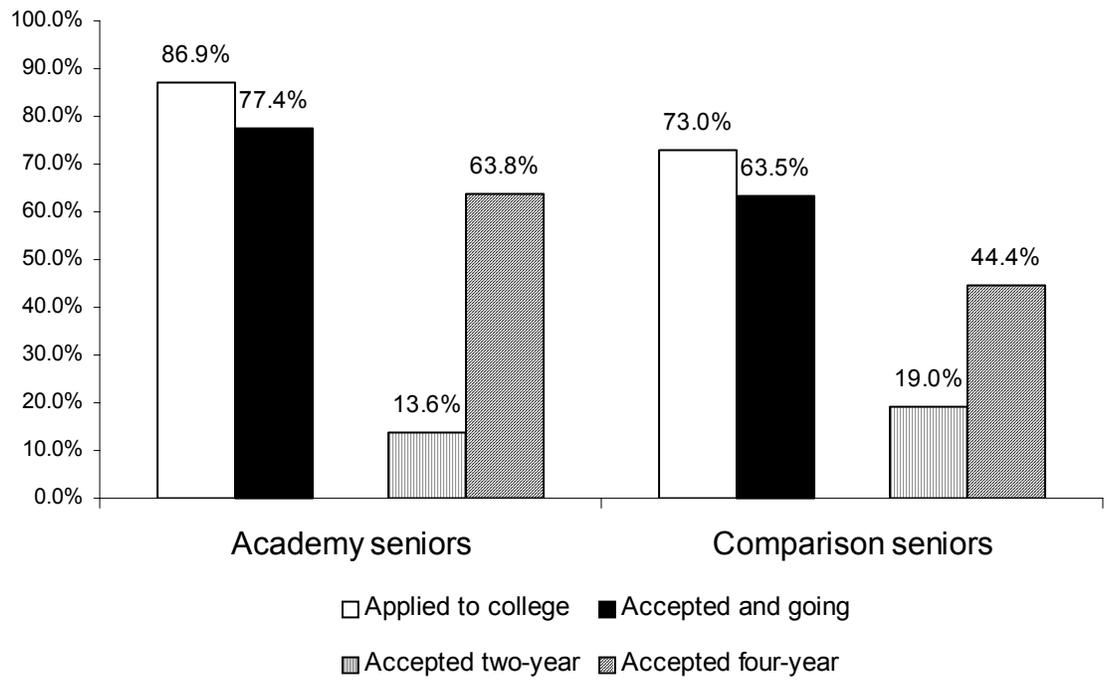
Figure 2 displays information about college plans for the seniors in our samples. By May of their senior year, 87 percent of the academy seniors and 73 percent of nonacademy seniors had applied to and planned to attend some postsecondary institution in the summer or fall following graduation.³⁰ In addition, 77 percent of the academy and 64 percent of the comparison seniors had already been accepted and planned to attend a four-year, two-year, or technical postsecondary institution.

As can be seen from Figure 2, the two groups contrasted sharply with respect to the types of colleges that they expected to attend. The academy seniors were much more likely than those in the comparison group to expect to attend a four-year college, while the comparison seniors were more likely to plan to attend a two-year college.

Can we expect these plans to be carried out? Although we cannot observe that directly, we do have information on the initial college-going patterns of academy graduates. While 64 percent of the academy seniors planned to go to a four-year college, and 14 percent planned to go to a two-year college, we found that 64 percent of the alumni enrolled in a four-year college during the summer and fall after graduation, and 28 percent enrolled in a two-year college (see Appendix Table-15). This comparison suggests that the college plans of the seniors do not overestimate the actual enrollments.

Figure 2

Applied, Accepted, and Planning to Attend College



Exploring the Academy Influence on Four-Year College Plans and Acceptance

These simple comparisons, and other survey findings, suggest that academy seniors had planned for and taken more specific actions than their peers to gain admission to a four-year college. Can this difference be attributed to the academy experience?

In this section we present an analysis of the determinants of the probability that a student, by the end of their senior year, had been accepted at a four-year college and was planning to attend.³¹ Our primary focus is on the influence of attending an academy on college plans—we are in effect comparing seniors who have received the complete academy experience to seniors who have not receive an academy-like high school experience. Since the dependent variable was dichotomous (either student planned to attend or not), we used logistic regression. There are many possible factors that will influence a student's college plans and if those are not taken into account or if any are correlated with the academy status, then we might mistakenly attribute the effect of those variables to the academy. Our sample selection procedure did minimize some differences, but did not guarantee that the two samples are not different in important ways.

To further isolate the specific effect of the academy status, we use data from the survey to control for many other factors that might influence college plans. The other determinants of college plans that we include in our analysis include demographic variables such as gender, race, and ethnicity. Since research has shown that parental education is an important determinant of college-going (National Center for Education Statistics, 2001), we include information on that as well. We also consider measures of student stability such as whether they changed schools or moved during high school. We would expect that more stable students would be more likely to plan to go to college.

Finally, since students with stronger academic records are more likely to plan to go to college, we included various measures of academic performance such as the number of courses the students took in algebra or higher math and foreign language courses, and whether they took an AP or other college level course.³² We also included the number of remedial courses taken by the students.

According to results displayed in Table 10, Asian students, students with two college-educated parents, and those who had taken at least one AP or college level course were more likely than other students to have been accepted by and planned to go to a four-year college. (None of the other measures were related, with one exception.) Even when these factors are taken into account, however, this analysis suggests that academy seniors are 16 percent more likely than are other seniors to apply to and be accepted at a four-year college.³³

Table 10:
Probability of Planning to Attend a Four-Year College

	(Column i)		(Column ii)		(Column iii)		(Column iv)	
	Nine Schools				Seven Schools			
	Coefficient		Coefficient		Coefficient		Coefficient	
Academy Seniors	0.632	*			0.640	*		
Travel Seniors			-0.211				0.095	
Finance Seniors			1.277	**			1.099	**
Female	0.142		0.323		0.290		0.387	
Asian	0.982	**	1.307	**	0.753		1.040	*
Black or Hispanic	0.468		0.674	*	0.804	*	0.962	*
Moved at Least Once	-0.360		-0.245		-0.627		-0.605	
Changed Schools at Least Once	-0.837		-0.640		-0.779		-0.601	
Highest Parental Education Unknown	0.197		0.240		0.280		0.326	
At Least One Parent with AA Degree	0.356		0.377		0.301		0.333	
One Parent with a BA Degree	0.318		0.384		0.155		0.209	
Both Parents with BA Degree or Higher	1.580	**	1.655	**	1.519	**	1.635	**
Pre-Academy Grade Point Average					0.683	**	0.572	*
Took at Least One Remedial Course	-0.018		0.166		0.131		0.287	
Took at Least One College/AP Course	0.721	**	0.556		0.650		0.526	
Number of Algebra I or High Math Courses	0.211		0.167		0.282	*	0.247	
Number of Foreign Language Courses	0.021		0.004		-0.071		-0.075	
Constant	-1.646		-1.770		-3.838		-3.597	
-2 log likelihood	405.1		390.8		308.7		303.8	
N=	356		356		287		287	

*Significant at <.05

** Significant at <.01

Note: The coefficients in columns i and ii are based on all nine schools' surveyed seniors with completed surveys. The coefficients in columns iii and iv are based on the seven schools with both transcript and survey information for surveyed seniors. The coefficients in columns i and iii are based on analyses that include a dichotomous measure of academy status. The coefficients in columns ii and iv are based on analyses that include a dichotomous measure of Academy of Finance status and a dichotomous measure of Academy of Travel and Tourism status.

Ideally, we would have liked to control for the students' preacademy GPAs as an independent influence on college-going, particularly since the two groups had initial GPA differences. But, we could not integrate our transcript and survey data for such analyses. Instead, we created an average GPA score for the academy and comparison groups within each school, using the transcript data provided by seven of the ten schools.

While doing so helped to isolate further the influence of being in the academy on college-going apart from pre-existing achievement differences in the two groups, such a measure has disadvantages. First, using the transcript data required that we reduce the sample to just seven schools. Second, since all academy students in each school share the same GPA value in this analysis, the variable would also pick up some individual school-related factors that might not be related to the GPAs, such as the overall quality of the school, which may add or detract to the independent measure of the academy influence. Nonetheless, we found this analysis helped to explore whether initial GPA differences accounted for the academy influence on college-going.

The results of this analysis are presented in Table 10, Column iii. As expected, the aggregate measure of pre-academy GPAs has a positive and statistically significant independent effect on the probability of planning to go to college. Nevertheless, controlling for this factor did not influence the size or statistical significance of the measured academy effect on whether a student is accepted at college and plans to attend a four-year school college.

College Acceptance Differences for Academies of Finance and Travel and Tourism Seniors

Our sample included two types of academies affiliated with very different types of industries—finance, and travel and tourism. As we have argued, the industry affiliation

may influence the nature of the opportunities that students have after high school. Results displayed in Table 10 (Column ii) suggest that the positive relationship between college plans and academy status is attributable to the Finance academy students, not those from the Travel and Tourism academies.³⁴ Travel and Tourism Academy students are no more likely than comparison students to have planned to go to a four-year college and been accepted at one, perhaps due in large part to industry-related career opportunities for those with less than a four-year college degree.

When we analyzed the results again, incorporating GPA information, we found that the positive influence of the career academy on four-year college-going is still attributable to whether students are in the finance academies, not the travel and tourism academies (as shown in Table 10, Column iv).³⁵ We repeated these analyses but measured the probability that a student would be planning to go to either a two- or a four-year college (these results are not shown). The results were similar. Academy seniors as a whole were more likely than comparison seniors to plan to go to some college, although this effect was weaker than it was for the four-year college analysis. This result suggests that the difference between the academy and the comparison students is stronger with respect to planning for four-year than two-year colleges.

The positive results for the finance academy seniors contrast with findings from MDRC's recent random assignment career academies evaluation (Kemple, 2001). MDRC found no relationship between academy enrollment and college-going; several factors might account for this difference. First, MDRC used a random assignment strategy to eliminate systematic initial differences between the academy and control groups, while we relied on using measured personal and family characteristics to control for initial

differences between the program and comparison groups. Nevertheless, since students in our sample must choose to join an academy, must then be accepted by the staff, and must persist in the program until graduation, it is possible that unmeasured differences between the academy and comparison groups might explain the positive findings in our study.

The student samples also differed in the two studies. MDRC selected (at random) program and control groups from a pool of academy applicants. But of the group that entered the program through random assignment, one-third left the academy before the end of their senior year. Of those students in the control group, 6 percent eventually had a program experience that was similar to the career academy. If there is a positive effect of academy participation and if that strengthens the longer the student is in the program, then the MDRC results will understate the effect of participation in the full program.³⁶

Finally, the two studies examine different samples, based on the types of academies studied and the types of program participants. The MDRC study included several different types of career academy programs in their sample, which varied dramatically in their affiliation with an industry, related coursework, internship experiences and professional development and technical support. Our study included only NAF-affiliated programs, which have a more prescribed set of program features. Thus, as a group, the NAF-affiliated academies may have a stronger influence on post-secondary experiences because of their program coherence, integration and intensity than the more diverse group of academies included in the MDRC study.

Educational Experiences of Academy Alumni

In order to develop additional insights into the career academy experience, and the nature of our sample, we analyzed the college-going experiences of academy alumni and compared them with the college plans of academy seniors and national data. The alumni were found to have had initial college transition outcomes that were similar to the career academy seniors' plans. Almost all of the alumni (92 percent) enrolled in a two- or four-year college program the summer or fall after high school graduation (Appendix Table A-15). How do the postsecondary experiences of academy alumni in our sample compare to those experiences of students nationally? In 1990 only 60.1 percent of high school graduates enrolled in a two- or four-year college by the October after completing high school; the figure for 1995 was 61.9 percent (National Center for Education Statistics, 2001). Moreover, only 4 percent of academy graduates reported needing remedial coursework when they started college, although almost 20 percent of first-time college enrollees nationally have reported that they need remedial coursework (National Center for Education Statistics, 1998). Enrollment in remedial courses is associated with a lesser likelihood of college continuation and degree completion (Adelman, 1999; Lewis, Farris & Greene, 1996).

The NAF samples included many first-generation college-goers. Forty-seven percent of alumni, and nearly one in five academy seniors, came from families where neither parent had any known education beyond a high school diploma. However, 90 percent of first-generation alumni enrolled in college (either a community or four-year college) and 83 percent of first-generation academy seniors were planning to enroll, in contrast to 64 percent of similar nonacademy seniors. Nationally, in 1995, only 47 percent of high school graduates whose parents had no college education enrolled in

college the fall after high school completion. In 1999, the figure was about 54 percent (National Center for Education Statistics, 2001). First-generation students nationally are also not very likely to enroll in four-year postsecondary institutions; only 30 percent of first-generation college students did so in 1995. Yet, of first-generation NAF college-goers, 43 percent of the 1995 cohort enrolled in a four-year college and 47 percent of the 1990 cohort did so. Although these comparisons are encouraging, they cannot be taken as definitive measures of academy effects since academy students are not representative of students nationally.³⁷

Many program alumni followed through on these positive starts by completing a two-year or four-year college degree within five to ten years (as shown in Table 11). Fifty-nine percent of the ten-year alumni and 45 percent of the five-year alumni had completed a four-year degree; and six and 14 percent, respectively, had completed a certificate or two-year degree by the time they were interviewed. Only a few never enrolled. In all, 78 percent enrolled in a four-year college at some time since high school graduation. Thirty-six percent were still enrolled when interviewed—76 percent in a four-year institution.

These educational attainment rates are much higher than those reported by a national sample of 26 year olds, who had been tracked since eighth grade in 1988. Of these young adults, 29 percent had completed a BA degree or higher—almost half the completion rate of the academy alumni. The completion rates were even lower among this national sample who were in public school in the eighth grade (26 percent), black, (17 percent) or Hispanic or Latino (15 percent) (Ingels, et al, 2002).

Table 11:
Highest Degree Attained by Alumni within Five to Ten Years
after High School Graduation
(Percentage)

Degree Attained	1990	1995	Total
No college	4%	4%	4%
Some college	31	38	36
Certificate/AA degree	6	14	12
BA/BS	45	44	44
Masters or higher	14**	1	5
N=	49	108	157

**statistically significant difference $p < .01$, chi-square test

Employment Experiences

A primary program goal is to help students make a successful transition into employment and gainful careers, and if desired by the student, into one of the NAF-affiliated industries. Generally, the program was designed to help students explore one industry in depth and to understand its career opportunities and related educational requirements. While program staff and employer partners hope that at least some of the young people will enter the academy industries, the program should generally help all graduates make a successful career transition into their field of interest, transferring their career and industry knowledge to explore other fields.

In this analysis, we explored the extent to which graduating seniors were interested in careers in their academy industry or related fields. We also examined the alumni's initial employment experiences and their later employment at the time they were interviewed, based on its relationship to the career academy industries, their job satisfaction, and the extent to which their current work fit their career plans.

Initial Employment Outcomes

At the time of graduation, half the academy seniors knew where they would be working for the summer, with about half of those planning to work in professional or semi-professional jobs or in administrative and support staff positions. As we have seen, most academy seniors were planning to be in college during the fall, with the majority anticipating that they would combine postsecondary studies with working.

The majority of career academy alumni worked in the fall following high school, on a full- or part-time basis. The majority of the working alumni were in executive, professional, technical, or administrative support positions and almost half were employed in the academy-related industries. By contrast, national data show that the majority of similarly-aged youth work in retail trade and service industries, with many holding fast food and supermarket positions (U.S. Department of Labor, 2000).

If the academy encouraged students to attend college, it also seems logical that academy students would be less likely to choose to work full time (although many students do work full time and attend college). We assumed that students who did not plan to attend college planned to work full time. We found that only 13 percent of the academy seniors planned to work full time in the fall after high school, while 27 percent of the comparison group were planning to do so. But this difference was due almost entirely to the Academy of Finance students. The Academy of Travel and Tourism seniors were much more likely than Academy of Finance seniors to be planning to work full time after high school and as likely as the comparison seniors, which may reflect their industry focus and the postsecondary educational requirements.

Alumni Employment Outcomes

Most working alumni appeared to be well situated in career-track positions at five and ten years after graduating, as shown on Table 12. Eighty-five percent were working and 46 percent had been continuously employed since high school graduation. The alumni's current employment fit moderately to extremely well with their long-range career goals. Most were satisfied with their current job based on a wide range of characteristics, including its field, the nature of the work, pay, benefits, importance, challenge, security, permanence, and opportunities for advancement. Also, the alumni's work was often in a professional field. Administrative support positions were the most common, with thirty-seven percent of those employed at the time of the survey working in such jobs, yet thirty-one percent had managerial or executive positions (not shown).

These results are quite positive when compared to a national sample of 26 year-olds in 2000 (who had been tracked since they were eighth graders in 1988 and would have been part of the 1992 graduating cohort). This sample was currently employed at a similar rate (86 percent), but their job satisfaction ratings were at least ten percentage points lower than the academy alumni for pay and fringe benefits, use of past training, and promotion opportunities, while more or less equal for job security and somewhat lower on the work's importance (Ingels et al., 2002).

Table 12: Alumni Job Status and Satisfaction (Percentage)			
	Year of high school graduation		Total
	1990	1995	
<i>Employment status</i>			
Currently employed	94%	81%	85%
Continuously employed since completing high school	39	49	46
Currently employed and having earned a 2-year or 4-year postsecondary educational degree	60	50	53
Currently employed, without having earned a postsecondary educational degree	35	34	34
Not working, but had earned a degree	2	8	6
Not working and not having earned a degree	3	8	6
N=	49	108	157
<i>Attributes of current or most recent job</i>			
Pay and fringe benefits	92	84	87
How well it relates to their academy experience	82	79	80
Its importance and challenge	94	87	89
Opportunities for advancement	92	82	85
Opportunities to use past training and skills	98	89	92
Security and permanence	94	88	90
Pride and respect received from family and friends	94	90	91
Relationships with co-workers	98	94	95
Nature of the work	94	88	90
The field itself	94	89	90
The job as a whole	92	87	89
N=	49	108	157
<i>Of those currently employed</i>			
Current job fits long-range career goals well	83	79	80
Works for an academy affiliated employer	0	7	5
N=	46	87	133

Employment in Academy-Related Occupations and Industries

One objective of the academy model is to encourage students to take an interest in the industries associated with the academies. Many employers work with the academies in part because they believe that they will help increase and strengthen the long-term labor supply available for their industries. In order to determine students' initial interest in careers related to the career academy, as well as the influence the academy may have had their career goals, we asked the open-ended question, "what career or job interested you the most?" when they were in 9th grade and also at the current time. Responses were coded as to whether these careers related to the academy focus. (The methodology is summarized in Appendix B.)

About one-fifth of the academy seniors reported having been interested in careers that were directly or somewhat related to their career academies when they were ninth graders (25 percent of the Academy of Finance seniors and 18 percent of the Academy of Travel and Tourism seniors). In contrast, less than ten percent of the comparison seniors had interest in any of the relevant occupations when they were ninth graders.

Participation in the career academy programs seemed to increase students' interests in careers in these industries. As seniors, 42 percent of the Academy of Finance seniors and 48 percent of the Academy of Travel and Tourism seniors were interested in careers in program-related fields, more than double the percentage with an initial interest for the latter group. To determine the extent of this increase, we also compared the academy seniors' career interests with their nonacademy peers. As might be expected, comparison students' interest in travel and tourism careers remained the same between their sophomore and senior years and their interest in finance-related careers increased

only in business careers, but not as much as their Academy of Finance peers. A small portion of the academy seniors actually lost interest in their academy-related industries, a plausible outcome from the program's intensive exposure.

Data from the alumni also suggest that the academies strengthened student interest in the academy-related industries, because the alumni pursued further employment and careers in these fields. Indeed, most alumni (90 percent) continued to work in the academy-related industries after high school and after college. For some, this employment was with an academy-affiliated employer specifically. Graduating seniors and alumni's initial postsecondary work experience was frequently in an academy-affiliated or other related industry. For the seniors, 26 percent were planning to work for their internship employer or other academy-affiliated employer in the summer or fall after high school (not shown). Of the alumni who worked the fall after high school graduation, 38 percent had positions with their summer internship employer or another affiliated employer (Table A-16). Five and ten years after graduation, 28 percent of working alumni were employed in jobs that were directly related to their academy-affiliated industries of finance and travel and tourism, while 54 percent found employment in the affiliated field of business. Moreover, 5 percent of working alumni were still working for their original internship employer or an academy-affiliated employer (not shown).

CONCLUSIONS

What has emerged from the various debates in recent years about high schools and their role in college preparation and workforce development are three converging objectives for transitioning adolescents: (1) to improve their academic skills and

performance, (2) to increase college-going and college completion, and (3) to shorten the early floundering period between high school completion and obtaining quality employment. These objectives are both overlapping and complementary, even the second and third objectives, yet they are often addressed separately. At the same time, many high school reform recommendations, while addressing different objectives, often contain similar institutional transformation features, such as small, more intimate learning communities; thematic, contextualized, and challenging curricula; the use of student-centered instructional practices; and engagement of learning resources from beyond the high school itself—through businesses and the community at large.

In contrast to other studies of academies (Kemple, 2001; Maxwell, 2001) that have studied programs with diverse characteristics, this report has analyzed ten career academy programs that were organized under the auspices of the National Academy Foundation (NAF). The educators who administer NAF academies agree to adhere to a core set of program characteristics; therefore this analysis focuses on a more homogeneous set of programs. NAF particularly emphasizes the comprehensive nature of the model that combines an industry focus and internships with strong contextualized academics.

In this report, we have presented information on the characteristics of NAF academy students, the elements of the programs that they have experienced, and the perceptions of NAF seniors and alumni about the quality and benefits of the academies. We have also examined the relationship between NAF participation and post-high school employment and educational activities. In some of our analysis we compared seniors who had completed the NAF programs to seniors in the same schools who had not

experienced an academy-like program and in some cases, we compared NAF alumni to national average characteristics.

There is a mutual selection process through which students enroll in the academies. The students must choose to apply and they are selected by academy teachers and administrators based on both objective and subjective criteria. Students who entered the academies did have higher GPAs and slightly higher attendance records than comparison students. Nevertheless, the academies were not elite programs. On many important demographic characteristics, the academy and nonacademy samples were not statistically distinguishable. And in general, the programs target middle-level students.

Our study clearly shows that it is possible to create and sustain an intensive and coherent academy program. In this study, all the programs provided the core career academy components as stressed by the NAF model, although there was some variation in emphasis and intensity. The programs created experiences for the participating seniors that were distinguishable from the high school experiences of the seniors in the nonacademy sample. Most participating seniors had a sequence of career-related courses; a private-sector, paid internship; a variety of college and career planning activities; and at least one college course. Seniors in the nonacademy sample were much less likely to have this combination of features.

Moreover, the students believed these experiences to be valuable and beneficial: most participating seniors and alumni agreed that the academies benefited them educationally and in preparing for college and careers. The academy students found the contextualized teaching and project-based learning to be more engaging and interesting than other coursework. Surveyed academy seniors reported feeling strongly supported by

the academy teachers and students, and generally felt more positive about and engaged in school than did their comparison peers. And although the academy students had slightly better attendance records in the early years of high school (before they were in an academy) than the nonacademy sample, during the period in which they were enrolled in the academy, attendance for academy students improved more than it did for the comparison students. This suggests that the academy experience improved student attendance.

The career academy experience did not have any measured influence on student GPAs, either positive or negative. At least this suggests that a program can include both at least one demanding college course and an internship requirement without weakening a student's academic achievement.

The academy experience also increased the students' interest in the related industries. Not surprisingly, on entering the academies students were already somewhat more interested in those industries than the comparison students. But that interest clearly strengthened as students went through the program. A small number of students also found that work in these industries was not for them, but this is also a positive outcome since it indicates that the program helped students understand their own interests and thereby refine their goals and plans. Alumni also stated that the program had increased their interest in the related industries and many had continued to work in the firms in which they had held internships. Thus the program does serve to strengthen the available labor supply for participating industries.

In general, academy alumni reported satisfaction with their post-high school education and employment. When compared to national averages, few needed

remediation in college and many worked in professional and managerial jobs in academy-related industries. Academy graduates appeared to have avoided, for the most part, typical youth-oriented jobs after leaving high school. Finally, a small percentage of the participants maintained a close relationship with their academy-affiliated employers by continuing to work for them many years after high school graduation.

Academy seniors, especially those in finance academies, were more likely than comparison seniors to have been admitted to a four year college and have planned to attend. This difference remained even after controlling for a variety of demographic and achievement related variables, suggesting that at least the finance academies have a positive influence on post-high school plans. And although the recent study by MDRC found no academy effect on college-going, the difference in results may be attributable to differences in the sample of academies—our study examined only NAF academies, while the MDRC study used a more heterogeneous sample.

Although these results on post-high school plans are encouraging, the analysis is complicated by two factors. The first complication is that there is some ambiguity about the optimal post-secondary activity. Second, although we have controlled for measured personal characteristics, it is still possible that unmeasured initial differences between the academy and nonacademy students may explain differences in measured outcomes.

Through their industry focus and internships, NAF academies improve students' post-high school employment opportunities. These opportunities may encourage students to work after high school, perhaps with the intention of continuing education later, while nonacademy students who will have relatively weaker employment opportunities may lean towards postsecondary education. Thus, immediate post-high school employment,

rather than college, may not be a negative outcome for some academy students, especially those who may face financial barriers to enrollment in college. This may be a more important factor in the academies of travel and tourism than in the finance academies.

In selecting our samples we attempted to reduce any differences between academy and nonacademy students, and indeed they were similar on many important variables. Nevertheless, some differences did remain. Although we were able to control for many of those differences in a multivariate analysis, unmeasured characteristics such as motivation may also influence outcomes. This problem is in principle solvable through extremely expensive random assignment evaluation. The MDRC study, through random assignment, was able to compare academy and nonacademy students whose measured and unmeasured characteristics do not differ systematically, and that study finds no academy effect on post-secondary activities. But that study does not measure the effect of NAF academies.³⁸

We have shown that students in NAF academies receive experiences and pursue post-secondary objectives and activities that are highly consistent with NAF goals and program features. NAF academy students and alumni are satisfied with their experience and believe that it prepared them well for post-secondary education and career employment. Participation appeared to strengthen attendance and not reduce GPAs despite time taken for career-related activities. The academy experience also increased student interest in the affiliated industries. And we presented suggestive evidence that the academy experience strengthened college-going plans, at least for finance academy students.

This study shows that the NAF academies are accomplishing many of the goals that they were established to achieve. The academy strategy continues to be an exciting approach to high school reform for which students, teachers, and administrators all exhibit satisfaction and enthusiasm. The strategy is also consistent with other high school reform initiatives such as recent efforts to create smaller high schools and to link high schools more closely with community colleges and other post-secondary institutions. Many of these linkages are organized around industry or occupational themes. While NAF continues to develop and invite new schools into the network, it should also continue to work to identify which combination of characteristics is most effective in achieving its overall objectives.

Notes

¹ An earlier version of this paper was presented at the annual conference of the American Educational Research Association, New Orleans, April 2002.

² Work-based learning refers to the use of work contexts or work settings for knowledge and skill development. This can include, for example, projects, and short- or long-term work experiences such as internships, apprenticeships.

³ <http://www.naf-education.org>

⁴ The original sample included ten sites, but we were not able to secure all of the requested data from each site. Therefore, some of the analyses use different numbers of sites depending on the availability of the relevant data. For more information, see Table A-1.

⁵ <http://www.pathwaystocollege.net>

⁶ For reviews of academy research see Hughes, Bailey, & Mechur, 2001; Stern, Dayton & Raby, 2000; Stern, Raby, & Dayton, 1992.

⁷ In this study, academy students could have been enrolled in one of 12 career academies in six comprehensive high schools in one district.

⁸ The Institute on Education and the Economy (IEE), Teachers College, Columbia University conducted the research, through a contract with the National Academy Foundation (NAF).

⁹ See Hughes, Karp, and Orr, 2002, for the employer research findings.

¹⁰ This ranged from 55% to 100% among our schools, with most returning 70% or more.

¹¹ NAF convened program directors at an annual meeting to discuss the research and the assistance we would need before the study began. We also conducted a conference call to discuss the study's administration and related logistics. NAF provided a small stipend to each school to help defray the costs of administering the survey and collecting transcript information and alumni addresses.

¹² The school had previously participated in a random assignment study. The staff felt that students knew when they were being surveyed for the purpose of showing that they were performing more poorly than other students who had academic opportunities they did not. The staff did not want to subject their students to this demoralization.

¹³ To test the effect of eliminating these 48 surveys, we ran some of the analyses using the entire sample with a dummy variable for observations that had missing information on race and gender, and then compared the results to the same analyses with the entire sample without using variables for race and gender as control variables. These changes did not influence the sign or significance of the coefficient for academy effects or any other variable.

¹⁴ These instances are noted in the relevant text and tables.

¹⁵ Alumni from 1990 and 1995 were interviewed in the summer and the fall of 2000 by an experienced telephone survey firm, which made several phone attempts during the day, evening, and weekends. Potential respondents were informed that the phone interview was completely voluntary and would be used for program improvement efforts, to encourage their candid assessments of their program experiences.

¹⁶ Logistic regression is an appropriate technique when the dependent variable is dichotomous.

¹⁷ Findings of core program components are presented in the text; findings on other components and on a wide range of personal and demographic characteristics are included in Appendix A.

¹⁸ This process was established to ensure that parents and school personnel know about the educational decision that the student has made, ensure that the student has some basic interest in the program, and prevent students from being assigned as an administrative accommodation.

¹⁹ NAF academies that are part of the California Partnership Academy network must have half of the students enrolled meet "at-risk" criteria.

²⁰ We got similar results when we estimated a logistic regression with these same variables in which the dependent variable was whether or not the student was in an academy.

²¹ Only eight schools are included in this analysis; due to concerns over confidentiality and privacy, one site, school E, refused to allow us to ask these questions of either the academy or the comparison group.

²² The GPA comparisons use data from the seven schools that provided transcript data.

²³ Some NAF schools also have non-NAF academies. In some cases, these were started after the school staff judged that they had had a successful experience with the NAF academy. In other cases, schools have incorporated some NAF- or academy-like practices into their regular classes and programs.

²⁴ While nationally, the majority of high school students have jobs, most have limited access to quality employment opportunities. School-provided internships, according to educational researchers, offer important advantages over the jobs students find on their own: more training, more interaction with adults at the work place, and better connections between students' studies and their work experience (Hershey et al., 1999). School-sponsored work placements also give students access to more diverse work places than

they would normally have (Bailey, Hughes, & Barr, 2000; Hershey et al., 1999). Such is the case for these career academy internships.

²⁵ Statistically significant differences between the two groups on each measure at $p < .05$.

²⁶ Statistically significant differences between the two groups at $p < .01$.

²⁷ Statistically significant differences between academy and nonacademy seniors at $p < .01$.

²⁸ As stated earlier, we were not able to link student characteristics to data from the transcripts, but our assumption here is that any student characteristics that would determine attendance did not change between ninth and twelfth grades and are therefore already reflected in the ninth grade attendance levels.

²⁹ By including pre-academy attendance, we are able to control for fixed motivational and other unmeasured factors that might influence attendance and that might influence academy enrollment. This provides evidence that changes in attendance were caused by the academy experience.

³⁰ Students were asked to list the college that they were expecting to attend in the summer or fall. They were then asked to identify the type of institution. If they did so, then we categorized them as planning to attend college in the summer or fall.

³¹ Students were asked to list the college they were going to attend. If they stated that the college was a four-year school, we categorized them as planning to attend a four-year college. We repeated the analyses using as a variable whether the student was planning to attend a four-year college and had been accepted at college. There were no substantial changes in the results.

³² NAF academy students are encouraged to take at least one college course. Therefore, as a result of this encouragement, we would expect that enrollment in an academy would result in students being more likely to take such a course than if they were not in the academy. To the extent that this is true, by including this variable as a control, we would expect our estimate of the effect of the academy to *underestimate* the true effect.

³³ To approximate the percentage (or marginal effect) that academy participation influenced college-going plans, multiply the academy coefficient by 0.25. For example, being in an academy increases the likelihood of planning and accepted at a four-year institution by 16 percent-- $p(Y=1) - p(Y=0) = (0.632) - (0.5) = (0.132) \approx 16$ percent. This approximation, however, relies on the assumption that academy affiliation is random

³⁴ We repeated this analysis using only the Finance Academy Schools. The academy variable was positive and significant and all of the other variables had the same sign and significance as in the analysis using both types of academies.

³⁵ Finally, as one more test, we did an analysis using all nine schools and, in addition to the demographic and course taking variables, we inserted a control for each school. In this case, we did not use the GPA. The school control approach is actually similar to our analysis using the GPA, since in this case, all students in each school share the value of one variable (the individual school dummy variable). Therefore, this variable will pick up some of the influence of the difference in average GPAs in each school as well as other school related influences. This analysis did pick up significant individual school effects—students from some schools were much more likely to go college than those from other schools. At the same time, the analysis showed the same positive finance academy effect. The other coefficients were similar, although the effects of parent's education and of moving recently were no longer significant, although the coefficients did have the same signs.

³⁶ The authors of the MDRC report adjusted their coefficients for attrition from the treatment group and academy enrollment for the control group. Even after this adjustment, they found no measured academy effect (Kemple 2001, p.18).

³⁷ Nationally, high school seniors are far less likely to be nonwhite and are far more likely to have one or both parents have some post-secondary education (74 percent of 1992 high school graduates, in contrast to only 49 percent of the 1990/1 academy alumni and 53 percent of the academy seniors) (Choy, 2002).

³⁸ The MDRC study also cost more than 50 times the present study.

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APPENDIX A: Additional Tables

Table A-1: Number of Student Transcripts Obtained by School and Academy Status								
School	Transcripts Received		Surveys Received		Usable Surveys		Usable Surveys Included in All Analyses	
	Non-academy	Academy	Non-academy	Academy	Non-academy	Academy	Non-academy	Academy
A	17	24	11	23	11	23	11	23
B	32	16	24	12	21	9	21	9
C	42	39	40	43	38	42	38	42
D	*	61*	31	26	30	23	***	***
E	26	13	11	11	10	10	10	10
F	37	37	19	27	17	25	17	25
G	**	20	**	11	Omitted from Study			
H	13	28	22	25	14	22	14	22
I	16	42	41	37	39	33	39	33
J	*	25*	16	18	10	12	***	***
Total	183	305	215	233	190	199	150	164

*Did not provide usable student transcripts.

**Did not provide a comparison sample.

***Not included in transcript analyses.

Table A-2:
Comparison of Academy and Nonacademy Seniors and
Academy Alumni on Personal Demographics

Characteristic	Academy Seniors	Nonacademy Seniors	Alumni 95-96	Alumni 90-91
Academy of Finance student	66%	0%	64%	90%
Female	71	65	60	45
Asian American/Pacific Islander	21	28		
Black or Hispanic	35	32		
Non-Hispanic White	44	40		
Do not know parents' educational attainment	22	14*	45	51
High school completion only for one or both parents	25	35*	--	--
Some college education, but not completion, for one or both parents	12	14	23	8**
College completion for one parent	26	20	31	41
College completion for both parents	15	16	--	--
Having moved 1+ times in the last six years	22	26	11	2
Having changed schools 2+ times in six years	9	13	--	--
N=	199	190	108	49

*statistically significant $p < .05$ **statistically significant $p < .01$

Note: Totals may not add 100 percent due to rounding.

Table A-3: Independent Measures Used in Comparing Academy and Nonacademy seniors	
<i>Independent measures</i>	
Academy status	Dichotomized as Academy or not
Type of academy affiliation	Dichotomized as: Academy of Finance or not Academy of Travel and Tourism or not
<i>Covariate measures used in the regression analyses of transcript data</i>	
Pre-academy GPA	Grade point average for the year before the academy seniors began their academy year
Pre-academy attendance	Number of days attended school in the year before the academy seniors began their academy program
<i>Covariate measures used in the senior survey regression analyses</i>	
Race/ethnicity	Dichotomized as: Asian or not African-American or not
Gender	Dichotomized as female or not
Having moved at least once in six years	Dichotomized as ever moved or not
Parental educational attainment	Dichotomized for each parental educational attainment level: Parents highest level of educational attainment unknown or not At least one parent has an AA degree or not At least one parent has a BA degree or not Both parents have a BA degree or not
School-wide Average pre-academy GPA	Group average by school and academy affiliation of pre-academy GPA
Number of years of algebra or higher level math courses	Self-reported number
Number of years of foreign language courses	Self-reported number
Whether students had an AP course	Dichotomized as had or had not
Whether students had a college level course	Dichotomized as had or had not
Number of years of remedial courses	Self-reported number

<p style="text-align: center;">Table A-4: Program and Outcome Measures Used to Compare Academy and Nonacademy Seniors</p>	
<i>Whether the academy created a uniquely different experience</i>	
Core program component measures	<ul style="list-style-type: none"> - Four or more career academy courses - Paid summer internship, connected to school - Unpaid summer internship, connected to school - One or more college-level courses - One or more years of computer technology - Number of career-related activities and classes in school - Number of college planning activities - Number of school-related job seeking activities
Quality of internship	<p>(3-point Likert prevalence scale)</p> <ul style="list-style-type: none"> - spent at least half time in training - rotated across several jobs - received a performance evaluation - had school-based supervision <p>(4-point Likert agreement scale)</p> <ul style="list-style-type: none"> - learned new things - was meaningful and important - completed one or more projects for the business
Student-centered nature of teaching	<p>4-point Likert scale agreement measure of (Cronbach's alpha=0.76):</p> <ul style="list-style-type: none"> - Teachers apply course content to problems and situations in the industry or real life - Teachers talk about different job opportunities - Work on multi-day projects - Teachers help with college planning - Teachers make sure students understand what they study - Teachers take the time to get to know you <p>Average rating of student-centered nature of teaching (based on the above six items)</p>
<i>Whether the academy enhanced school and school performance</i>	
School engagement and importance	<p>5-point Likert scale agreement measure of (Cronbach's alpha=0.61):</p> <ul style="list-style-type: none"> - Doing well in school is important - Things learned in school are going to be important later in life - Does not think about dropping out

	<ul style="list-style-type: none"> - Enjoys coming to school - Feels like they belonged in this school - Students feel connected to this school <p>Average of the school engagement and importance scale score (1-6)</p>
<i>Whether the academy experience was related to more college transition activities and plans</i>	
College planning actions taken	<ul style="list-style-type: none"> - Number of college planning actions taken - Average number of AP courses completed - Average number of college-level courses completed - Average number of colleges applied to - Believe they will complete a four-year college degree or more (measured on a rating scale of levels of educational attainment)
<i>Whether the academy experience was related to more career transition activities and plans</i>	
Summer employment plans	Nominal measures of working full-time, part-time or not working
Fall employment plans	Nominal measure of working full-time, part-time or not working
<i>School performance outcomes</i>	
Attendance rates	Percentage days attended (out of 180 days)
Grade point average	Grade level average based on a four-point scale
<i>Modeling the relationship between academy status and covariate measures on anticipated college outcomes: dependent measures</i>	
Planning to attend two-year or four-year college in the Summer or Fall and having been accepted	Dichotomous measure—yes or no
Planning to attend only a four-year college in the Summer or Fall and having been accepted	Dichotomous measure—yes or no
Planning to attend only a two-year college in the summer or fall and having been accepted	Dichotomous measure—yes or no

Table A-5: Alumni Program and Postsecondary Outcomes	
Internship	Dichotomous measure as internship or not
Had a high quality internship	Whether significantly influenced career direction
Had a beneficial preparatory experience	4-point Likert rating of the degree of academy helpfulness in: <ul style="list-style-type: none"> • focusing career plans • encouraging to complete high school • encouraging to continue education beyond high school • developing interest in industry or related fields • helping to see new career opportunities • causing to meet people would not have known
College-going	Whether went to college Nominal measure of type of college (two-year, four-year other) Financial aid (dichotomous) Nominal measure of type of degree completed Whether continuously enrolled or not Whether still enrolled or not
Remedial courses	Dichotomous measure or whether needed remedial courses or not
Employed in the fall after high school graduation	Nominal measure of employed full time, part-time or not employed
Type of fall employment after high school graduation	Ordinal measure of type of employment—executive, professional, technical, administrative and other
Type of industry employed in the fall after high school graduation	Dichotomous measure of whether employed in an academy-related industry or not (directly or somewhat related) Dichotomous measure of whether it was an academy-affiliated employer or not
Currently employed	Dichotomous measure of currently employed or not
Continuously employed status	Dichotomous measure of whether employed continuously since completing high school

Employment status	<p>Ordinal measure combining employment status and degree completion:</p> <ul style="list-style-type: none"> • Currently employed and having earned a postsecondary educational degree (two- or four-year degree) • Currently employed, without having earned a postsecondary educational degree • Not working, but had earned a degree • Not working and not having earned a degree
Type of job currently employed in	Ordinal measure of type of job: managerial, professional, technical, administrative, sales or other.
Career fit	4-point Likert scale rating of fit of current job to long-range career goals
Attributes of current or more recent job	<p>4-point Likert scale satisfaction ratings of:</p> <ul style="list-style-type: none"> • Job pay and fringe benefits • How well it relates to their academy experience • Its importance and challenge • Opportunities for advancement • Opportunities to use past training and skills • Security and permanence • Pride and respect received from family and friends • Relationships with co-workers • Nature of the work • The field itself • The job as a whole

Characteristic	Academy Seniors	Nonacademy Seniors
One parent lost a job	15%	20%
A family member was disabled or ill	22	17
One parent got married/remarried	7	11
Family member was a victim of a crime	14	17
Family received welfare	9	6
Parents divorced or separated	11	10
A sibling dropped out of school	3	5
A parent who died	4	5
Became seriously ill or disabled personally	6	7
N*=	180	189

* Only eight schools are included in this analysis; due to concerns over confidentiality and privacy, one site, school E, refused to allow us to ask these questions of either the academy or the comparison group.

	1990	1995	Total
Had a summer internship	92%	76%	81%
Had an alternative career-related experience	0	8	7
N=	49	108	157
<i>Agree or strongly agree regarding the internship:</i>			
Gained respect from family and friends	93%	98%	97%
Job related well to your career plans	84	93	90
Job increased your interest in working in the field	73	88	83
You enjoyed the experience	89	96	94
You developed job skills	93	96	95
Your job related well to your academy coursework	89	93	91
You learned things that you can't learn in class	96	99	98
N=	45	82	127

Table A-8:
Academy and Other Seniors Who Selected College and
Career Planning Activities in High School

<i>Activities</i>	Participation in the Activities (Percentage)	
	Academy Seniors	Nonacademy Seniors
<i>College Planning Activities</i>		
Talked with a teacher about postsecondary institutions	67%	57%**
Talked with a guidance counselor about postsecondary institutions	61	61
Discussed college in class	73	62**
Looked at college catalogs	78	73
Visited a college campus	71	54**
Took the SATs or ACTs	81	73*
Had a college interview	27	18*
Talked with parents about how to pay for school	75	68
Talked with a knowledgeable adult about financial aid	61	46**
<i>Career-related work-based learning experiences</i>		
School-based business/enterprise	59%	31%**
Community service	74	47**
Job shadowing	43	15**
Work site visit	53	16**
Employer talks at school	68	38**
Work readiness class	55	19**
Talked with teachers about careers	78	56**
Talked with counselors about careers	57	48*
<i>Job planning activities</i>		
Submitted a job application	56%	58%
Had a job interview	51	43
Applied for college work-study	20	17
Talked with a teacher about a career	42	28**
Talked with an advisor about a career	26	29
Been offered a job	48	39*
Currently work for/have worked for the employer respondent is planning to work for after graduation	32	31
<i>School-related job seeking activities</i>		
Interest inventories	12	6*
Job listings	22	22
Job fairs	19	8**
Career placement	10	8
Letters of recommendation from teachers	21	20

Letters of recommendation from other school staff	19	11
Practice interviews	35	14**
School-arranged job interviews	24	6**
Career exploration	26	15**
Job rotations	15	6**
Job shadowing	22	9**
Mentor	17	6**
Career day	22	17

*p<.05 using Pearson chi-square test

** p<.01 using Pearson chi-square test

Table A-9: Percentage of Academy Seniors Who Agreed that Participating in the Academy Benefited Them Some or a Great Deal in the Following Ways			
Types of benefits	Academy of Finance	Academy of Travel and Tourism	Total
Created a supported and encouraging high school experience	85%	89%	86%
Made me feel more comfortable in a professional work environment	85	95	88
Interested me in a career in the industry	69	69	69
Motivated me to do better in my school courses	67	82	72
Helped me to be well-prepared to pursue a career in the field	80	85	82
Made me seek challenging educational experiences	72	80	75
Gave me professional contacts	65	84	72
Made me seek a challenging career path	71	84	75
N=	107	55	162

Table A-10: Career Academy Students by Measures of Preparedness for College and the Job Market (Percentage)	
More prepared than friends who are not in the academy in:	Career Academy Seniors
Applying to colleges	58%
Planning the best way to achieve career goals	80
Knowing how and where to look for a job	81
Knowing what kinds of jobs are available	80
Knowing what kind of training is needed to be successful in chosen career	82
N=	193

Table A-11 Percentage of Academy Alumni Who Agreed that They Were Well or Very Well Prepared by their Academy for Postsecondary Education			
	1990	1995	Total
Identify and select a college that met your needs	90%	89%	89%
Have a career focus for your college major	91	88	89
Understand what college preparation is needed for jobs you want	94	95	95
Doing college-level academic work, generally	98	98	98
Doing college-level work in your major	92	96	95
Being motivated to complete your college degree	96	89	91
Taking at least one college-level course in high school	100	98	99
N=	49	108	157

Table A-12 Percentage of Academy Alumni Who Agreed that They Had the Following Benefits and Influences			
Percent who agreed somewhat or a great deal that the program benefited them in:	1990	1995	Total
Job readiness	96%	98%	97%
Academic skills	98	99	99
Knowledge of the industry	94	99	97
Ability to work with others	100	98	99
Ability to take direction	98	99	99
Increased confidence	100	99	99
Communication skills	98	97	97
Leadership skills	98	97	98
Computer skills	94	92	97
N=	49	107	156
Had a significant experience that greatly influenced their career direction			58%
N=			157
Of these, percent who identified their most significant as:			
--academy courses			40%
--academy internship			40
--other high school courses or work experience			0
--College or higher education			13
N=			91

Table A-13: Percentage of Academy and Nonacademy Seniors Who Agree that the Following Experiences Greatly Influenced their Career Direction			
Significant experiences	Academy Seniors	Nonacademy Seniors	Total
Regular high school classes	33%	44%	39%*
Academy high school classes	57		
Internship/school-related job	43	28	36**
Academy mentor/Adult mentor	14	16	15
High school job	38	22	30**
My parents' work	25	22	23
Volunteer work	30	15	23**
Other	10	14	12
N=	199	190	389

*= p<.05 chi-square test

**=p<.01 chi-square test

Table A-14: Percentage of Academy Seniors Who Agree that the Career Academy Program Helped them Prepare for College in the Following Ways			
	Academy of Finance	Academy of Travel and Tourism	Total
Helped me to focus on what I wanted to study	68%	69%	68%
Made me believe that college was a realistic option for me	54	61	54
Allowed me to earn college credit in high school	43	43	43
Improved my confidence about being prepared for college level work	59	61	59
N=	132	67	199

Table A-15 Percentage of academy alumni according to their initial post-secondary educational outcomes			
Postsecondary education enrollment summer or fall after high school	1990	1995	Total
Four-year college	76%	59%	64%
Two-year college	14	34	28
Other	4	3	3
Ever had remedial courses in college	6	3	4
N=	49	108	157

Table A-16 Postsecondary employment experiences of alumni, 1990 and 1995			
Characteristics	1990/1	1995	Total
In the fall after high school graduation, percent who worked:			
-- full time	25%	19%	20%
-- part-time	35	35	35
-- in apprenticeship or armed forces	0	1	1
-- in school and not working	31	41	38
-- other (incl. homemaker/looking for work)	9	4	6
Fall employment, percent who are working:			
-- full-time or part-time	62	55	57
N=	47	106	153
Fall employment (of those working), percent who are working:			
--for internship employer	59	16	30
--for other academy-affiliated employer	7	9	8
N=	29	57	86

APPENDIX B: Analysis of Changes in Students' Career Interests between Ninth and Twelfth Grades

To determine whether academy participation influenced students' career interests, we asked both groups of seniors to describe "what career or job interested you the most" as ninth graders and as seniors. For the Academy of Finance and nonacademy students in schools that had Academies of Finance, responses were coded as one of four categories: (1) not at all related/do not know, (2) somewhat related, (3) "business," or (4) directly related to the financial services industry, using the categories shown in Appendix Table B-1. Students who gave answers that were clearly not a focus of the academy, such as journalism, law, or medicine, as well as students who answered that they did not have a career goal, wrote a question mark, or otherwise indicated that they did not know what occupation they wanted to enter were coded as "not at all related." Responses that addressed occupations clearly focused on by the Academy of Finance curriculum, such as accounting, finance, or investment banking, were coded as "directly related."

However, there was a large gray area. Some students indicated that they were interested in careers such as marketing, real estate, human resources, or advertising. While these fields are not explicitly addressed by the academy curriculum, they are areas that students would likely have learned about through their academy experience, particularly during their internships or visits to businesses. Thus, it is conceivable that students' career goals had been influenced by the academy. Thus, these fields were coded as being "somewhat related."

Table B-1: Coding Scheme for Occupational Interests, Noted in the Ninth or Tenth Grade or Twelfth Grade			
Academy Type	Directly Related	Business	Somewhat Related
Academy of Finance	Management Accounting Finance Entrepreneur Stocks/Stockbroker CEO/CFO Investment Banking	Coded separately	Marketing Advertising Real Estate HR/Personnel Business Manager Clerical Worker Economics
Academy of Travel and Tourism	Travel Hotel Cruise Airline Chef/restaurant Hospitality	Included in somewhat related	Marketing Advertising Public Relations HR/Personnel

A further complication arose with the large number of students who exhibited interest in careers in “business.” This can be interpreted in one of two ways: young people are aware that individuals who work in the broad area of “business” tend to have a relatively high level of occupational and financial success and therefore they indicate a desire to enter the field without a distinct understanding of it and not as a result of their academy experience or, conversely, that academy students are exposed to a wide array of fields that are loosely categorized as relating to “business,” and that they find many of them interesting as a result. Thus, we cannot be certain that those students who indicated an interest in business careers were more interested in or influenced by the academy than others, but also cannot rule out this possibility. We therefore coded those students who listed “business” as a career goal into a separate category.

We used a similar coding scheme for the students in Travel and Tourism Academies and schools. Students who were interested in fields such as teaching, medicine, law, or who did not indicate a career goal, were coded as “not at all related”; students indicating a desire to enter careers such as hotel management, travel, or hospitality were coded as “directly related.”

Unlike the Finance Academies, Travel and Tourism Academies do not specifically focus on business-related areas such as accounting, although students do encounter “business” as part of their broad academy experience. Thus, we did not break out “business” as a separate category, instead including it, along with careers such as marketing, public relations, or advertising, in the “somewhat related” category. Again, occupations included in this category were those fields that students were likely to encounter during their academy experience but which are not explicitly addressed by the travel and tourism curriculum.

As the results displayed on Tables B-2 and B-3 indicate, the academies did attract students who tended to be interested in careers in relevant industries. One-quarter of the students in the Finance Academies and almost one-fifth of those in the Travel and Tourism Academies had, in ninth grade, career goals in occupations at least somewhat related to the academy industries. In contrast, less than ten percent of the students in the comparison classes had an interest in careers in the relevant academy occupations.

Participation in the academies does seem to be related to an increased interest in the academy industries. For Finance Academy students, interest in at least somewhat related occupations increased from 25 percent to 43 percent between the ninth and

twelfth grades. The increase for travel and tourism students was even larger: from 18 percent to 48 percent.

It is possible that the interest in these careers by all high school students might grow between these grades. This seems particularly likely for finance-related occupations, which, at the time of our survey, enjoyed high prestige. Indeed, Table B-2 does indicate that the interest in finance-related occupations did grow among students in the comparison groups in schools that had Academies of Finance. But this growth took place almost entirely in the “business” category. The number of comparison students interested in careers directly related to finance actually went down from four to two.

Table B-2: Occupational Goals of Students in Schools with Academies of Finance					
		Somewhat Related	Business Related	Directly Related	Total
Academy (N=131)	Ninth Grade	5 (3.8%)	13 (9.9%)	15 (11.5%)	33 (25.1%)
	Twelfth Grade	8 (6.1%)	24 (18.3%)	24 (18.3%)	56 (42.7%)
Nonacademy (N=122)	Ninth Grade	1 (0.8%)	4 (3.3%)	4 (3.3%)	9 (7.4%)
	Twelfth Grade	5 (4.1%)	16 (13.1%)	2 (1.6%)	23 (18.9%)

Table B-3: Occupational Goals of Students in Schools with Academies of Travel and Tourism				
		Somewhat Related	Directly Related	Total
Academy (N=65)	Ninth Grade	2 (3.0%)	10 (15.4%)	12 (18%)
	Twelfth Grade	17 (26%)	14 (21.5%)	31 (47.7%)
Comparison (N=70)	Ninth Grade	4 (5.7%)	0	4 (5.7%)
	Twelfth Grade	3 (4.3%)	0	3 (4.3%)

Table B-4: Student Increase and Decrease in Academy-Related Occupations			
	Increased Interest	Decreased Interest	Net Increase
Academy of Finance (N=131)	31 (23.7%)	8 (6.1%)	23 (17.6%)
Academy of Travel and Tourism (N=65)	23 (35.4%)	4 (6.2%)	19 (29.2%)

A stronger pattern emerged for students in schools with Academies of Travel and Tourism (Table B-3). Very few students in either group ever exhibited interest (somewhat or directly) in academy-related industries. In fact, no nonacademy seniors indicated an interest in careers directly related to the academy at any point. In contrast, over 20 percent of academy students desired to enter a field directly related to travel and tourism at the end of their senior year.

Net changes in the total number of students interested in particular occupation types do not indicate whether some students who were initially interested in a particular occupation lost interest. Indeed, we found that of the 33 finance students who were initially interested in at least somewhat related occupations, nine were no longer interested in any finance-related occupation by their senior year and six of the 23 students who were initially interested in travel and tourism related occupations had lost interest, representing six percent of all academy seniors (Table B-4). It may have been useful for many of these students to discover that they were not interested in something that initially appeared attractive to them. The loss of interest in the industry can be viewed as a program effect as well, because it may in part reflect what they have learned about the industry and themselves.

Although the number of students in these interest categories tends to be small, the analysis suggests that the academy experience does increase or solidify the interest of students in academy-related occupations, and even more, sharpens students' career interests either with or not with the industry. The academies do attract some students who are more likely to be interested in those occupations to begin with, although 75 percent of the students who entered the Academy of Finance and 88 percent of those students who

entered the Academy of Travel and Tourism did not express any initial interest in occupations even somewhat related to those industries. By twelfth grade, the percentage of interested students among those in an academy had grown; by graduation, almost half of both groups were interested in careers that were somewhat or directly related to their academy industry. While interest in “business” also grew among the comparison students in the finance academy schools, these students had no increase in interest in occupations directly related to finance. Also, the comparison students in the travel and tourism schools were not interested in travel and tourism related occupations either in ninth or twelfth grades.