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Study of the Effect of the Talent Search Program on Secondary and Postsecondary Outcomes in Florida, Indiana and Texas

A Study of the Effect of the Talent Search Program On Secondary and Postsecondary Outcomes in Florida, Indiana and Texas

Final Report From Phase II Of the National Evaluation

By:

Jill M Constantine
Neil S. Seftor
Emily Sama Martin
Tim Silva
David Myers

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CONTENTS

Chapter **Page**

Acknowledgments……..…iii

List of Tables…….…….……ix

List of Figures…….……..…..….. xiii

Executive Summary…… …….xv

I Introduction 1

A. Program Description 1

1. Context for Studying Talent Search 2
2. Services Offered by Talent Search 4
3. Study Description and Report Overview 4

II Study Design and Methodology 7

A. Study Design 7

1. Research Questions 7
2. State and Project Selection 7

B. Analytic Approach 9

1. The Preferred Comparison Group 9
2. Using Propensity Score Models to Identify the Comparison Group 11

C. Estimating the Effect of Talent Search on Secondary and Postsecondary Outcomes 14

1. Empirical Specification 14
2. Standard Errors 15
3. Reliability of Propensity Score Matching Methods 15

CONTENTS

Chapter **Page**

III Texas 17

A. Introduction 17

B. Data 18

1. Strengths and Weaknesses of the Data 20
2. Characteristics of Talent Search Participants and Potential Comparison Students 22

C. Comparison Groups 25

D. Results 29

1. High School Completion 31
2. Application for Financial Aid 32
3. Postsecondary Enrollment 34
4. Postsecondary Persistence 37

E. Discussion of Results 43

IV Indiana 49

A. Introduction 49

B. Data 49

1. Strengths and Weaknesses of the Data 52
2. Characteristics of Talent Search Participants and Potential Comparison Students 54

C. Comparison Groups 57

D. Results 63

1. Application for Financial Aid 63
2. Postsecondary Enrollment 64

E. Discussion of Results 68

CONTENTS

Chapter **Page**

V Florida 71

A. Introduction 71

B. Data 72

1. Strengths and Weaknesses of the Data 73
2. Characteristics of Talent Search Participants and Potential Comparison Students 75

C. Comparison Groups 77

D. Results 79

1. High School Completion, Application for Financial Aid, and College Entrance Test Taking 81
2. Postsecondary Enrollment 82
3. Postsecondary Persistence and Completion 87

E. Discussion of Results 90

VI Comparing Findings Across the States 95

A. Implications of the Data for Studying Talent Search 95

B. Findings 96

C. Implications 100

References 103

Appendix A: Chapter Tables 105

Appendix B: Compilation of Data Sources and Feasibility of Evaluations Based on Administrative Records 131

TABLES

Table		Page
I	Number of Talent Search Projects, Talent Search Participants, and Comparison Students, by State	xvi
I.1	Services Most Commonly Offered by Talent Search Projects in 2000	5
III.1	Texas Data Sources	19
III.2	Baseline Characteristics of Talent Search Participants and All Other Students, All of Texas	23
III.3	Below Grade and Persistence of Talent Search Participants and All Other Students in Texas	25
III.4	Assessing Balance Between Talent Search Participants and Nonparticipants in the Same High Schools in Texas	28
III.5	Assessing Balance Between Talent Search Participants and Nonparticipants at Different High Schools in the Same Districts in Texas	30
III.6	Percentage of Talent Search Participants and Comparison Students Who Completed High School in Texas, by Project	33
III.7	Percentage of Talent Search Participants and Comparison Students Who Were First-Time Applicants for Federal Financial Aid in 1999 or 2000 in Texas, by Project	35
III.8	Percentage of Talent Search Participants and Comparison Students Who Enrolled in Any Public Postsecondary Institution in Texas, by Project	38
III.9	Percentage of Talent Search Participants and Comparison Students Who Enrolled in a Four-Year Public Postsecondary Institution in Texas, by Project	39
III.10	Percentage of Talent Search Participants and Comparison Students Who Enrolled in a Two-Year Public Postsecondary Institution in Texas, by Project	40
III.11	Continuous Enrollment in Four-Year Institutions and Total Credits Earned by Talent Search Participants and Comparison Students in Texas	42
IV.1	Indiana Data Sources	51

TABLES

Table		Page
IV.2	Baseline Characteristics of Talent Search Participants and All Other Students in Ninth Grade in Fall 1995, All of Indiana	55
IV.3	Assessing Balance Between Talent Search Participants and Nonparticipants in the Same High Schools in Indiana	60
IV.4	Percentage of Talent Search Participants and Comparison Students Who Applied for Financial Aid or Enrolled in a Postsecondary Institution in Indiana, by Project Group	67
V.1	Florida Data Sources	73
V.2	Baseline Characteristics of Talent Search Participants and All Other Students, All of Florida	76
V.3	Below Grade and Persistence of Talent Search Participants and All Other Students in Florida	77
V.4	Assessing Balance Between Talent Search Participants and Nonparticipants in the Same High Schools in Florida	78
V.5	Assessing Balance Between Talent Search Participants and Nonparticipants at Different High Schools in the Same Districts in Florida	80
V.6	Percentage of Talent Search Participants and Comparison Students Who Completed High School and Applied for Financial Aid in Florida, by Project	83
V.7	Percentage of Talent Search Participants and Comparison Students Who Took College Entrance Exams in Florida, by Project	84
V.8	Percentage of Talent Search Participants and Comparison Students Who Enrolled in Any Public Postsecondary Institution in Florida, by Project	86
V.9	Percentage of Talent Search Participants and Comparison Students Who Enrolled in a Four-Year Public Postsecondary Institution in Florida, by Project	88
V.10	Percentage of Talent Search Participants and Comparison Students Who Enrolled in a Two-Year Public Postsecondary Institution in Florida, by Project	89
V.11	Percentage of Talent Search Participants and Comparison Students Who Persisted in Public Postsecondary Institutions in Florida, by Project	91

TABLES

Table		Page
V.12	Percentage of Talent Search Participants and Comparison Students Who Completed a Two-Year Degree in Florida, by Project	92
A.III.1	Variable Descriptions—Texas	107
A.III.2	Baseline Characteristics of Talent Search Participants and Nonparticipants in Texas, by Project	109
A.III.3	Below Grade and Persistence of Talent Search Participants and Nonparticipants in Texas, by Project	115
A.IV.1	Variable Descriptions—Indiana	117
A.IV.2	Baseline Characteristics of Talent Search Participants and Nonparticipants in Ninth Grade in Fall 1995, in Indiana, by Project Group	119
A.V.1	Variable Descriptions—Florida	123
A.V.2	Baseline Characteristics of Talent Search Participants and Nonparticipants in Florida, by Project	125
A.V.3	Below Grade and Persistence of Talent Search Participants and Nonparticipants in Florida, by Project	129
B.1	Summary of Talent Search Project Record Data Collection	136

FIGURES

Figure		Page
1	Talent Search Participants and Comparison Students Who Were First-Time Applicants for Federal Financial Aid, 1999–2000, by State	xviii
2	Talent Search Participants and Comparison Students Who Enrolled in a Public Postsecondary Institution, 1999–2000, by State	xix
3	Talent Search Participants and Comparison Students Who Enrolled in a Public Two-Year or Four-Year Institution, 1999–2000, by State	xx
III.1	Talent Search Participants and Comparison Students Who Completed High School and Were First-Time Applicants for Financial Aid from Texas in 1999 or 2000	32
III.2	Talent Search Participants and Comparison Students Who Enrolled in a Public Postsecondary Institution in Texas in 1999, 2000, or 2001	36
III.3	Talent Search Participants and Comparison Students Who Enrolled in a Public Postsecondary Institution in Texas in 1999, 2000, or 2001, by Institution Type	37
IV.1	Talent Search Participants and Comparison Students Who Applied for Financial Aid in Indiana	64
IV.2	Talent Search Participants and Comparison Students Who Enrolled in College in Indiana	65
IV.3	Talent Search Participants and Comparison Students Enrolled in College in Indiana, by Degree Program	66
V.1	Talent Search Participants and Comparison Students Who Completed High School, Applied for Financial Aid, and Took College Entrance Exams in Florida	82
V.2	Talent Search Participants and Comparison Students Who Enrolled in a Public Postsecondary Institution in Florida	85
V.3	Talent Search Participants and Comparison Students Who Persisted in Public Postsecondary Institutions in Florida	90
VI.1	Talent Search Participants and Comparison Students Who Were First-Time Applicants for Federal Financial Aid, 1999–2000, by State	97

FIGURES

Figure **Page**

VI.2 Talent Search Participants and Comparison Students Who Enrolled in a Public Postsecondary Institution, 1999–2000, by State....98

VI.3 Talent Search Participants and Comparison Students Who Enrolled in a Public Two-Year or Four-Year Institution, 1999–2000, by State....99

EXECUTIVE SUMMARY

Many studies have documented the fact that college graduates earn significantly more money during their lifetimes than high school graduates (U.S. Department of Education 2004). Research also shows that college graduates demonstrate greater civic involvement and are more likely to vote and assume leadership roles in their communities (Astin 1993; Bowen and Bok 1998).

Low-income students and students whose parents have not attended college typically are less likely than middle- and upper-income students to complete high school and attend college, and are thus less likely to reap the benefits of attending college. Lack of information, resources, and exposure to others who have navigated the college process may be substantial hurdles for these students. Federal financial aid is available through Pell Grants, college tuition tax credits, and student loan programs, but low-income students may not be taking full advantage of these sources. Even low-income students with high educational aspirations may find the financial aid and college application processes overwhelming and discouraging.

In 1965, Congress established the Talent Search Program as one of the original federal TRIO programs. The others include Upward Bound, created in 1964, and Special Services (later renamed Student Support Services), established in 1968. Today, TRIO includes five other programs. Collectively, these programs help low-income, potentially first-generation college students prepare for and gain access to college. The Talent Search program primarily provides information on the types of high school courses students should take to prepare for college and on the financial aid available to pay for college. The program also helps students access financial aid through applications for grants, loans, and scholarships, and orients students to different types of colleges and the college application process. In fiscal year (FY) 2004, the Talent Search program received approximately $144 million to serve 382,500 students in 470 projects across the country; on average, each project spent approximately $375 per participant served. The program has grown since FY 2000, the period relevant to this study, when Talent Search served 320,000 students and spent approximately $313 per student.

After a two-year implementation study, the U.S. Department of Education's Policy and Program Studies Service selected Mathematica Policy Research Inc. (MPR) in 2000 to assess the effect of Talent Search in selected states. A variety of designs were considered and ultimately the study team opted to compile data from administrative records from many sources, including program, state, and federal records, to evaluate the effectiveness of federal education programs, partly as a test of whether such an evaluation was feasible. The study also yielded useful information about the effectiveness of the Talent Search program.

METHODOLOGY

The study included an analysis of the effectiveness of the Talent Search program in Florida, Indiana, and Texas. We based our analysis on administrative data compiled in these three states and a quasi-experimental design to create matched comparison groups (Rosenbaum and Rubin

1985). Outcomes of students who participated in Talent Search were compared with outcomes of similar students at the same schools or other schools who did not participate. We restricted our analysis to the cohort of students who were in ninth grade in 1995–96 to allow us to collect information on high school completion and postsecondary enrollment, which occurred as late as 2002. Although all students were in ninth grade in 1995–96, Talent Search participants may have received services through the program at any point from grades six through twelve. We compared secondary and postsecondary outcomes between Talent Search participants and comparison groups within each state.

We received data on Talent Search participants from at least 60 percent of all Talent Search programs operating in Florida, Indiana, and Texas in 1995–96. As shown in Table 1, samples included large numbers of Talent Search participants and matched comparison students in each state.

TABLE 1

NUMBER OF TALENT SEARCH PROJECTS, TALENT SEARCH PARTICIPANTS, AND COMPARISON STUDENTS, BY STATE

State	Total Number of Talent Search Projects Operating in 1995–96	Number of Projects Providing Data	Number of Talent Search Participants in Study Cohort	Number of Matched Comparison Students in Study Cohort
Florida	7	5	908	13,843
Indiana	8	7	1,166	9,844
Texas	16	10	4,112	30,842

KEY FINDINGS

The main research questions addressed in this report are as follows.

1. Is it possible to rely on administrative records to compile a retrospective record of participation in Talent Search, characteristics of students in secondary school, and secondary and postsecondary outcomes?

2. Can administrative data and quasi-experimental techniques be used to identify students who are not participating in the program but have characteristics similar to the Talent Search students in order to estimate the relationships between participation in Talent Search and secondary and postsecondary outcomes?

The Efficacy of Using Large State Databases to Inform Policy

The compilation of data from administrative sources to study the effect of Talent Search on participants was successful in Florida, Indiana, and Texas. We could not compile a suitable data file for analysis in Minnesota (due to a lack of access to state secondary school records) and Washington (due to missing or poor-quality Talent Search project data). Obtaining student level data which included information identifying students to facilitate merging records across data sources was challenging to obtain for the years of interest, 1995–2000. Data from recent years should be easier to attain as more states develop systems for compiling secondary and postsecondary school records, and federal programs are more consistent in reporting information on the participants served and maintain records electronically.

The data files compiled in Florida, Indiana, and Texas contained a wealth of information on students in Talent Search. This included important demographic information such as age, race, and gender; the school the student was enrolled in for ninth grade; and postsecondary outcomes, such as first-time application for financial aid and postsecondary enrollment. Because we compiled a large amount of data in each state, both in terms of the number of data elements available and the size of the student samples, we were able to use complex propensity score matching models to identify nonparticipating students who were most similar to Talent Search participants. We were also able to obtain these data at a far lower cost and in a shorter time frame than if we had collected data directly from students and their families over a five- to seven-year period.

However, not all data on student characteristics and on secondary or postsecondary outcomes of interest were available in any one state, and the type of information that was missing differed across states. However, the variations in the data, as well as our strategies for drawing comparison students in each state, provided a good test of the sensitivity of the findings to using different data sources and comparison students. Findings that were consistent across all three states suggest greater robustness.

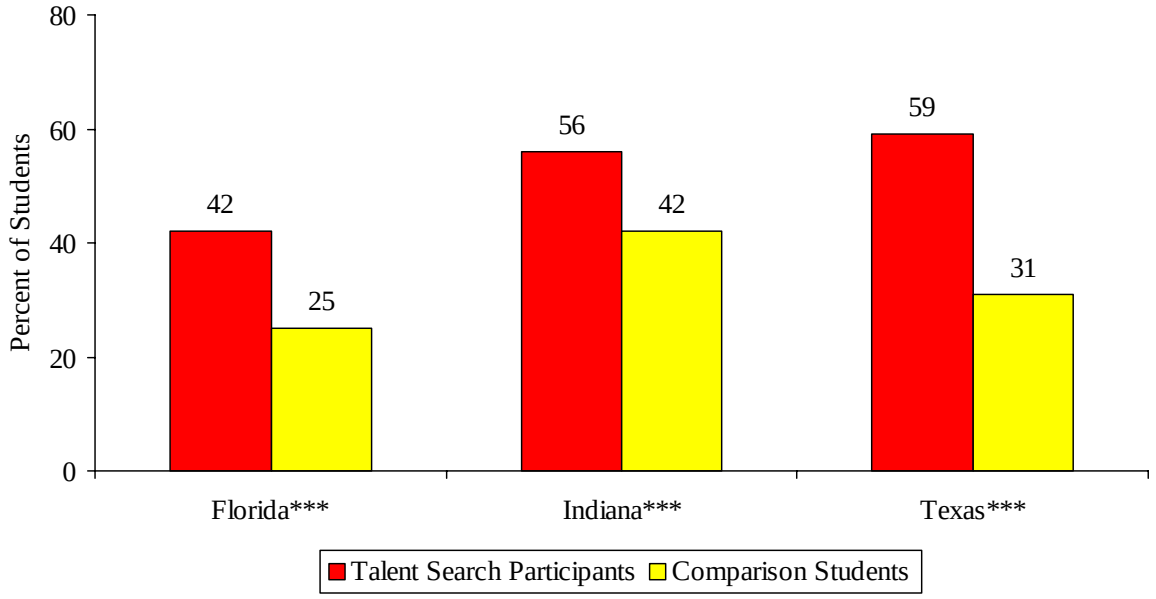
Findings Across States

Talent Search participants were more likely than comparison students to apply for federal financial aid and enroll in public postsecondary institutions in Florida, Indiana, and Texas.

- ***Financial Aid Applications.*** Talent Search participants were more likely than nonparticipants from similar backgrounds to be first-time applicants for financial aid in the 1999–2000 school year. The difference in financial aid application for Talent Search participants and nonparticipants was 17, 14, and 28 percentage points, respectively, for Florida, Indiana, and Texas (Figure 1). The difference was smallest in Indiana, where we had the strongest measures of educational aspirations. Even in Indiana, however, the gap represents application levels for financial aid that are one-third higher for Talent Search participants.

FIGURE 1

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO WERE FIRST-TIME APPLICANTS FOR FEDERAL FINANCIAL AID, 1999–2000, BY STATE



Note: Talent Search participants were students in ninth grade in 1995–96 served by a Talent Search project that supplied data for this study. Comparison students are nonparticipants from the same target high schools as Talent Search participants who matched to a Talent Search participant.

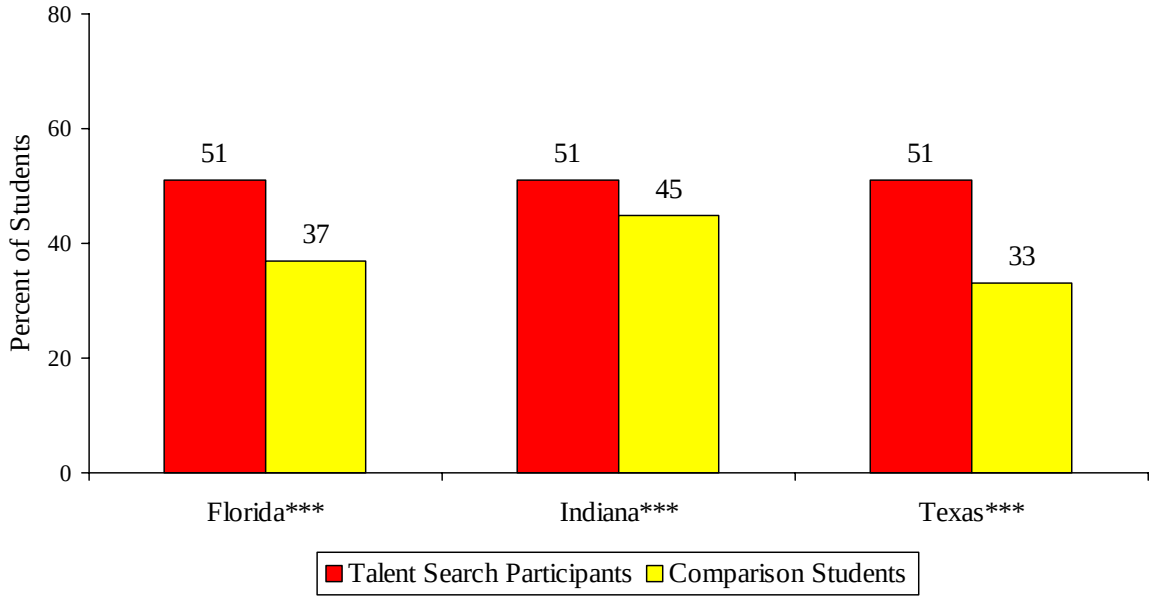
***Difference is statistically significant at the 1 percent level.

- ***Postsecondary Enrollment.*** Talent Search participants were more likely than nonparticipants to enroll in a public college or university in their state by the 1999–2000 school year. Initial enrollment in a postsecondary institution was higher by 14, 6, and 18 percentage points, respectively, for Florida, Indiana, and Texas (Figure 2).

- ***Enrollment in Two- Versus Four-Year Institutions.*** Talent Search participants were more likely to enroll in two-year and four-year institutions and the gains were larger and more statistically robust for two-year enrollment (Figure 3). Enrollment by type of institution (two- or four-year) was linked to the type of institution hosting the Talent Search project. In general, projects increased two- or four-year enrollment, but not both. Talent Search projects may have increased enrollment by exposure to their type of institution, or to their specific institution.

FIGURE 2

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A PUBLIC POSTSECONDARY INSTITUTION, 1999–2000, BY STATE



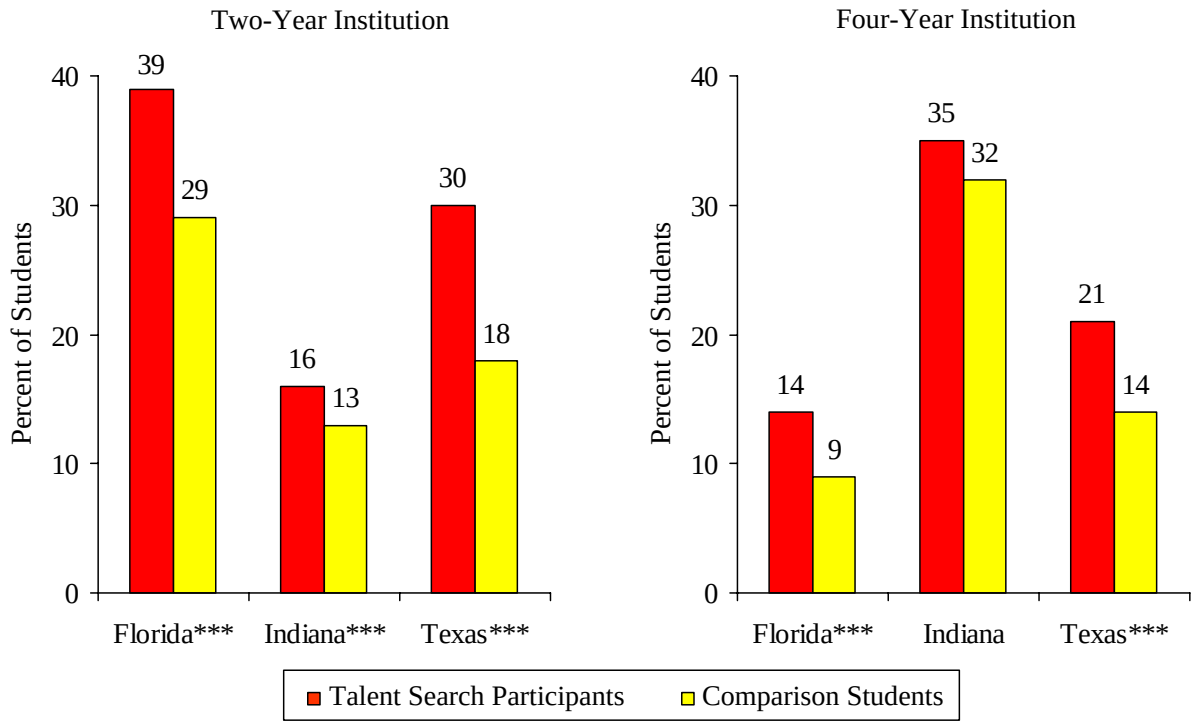
Note: Talent Search participants were students in ninth grade in 1995–96 served by a Talent Search project that supplied data for this study. Comparison students are nonparticipants from the same target high schools as Talent Search participants who matched to a Talent Search participant.

***Difference is statistically significant at the 1 percent level.

We also examined differences in high school completion in Florida and Texas, the states where this information was available in administrative records. There were large differences in Florida and Texas—9 and 14 percentage points, respectively—between Talent Search participants and nonparticipants. However, we are less confident this finding can be attributed to participation in Talent Search than the findings on application for financial aid and initial college enrollment. Estimates of the differences in Florida and Texas could be biased upward if Talent Search project staff chose to serve students who were most likely to complete high school and most Talent Search project services do not directly target high school retention, so there is no program-based explanation for generating a difference of this magnitude. Also, we cannot verify that Talent Search participants also had higher rates of high school completion in Indiana. The magnitude of the differences in high school completion suggests that the data available in Florida and Texas may not be adequate to control for characteristics, such as educational aspirations and motivation, of students who choose to participate in Talent Search. It is possible that some of the difference in high school completion is due to participation in Talent Search, but the evidence is not as strong as the findings on application for financial aid and postsecondary enrollment.

FIGURE 3

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A PUBLIC TWO-YEAR OR FOUR-YEAR INSTITUTION, 1999–2000, BY STATE



Note: Talent Search participants were students in ninth grade in 1995–96 served by a Talent Search project that supplied data for this study. Comparison students are nonparticipants from the same target high schools as Talent Search participants who matched to a Talent Search participant.

***Difference is statistically significant at the 1 percent level.

CONCLUSION

The study was not a randomized experiment and we cannot attribute differences in outcomes solely to participation in Talent Search. However, despite the limitations in the data and the design, we are more confident that some of the differences in first-time application for financial aid and initial postsecondary enrollment can be attributed to participation in Talent Search, for several reasons. First, the magnitude of the differences in first-time application for financial aid and postsecondary enrollment were larger than the difference in high school completion and remained even when examining these outcomes among high school graduates only. This suggests that even if unmeasured characteristics accounted for all the differences in high school completion, some of the differences in postsecondary outcomes could still be attributed to participation in Talent Search. Second, the higher rates of application for financial aid and postsecondary enrollment were consistent across all three states (although the differences were smallest in Indiana, where the two groups had similar educational aspirations).

A third and important reason is consistency with the program's objectives and services it delivers. Talent Search projects report directly targeting services toward activities to increase application for financial aid and postsecondary enrollment. From the research conducted for Phase I of this study, we found that help with application for financial aid is "hands on"—it involves sitting with students to complete their paper-and-pencil applications or at a computer to complete the Web-based Free Application for Federal Student Aid (FAFSA). Talent Search project staff also reported providing college orientation activities, such as help completing college applications, visits to college campuses, and arranging for participants to shadow students—often Talent Search alumni—at the project's host institution. Looking at the findings across projects, the potential relationship between enrollment in a two- or four-year institution and the type of institution hosting the Talent Search project suggests that orientation to the host institution itself may increase postsecondary enrollment for participants.

The findings we present in this report suggest that assisting low-income students who have college aspirations to overcome information barriers—an important objective of the Talent Search program—may be effective in helping these students achieve their aspirations. Practical information—direct guidance on how to complete applications for financial aid and admission to college and what a college campus looks and feels like—may have been one of the key services that Talent Search projects delivered.

I. INTRODUCTION

A. PROGRAM DESCRIPTION

One of the original federal TRIO programs, Talent Search was designed to help low-income, potentially first-generation college students prepare for and gain access to college. The program helps students achieve these goals by:

- Providing information on the types of high school courses students should take to prepare for college
- Providing information on financial aid available to pay for college
- Helping students access financial aid through applications for grants, loans, and scholarships
- Orienting students to different types of colleges and the college application process

Talent Search has consistently been the largest of the TRIO programs in the number of students served. Talent Search funding in fiscal year (FY) 2004 was approximately $144 million and it served 382,500 students in 470 projects across the country. The program has grown since FY 2000, the period relevant to this study, when Talent Search served approximately 320,000 students in 360 projects across the country.[1] Talent Search, which spent approximately $313 per student in FY 2000, is a relatively low-intensity program.[2] It targets students who have academic potential for college but who may need extra information and help in navigating the financial aid and college application process. The low-intensity structure of Talent Search is reflected in the limited number of services participants received. According to a survey of

[1] Other original TRIO programs were much smaller in the same fiscal year. In 2000, Student Support Services (SSS) served approximately 180,000 students. In 1999, Upward Bound served fewer than 60,000 students combined. For a profile of TRIO programs, see U.S. Department of Education 2003.

[2] For example, in FY 2001, the average cost per student served by Upward Bound was $4,800 per year.

project directors in 2000, while almost three of ten Talent Search participants received 20 or more hours per year of services, nearly half received 10 hours per year of services or fewer.[3]

1. Context for Studying Talent Search

The importance for success in the labor market of completing high school and earning a postsecondary degree is well documented. The difference in earnings between high school and college graduates is great, even among young workers. For full-time workers ages 25 to 34, median earnings are 65 to 70 percent higher for workers with a bachelor's degree than for workers with a high school diploma only. Workers who do not complete high school fare much worse, earning only 75 percent of what high school graduates earn and less than half of what workers with a bachelor's degree earn (U.S. Department of Education 2004). These differences increase with workers' ages, as earnings also rise more rapidly among college-educated workers with experience (Murphy and Welch 1992). In addition to the economic benefits of a college education, evidence suggests positive externalities are generated by individuals who complete college, such as having a greater civic orientation, being more likely to vote, and assuming leadership roles in their communities (Astin 1993; Bowen and Bok 1998).

Low-income students are less likely than middle- and upper-income ones to complete high school and attend college (and thus less likely to reap the benefits of attending college) for several reasons. First, the barriers low-income students face are due, in part, to the socioeconomic status of their families—it is more difficult for low-income families to allocate time and money toward schooling and away from other necessities. Second, the environment outside the household compounds these issues. Recent studies of high school dropout rates across the country indicate that not only do low-income students have higher dropout rates than

[3] For details on the program as it was operating in the late 1990s, see Cahalan et al. 2004.

other students, but middle-income students at high-poverty high schools have higher dropout rates than middle-income students at other high schools. Attending a high-poverty high school is particularly deleterious for high school completion among African Americans (Swanson 2004; Balfanz and Legters 2004). Third, most low-income students do not have a parent who has a college degree, which presents both financial and informational barriers for students accessing financial aid and navigating the college admissions process. In 1999, 82 percent of students with parents with a bachelor's degree enrolled in college immediately after high school, compared to 54 percent of students with parents with high school diplomas only. Differences in high school curricula, parents' education, and test scores can partly explain the gap in enrollment rates between low- and high-income students (U.S. Department of Education 2001; Jacobson et al. 2001; McPherson and Schapiro 1998). However, evidence indicates that, even though financial aid programs such as Pell Grants, college tuition tax credits, and student loan programs are available, differences in financial resources also play an important role (Kane 1999). Talent Search tries to help students overcome these obstacles by primarily targeting low-income, potentially first-generation college students.[4]

Additionally, low-income students are not taking full advantage of financial aid programs. A study by the American Council on Education showed that 20 to 30 percent of college-going students with family incomes below $40,000 (and thus likely to be eligible for federal financial aid) did not file a Free Application for Federal Student Aid (FAFSA) in 2000. This includes approximately 850,000 students who may have been eligible for a Pell Grant (King 2004). Other studies have also shown that while low-income students may have high educational aspirations,

[4] In each Talent Search project, up to one-third of participants need not meet either of these criteria. Most projects, however, have considerably fewer than one-third of participants who do not meet either of the criteria.

they find the college admissions test-taking, financial aid application, and college application process difficult to navigate (St. John et al. 2002; Avery and Kane 2004).

2. Services Offered by Talent Search

Talent Search helps students overcome the informational barriers that stem from attending high-poverty high schools and being the first generation in their families to attend college. The services and goals of the Talent Search program are specifically intended to address some of the barriers described above. Talent Search projects reported providing a wide range of services in 1999–2000, but the services most commonly provided fall into three categories: (1) academic support, (2) career development, and (3) financial aid. Table I.1 shows the percent of projects providing the services most commonly reported in those categories**.** The services listed include only those that more than 90 percent of the projects provided. In addition, project directors listed financial aid services and visiting college campuses as the top two services that contributed to achieving the projects' objectives.

3. Study Description and Report Overview

Assessing the effectiveness of Talent Search in achieving its program goals is challenging, due to the large number of students it serves, the diffusion of projects across all 50 states and many schools, and the low intensity of services. Because many services focus on providing information to students, conducting an evaluation using a randomized design or nonrandomized study based on a longitudinal survey of students could be difficult to implement and prohibitively expensive. Based on three designs proposed by Mathematica Policy Research Inc. (MPR) in 2000 (Maxfield et al. 2000), the U.S. Department of Education (ED) chose to study the effect of participation in Talent Search on secondary and postsecondary outcomes in selected states, relying on administrative records gathered from several sources and quasi-experimental

TABLE I.1

SERVICES MOST COMMONLY OFFERED BY
TALENT SEARCH PROJECTS IN 2000

Type of Service	Projects Providing Service (Percent)
Academic Support	
Test taking and study skills	98
Academic advising and course selection	94
Career Development	
College orientation activities	98
Visits to college campuses	96
Referrals and counseling	91
Financial Aid	
Individual financial aid counseling	98
Financial aid workshop	97
Assistance with pencil-and-paper FAFSA	97
Scholarship searches	94

Source: Tables 6.1, 6.3, and 6.4 from Cahalan et al. 2004, based on MPR's Survey of Talent Search Project Directors in 1999–2000.

statistical techniques, which allow us to identify students who did not participate in the program but who were similar to Talent Search participants.

In Chapter II, we describe the methods used in the analysis. In chapters III, IV, and V, we describe the data sources used to compile records on students, the strengths and weaknesses of the data, the specific analytic approach for identifying nonparticipating students who are similar to Talent Search participants in each state, and estimates of the effects of Talent Search on completion of high school, financial aid, and postsecondary enrollment in Texas, Indiana, and Florida.[5] In the final chapter, we discuss our findings across the states and assess the success of our analytic approach.

[5] We present findings in Texas first since the data collected in Texas were compiled entirely by MPR staff. We follow with the findings in Indiana and Florida to provide contrast in the type of information available across the three states. The order of the presentation of the state findings do not reflect the importance of the findings in one state over another.

II. STUDY DESIGN AND METHODOLOGY

A. STUDY DESIGN

1. Research Questions

The two main research questions posed in this design and addressed in this report are: (1) Is it possible to rely on administrative records to compile a complete, retrospective record of participation in Talent Search, characteristics of students in secondary school, and secondary and postsecondary outcomes? and (2) Can administrative data sources and quasi-experimental techniques be used to identify students who are not participating in the program but have characteristics similar to the Talent Search students in order to estimate the relationships between participation in Talent Search and secondary and postsecondary outcomes?

2. State and Project Selection

We chose Florida, Indiana, and Texas for our analysis based on the findings of the feasibility study (Maxfield et al. 2000). We also conducted additional research and negotiations in other states. The requirements for the administrative data were high: states had to provide secondary and postsecondary data that would allow us to track the experiences of one cohort of ninth-grade students over several years. In addition, we needed detailed identifying information on students so that we could merge the data from Talent Search projects and federal financial aid applications with the state data. A brief description of the data sources in each state is provided in the chapter on that state; Appendix B contains a more detailed explanation of the data sources and process of merging information across those sources.

The cohort we chose for this study consisted of students in the ninth grade in the fall of the 1995–96 school year. We chose this cohort to allow collection of retrospective data that enable us to assess outcomes related to the Talent Search program goals: high school completion,

application for financial aid, and college enrollment. Students from this cohort who graduated from high school "on time" in spring 1999 were first-time applicants for financial aid and new entrants in college in fall 1999. We obtained data on first-time applicants for financial aid and college enrollment for 1999, 2000, and (in some cases) 2001, thus allowing extra time for students who take longer to complete high school or wait after completing high school before applying for aid and enrolling in college.

After we identified the states for the analysis, we attempted to collect student participation and identification data from all Talent Search projects in each state; thus, we tried to obtain information on a complete census of Talent Search participants from 1993–2000.[6] We focused on 1993–2000 because the cohort chosen for the study, students who were in ninth grade in 1995–96, progressed from middle school through high school during this time period. Many projects did not have records of participants as far back as 1993, but all projects that provided data for the study had records back to 1995. We received data from at least 60 percent of projects in Florida, Indiana, and Texas, but we did not receive data from all projects in any state. Therefore, our findings do not reflect the experience of the entire population of participants, even for the cohort of students in ninth grade in 1995–96, although they do reflect the experiences of most of the participants in the cohort in these three states.[7]

[6] Some Talent Search participants may have first participated in the program in years prior to 1995–96, when they were in middle school. In order to capture services received in middle school, we extended the window of Talent Search program participation back to 1993.

[7] Appendix B contains a detailed description of the data collected from Talent Search projects.

B. ANALYTIC APPROACH

1. The Preferred Comparison Group

Our goal in assessing the effect of Talent Search on participants was to determine what would have happened to Talent Search students if the program had not been available to them. A randomized study would have provided the most valid framework for such an analysis, splitting students who wished to participate in Talent Search into groups of those assigned to participate and those not assigned to participate. Because a randomized study was determined to be infeasible, however, we attempted to identify a group of students who were similar to Talent Search participants but who had not participated in the program. Within the quasi-experimental framework, the preferred set of comparison students would (1) be drawn from the same districts as the Talent Search participants (for each project) but not from the same high schools; (2) have persisted to the same point in high school; and (3) be similar on all observable characteristics.

Drawing comparison students from other high schools is useful because students in target high schools who chose to participate in Talent Search when it was offered may be fundamentally different in important characteristics from those who chose not to participate. Some of these characteristics—such as motivation and aspirations—were not consistently available in the data sources we compiled. If Talent Search participants *are* fundamentally different from nonparticipants, the estimated effects of participation based on comparisons between these groups may, in part, be attributable to differences in motivation that predate students' participation in Talent Search. If Talent Search staff targeted students with higher college aspirations than otherwise similar students, the analysis will overestimate the effects of participation on outcomes.[8] We believe that selecting students from the same districts as Talent

[8] For information on the types of students Talent Search targeted, see Cahalan et al. 2004.

Search participants, but not from the same target high schools, may help to minimize bias from self-selection into Talent Search.

The second characteristic of our preferred comparison group is that they persist to the same point in high school as Talent Search participants did before the program served them.[9] Students who persisted through high school may differ from those who did not persist for reasons that are difficult to measure, such as motivation or a supportive home environment. Because we believe these unobservable characteristics to be important in determining educational outcomes, we sought to control for them by forcing an exact match on persistence through high school. The pool of potential comparison students shrinks as students drop out of high school or are unable to be tracked, but we are confident that the remaining pool of students is more likely to resemble Talent Search participants than all students who were in ninth grade in the fall of 1995.

Finally, as with all matching analyses, we want to use a matching strategy to identify a comparison group that is as similar as possible to the participant group, particularly in observable characteristics correlated with educational outcomes, such as gender, economic status, and academic performance in high school. Therefore, comparison students should be as similar as possible to Talent Search participants on these characteristics, as well as on other related, observable characteristics. Without a similar distribution, or "balance," on these key characteristics, it is difficult to ascertain whether differences in outcomes are due to participation in the program or to differences between the two samples. Furthermore, Rubin (2001) argues that regression analysis alone cannot adjust for substantial differences in the distribution of covariates between the two groups. Therefore, for the propensity score matching approach to be

[9] Differences in persistence after Talent Search serves students could be attributable to Talent Search and should be included in the estimate of the effect of the program on participants.

statistically valid, participants and the comparison groups chosen through the matching procedure must have similar distributions on the observable characteristics.

We defined the participant population as students in the ninth-grade cohort in 1995–96 served by Talent Search projects between 1993 and 2000.[10] The initial pool of potential comparison students was the population of all nonparticipants in the state who also were in the ninth grade in fall 1995 and for whom we were able to collect data. We stratified, by geography and year, samples of participants and nonparticipants, into several groups per state.

2. Using Propensity Score Models to Identify the Comparison Group

Within each group, we estimated propensity scores on which the two samples were to be matched (Rosenbaum and Rubin 1983 and 1985). An unweighted logit model was estimated to distinguish between members of the two samples; the dependent variable (participation in Talent Search) was coded as 1 for participants and 0 for nonparticipants. The explanatory variables varied by state; in each state, however, they included demographic, socioeconomic, and some academic characteristics. We used the model to estimate the log odds (the output of the propensity score model) of participating in Talent Search, conditional on the explanatory variables, for each participant and nonparticipant in the group.[11]

Within each group, we matched Talent Search participants to similar nonparticipating comparison students. Two students were deemed comparable when their log odds were sufficiently close. We matched each participant to all comparison students deemed comparable—a technique called "matching with replacement." Talent Search participants for

[10] Participants were defined as students served between 1993 and 2000 by the Talent Search projects that provided data for the study. Some projects included information on the number of years students were served and the specific services students received, but this information was not consistently available.

[11] The log odds of being in the participant sample equals the natural log of $P(1) / P(0)$, where $P(1)$ equals the probability of being in the participant sample, and $P(0)$ equals the probability of being in the comparison sample. We predicted these probabilities using the estimated coefficients from the logit model.

whom we could not find a similar comparison student were excluded from the study because no comparison student could provide credible information about the outcomes we would have observed without the student's participation in Talent Search. In each state, however, we were able to match 95 percent or more of Talent Search participants to at least one comparison student. All comparison students who were matched to one or more participant sample members were included in the matched comparison group.

Another component of the algorithm for matching participant and comparison students was to select the appropriate "caliper range" that defines how close the log odds of a participant and a comparison student must be to be deemed a suitable match. Narrow caliper ranges can leave many participants unmatched when similar students might be found in the comparison sample; wide caliper ranges generate matches between students who may be less similar. We tested several caliper ranges in matching participants to the comparison students, based on fixed fractions of the standard deviation of the log odds within the matching group. Each caliper range generated different matched participant and comparison samples. Therefore, selecting a caliper range was equivalent to selecting a pair of matched participant and comparison samples. Ultimately, we selected a narrow caliper range which led to matched participant and comparison samples with a smaller number of significant differences in variables that describe baseline characteristics and academic achievement, while still finding matches for a high percentage of participants.[12]

[12] We used a caliper range of 1/20th of the standard deviation of the log odds from the propensity score model, a small caliper to ensure that we matched only those who had propensity scores very close to the participant being matched. Due to the large size of the nonparticipant population in the administrative data available, we were able to obtain well-matched comparison groups using even smaller calipers. Using smaller calipers, however, led to more participants dropping out of the analysis because we could find no suitable comparison students. We were able to identify matches for 95 percent or more of all participants in each state.

As part of the matching procedure, students in the comparison sample who matched to participants were assigned weights based on their matches. The total of the weights assigned to the matched comparison sample is the same as the total number of Talent Search participants—that is, when using the weights, the participant and comparison samples are the same size. For all comparison group members who were within the caliper range for a participant, each comparison group member received an equal share of the participant's weight. For example, if 10 comparison students fell within the caliper range of participant A, each comparison student would receive a weight of 1/10 from participant A. Furthermore, because matching is done with replacement, a comparison group member could fall within the caliper range of several participants. If one of the comparison group members from the example above also matched participant B, who had five comparison students within the caliper range, that comparison group member would receive an additional weight of 1/5 from matching participant B. Each matched comparison student was assigned a weight equal to the sum of the weight contributions from each participant to whom he or she was matched. In the example above, the comparison student would receive a weight of 1/10 from participant A, plus 1/5 from participant B, for a total of 3/10.

The tables in each chapter show the results of matching. In general, we were unable to draw comparison students with all three characteristics of the preferred comparison group described above: in Texas and Florida, we were able to control for persistence and match on observable characteristics but only within the target high schools. In Indiana, we matched well on observable characteristics within the target high schools but lacked data on persistence. Therefore, in each state we drew two different comparison groups to Talent Search participants, to test whether our findings were sensitive to the comparison group drawn. In each state our findings were consistent compared to the comparison group chosen. That is, the results were

similar regardless of the comparison group chosen. Therefore, in presenting our findings for each state in chapters III–V, we present results using only the comparison group drawn from students within the same target high schools who had the same balance of observable characteristics as Talent Search participants, allowing us to compare results across states.

C. ESTIMATING THE EFFECT OF TALENT SEARCH ON SECONDARY AND POSTSECONDARY OUTCOMES

1. Empirical Specification

We used a regression-adjusted approach to estimate the effect of participation in Talent Search on high school completion, first-time application for federal financial aid, and college enrollment. To compute the average effect of participation in Talent Search, we estimate a statistical model that predicts the outcome of interest as a function of participation status and background characteristics (for example, sex, race, ethnicity, and academic-risk status). This approach allowed us to (1) adjust for the small remaining differences in observable characteristics between Talent Search participants and the matched comparison group and (2) increase the precision of our estimates. The basic form of the model is:

$$y_i = \beta_0 + \beta_1 P_i + \beta_2 X_i + \varepsilon_i ,$$

where y_i is the outcome of interest; P_i equals 1 if the student participated in Talent Search and 0 otherwise; X_i is a vector that includes the student's characteristics; ε_i is a random error term that captures the effects of unobserved factors that influence the outcome; and β_0, β_1, and β_2 are parameters or vectors of parameters to be estimated. The parameter of greatest interest is β_1, which shows the impact of participating in Talent Search on student outcomes. We estimate the parameters in the above equation using ordinary least squares for both categorical and continuous outcomes. All regression models are weighted to account for matching, as described

in the preceding section, and allow for potential heteroskedasticity of standard errors due to clustering at the project level.

2. Standard Errors

By using a caliper range to determine potential comparison students who are similar to any given participating student, rather than a one-to-one match, we increase the size of our matched comparison student sample. The weighting algorithm accounts for the number of matches per treatment student, and the standard error calculations from the outcomes equation estimation account for the variance in the weights.[13]

3. Reliability of Propensity Score Matching Methods

In using a matched comparison group based on propensity score design, we adhered to the criteria developed by Rosenbaum and Rubin in a series of articles (Rosenbaum and Rubin 1983 and 1985; Rubin 2001) for replicating a randomized design as well as possible. That is, we used as many covariates as possible in estimating our propensity models, we report findings only for matched comparison groups with a distribution of characteristics similar to those of Talent Search participants, and we test the sensitivity of our findings to alternative comparison groups that also meet these criteria. One study showed that using propensity score matching can replicate program evaluation findings based on experimental designs (Dehejia and Wahba 1999); however, other analyses of the same data did not support this finding (Smith and Todd 2004). In addition, other studies have found that (1) nonexperimental methods in general, and propensity score methods specifically, do not replicate findings from randomized studies well; and (2) there

[13] We estimated robust standard errors to account for clustering and used the "svyreg" procedure in Stata to account for the variance in the weights.

is no consistent pattern of nonexperimental studies over- or underestimating the impacts of programs found using randomized designs (Agodini and Dynarski 2004; Glazerman et al. 2003).

The limitations in the matched comparison group design have implications for the findings presented in the following chapters. Because the data available and our strategy for drawing comparison groups differed across each state, we have the most confidence in findings that are consistent across states. We report project-level impacts to assist in the interpretation of our state-level findings, but we do not rely on findings on individual projects in our assessment of the overall success of Talent Search in the three states.

III. TEXAS

A. INTRODUCTION

In 1999, there were 17 Talent Search projects operating in Texas, serving more than 15,000 students (Cahalan et al. 2004). Sixteen of these projects were operating in 1995. This is many more projects, serving many more students, than were operating in Florida or Indiana at the time.[14] The analysis in this chapter is based on more than 4,000 Talent Search participants in 10 Talent Search projects throughout Texas who were in ninth grade in the fall of 1995, along with similar nonparticipants who were in the same school districts. The data we obtained from state agencies included secondary school records on the entire 1995–96 ninth-grade cohort and postsecondary school records on students in the cohort who had enrolled in public postsecondary institutions in Texas. Compared to the nonparticipants, the students participating in Talent Search had higher rates of high school completion, first-time application for federal financial aid, and enrollment in public postsecondary institutions in Texas. The magnitudes of these differences in rates varied, but the differences in application for financial aid were the largest.

This chapter describes the data sources that were used to compile records on students. It also discusses the strengths and weaknesses of the data and the methods we used to identify nonparticipating students who were similar to Talent Search participants. We draw comparisons between Talent Search participants and nonparticipants to estimate the relationships between Talent Search participation and high school completion, application for financial aid, and

[14] While Texas served the largest number of students in absolute terms, Indiana served the highest proportion of the low-income secondary school students in the state, followed by Texas and Florida (see Table 3.21 in Cahalan et al. 2004).

postsecondary enrollment. The chapter concludes with a discussion of the findings and an assessment of the success of using these data to examine the effect of Talent Search in Texas.

B. DATA

We used four main data sources (Table III.1):

1. ***Secondary School Records.*** The Texas Education Agency (TEA) provided these records, which included demographic, socioeconomic, and academic characteristics of the cohort of students in ninth grade in fall 1995. These data come from several TEA data collections. We obtained demographic and academic characteristics from the "fall snapshot" of ninth-graders in 1995. We took enrollment status, grade level, and high school exit status from data collected each summer following the school years from 1996 to 2000. We collected eighth-grade test scores, based on administration of the Texas Assessment of Academic Skills (TAAS) in spring 1994 and spring 1995.[15]

2. ***Talent Search Project Records.*** We obtained records from 13 of the 17 Talent Search projects operating in 1999; 11 projects provided information on all students served during the period of this study (1995–2000).[16] Although the various Talent Search projects provided different types of data, all projects provided the name, social security number (SSN), date of birth, and gender for the students they served. Project records also indicated the years a student was served.

3. ***Federal Financial Aid Application Records.*** We obtained these records from the Office of Postsecondary Education (OPE) in ED. They contained the names of nearly all first-time applicants for federal financial aid who lived in Texas in 1999 and 2000.

4. ***Postsecondary School Records.*** The Texas Higher Education Coordinating Board (THECB) supplied these records. They included information on enrollment, part-time or full-time enrollment status, credits earned, and enrollment in a two- or four-year institution for all students in the cohort who enrolled in a public college or university in Texas for the school years 1999–2002.

As discussed in Chapter II, we selected the cohort in this study to allow the collection of retrospective data in order to assess several outcomes related to the goals of the Talent Search

[15] In 2003, the Texas Assessment of Knowledge and Skills (TAKS) replaced the TAAS.

[16] One additional project began operating in 1998–99 and did not serve enough students in the target cohort to be included in the analysis, thus all analyses are based on participants served by 10 projects.

TABLE III.1

TEXAS DATA SOURCES

Source	Variables	Years	Number of Students from Fall 1995 Ninth-Grade Cohort
Texas Education Agency (TEA) Public Education Information Management System (PEIMS)	Name, SSN, and date of birth for all students in the ninth grade	School year 1995–96	335,563
Texas Education Agency (TEA) Public Education Information Management System (PEIMS)	Enrollment status, grade level, and high school exit status	Summer 1996 Summer 1997 Summer 1998 Summer 1999	329,019[a] 297,020 265,759 218,372
Texas Education Agency Student Assessment Division	Eighth-grade scores on the Texas Assessment of Academic Skills (TAAS)	Spring 1994 Spring 1995	273,866
U.S. Department of Education, Office of Postsecondary Education (OPE)	First-time applicants for federal financial aid who were living in Texas	School year 1999–2000 School year 2000–01	86,145[b]
Texas Higher Education Coordinating Board (THECB)	Postsecondary enrollment, credits, and type of institution	School year 1999–2000 School year 2000–01 School year 2001–02	122,055
Talent Search Projects	Lists of students and years served	1993–2000	4,177[c]

Note: Figures indicate the number of students in the ninth-grade cohort who were identified with records in the other data sources.

[a]The number of cohort students remaining declines each year as students leave Texas public schools.
[b]There were approximately 180,000 first-time applicants for federal aid from Texas in 1999–2000 and 2000–01.
[c]Based on a total of 31,000 students served by 10 Talent Search projects in the years 1993–2000.

program, including high school completion, application for financial aid, and college enrollment. Students in this cohort who graduated from high school "on time" in spring 1999 were first-time applicants for financial aid and new entrants in college in fall 1999. We obtained data on first-time applicants for financial aid for both 1999 and 2000, to expand the window for students who take an additional year to complete high school or wait a year after completing high school before applying for aid. Similarly, we collected data on postsecondary enrollment for 1999, 2000, and 2001, to allow students two extra years to complete high school and enroll in college and to assess initial persistence in college for as many in the cohort as possible. Altogether, these data sources yielded records on 335,563 students who were in ninth grade in a Texas public school in fall 1995.[17] Talent Search projects that provided data served 4,177 of these students at some point during secondary school.

1. Strengths and Weaknesses of the Data

The use of administrative records resulted in a database with several strengths for studying the effect of Talent Search on participants:

- ***The data are comprehensive and comprise the full sample of ninth-graders in Texas public schools in the fall of 1995.*** Because Talent Search projects are spread throughout the state, a critical requirement was to be able to draw comparisons for students from across the state. MPR staff took care to merge the records from several data sources using procedures that were thorough and accurate.
- ***The data contain important predictors of high school completion, application for financial aid, and college enrollment.*** These characteristics include race, ethnicity, gender, economic status (defined as eligibility for free or reduced-price lunches), a state indicator for being at-risk of dropping out of school, high school curriculum, participation in gifted and talented programs, and test scores. Identifying comparison students using statistical modeling is more feasible when we can determine whether students are similar in characteristics related to the outcomes studied.

[17] We restricted analysis to students in the ninth grade who were between 13.7 and 17 years of age in fall 1995. This reduced the analysis sample to 321,000.

- ***The data include persistence through high school, which allows us to control for important observable and related unobservable characteristics in selecting comparison students.*** It is essential that the many Talent Search students who are not served until they are juniors or seniors in high school be compared only to students who have also progressed to a similar point in school.

- ***The data provide reliable information on key outcomes, such as high school completion status, application for federal financial aid, enrollment in college, and initial persistence in college.*** These outcomes, because they are based on data that come from administrative sources, are likely to be more accurate and comprehensive than results based on self-reported information.

The data also have limitations for determining differences between Talent Search participants and similar nonparticipants:

- ***The data do not contain some characteristics that are important predictors of key outcomes.*** These include the parents' education level, family structure, and education and career aspirations and plans. It would be useful to control for these variables in the analysis, especially if Talent Search staff target students who already aspire to attend college; without them, we are likely to overstate the effect of participation in Talent Search.

- ***Students drop out of the data as the state loses track of them.*** Although grade level and high school completion status are recorded for each student in each year, the state loses track of some students. In the target cohort in this study, Texas did not record an exit status for 22 percent of the sample. Many of those students are also missing grade level enrollment information at some point. Therefore, the sample suffers from attrition even though initially it was a complete census of the cohort.

- ***Postsecondary enrollment data are limited to attendance at public colleges and universities in Texas.*** This limitation implies that overall postsecondary enrollment rates of students in this cohort are understated. However, this affects our estimates of the difference in postsecondary enrollment between Talent Search participants and comparison students only if one group is more likely to enroll in private or out-of-state institutions.

- ***Information on participation in Talent Search, application for federal financial aid, and postsecondary enrollment is not integrated with information on secondary schooling.*** The data that Talent Search projects, OPE, and THECB provided do not share a common identification system with the TEA. Although all data sources included SSNs for students, 10 percent of students in the TEA data have no valid SSNs. Some of these cases could be matched to SSNs using names and dates of birth; however, some of the students in the cohort who participated in Talent Search, applied for financial aid, or enrolled in college probably remain unidentified.

- ***We did not gather data for all Talent Search participants in the ninth-grade cohort, as some projects did not supply data.*** If projects not supplying data are systematically different from those that did provide data, the study findings will not apply to all the students served by Talent Search in Texas.

The compilation of the data in Texas demonstrates the feasibility of extracting information from administrative records to study the effect of Talent Search on participants. The comprehensiveness and accuracy of the data are the greatest advantages of this approach. On the other hand, given that educational aspirations are an important factor affecting the outcomes of Talent Search participants, the lack of information on aspirations is a serious limitation of the data.

2. Characteristics of Talent Search Participants and Potential Comparison Students

The characteristics of Talent Search participants differed significantly from those of nonparticipants across the state as a whole, as well as within the high schools that individual projects targeted. We identified target high schools through the projects' 1999 Annual Performance Reports (APRs) and verified them through MPR's survey of projects in 1999–2000. Table III.2 shows that Talent Search students were more likely than all other students in the state to be black or Hispanic, economically disadvantaged, and taking a vocational or technical course—all characteristics associated with lower rates of high school completion and college enrollment.[18] On the other hand, they also had characteristics associated with *higher* rates of high school completion and college enrollment: they were more likely than nonparticipants to be female, to be the traditional age for entering ninth grade, and to be participating in a gifted and talented program. They also had slightly higher eighth-grade test scores.

[18] Appendix Table A.III.1 defines the variables used in the analysis.

TABLE III.2

BASELINE CHARACTERISTICS OF TALENT SEARCH PARTICIPANTS AND ALL OTHER STUDENTS, ALL OF TEXAS
(Percents)

	Participants	All Other Students	
Demographic Characteristics			
Male	38.3	52.9	***
White	26.7	44.9	***
Black	25.4	14.9	***
Hispanic	47.2	37.7	***
Home language is Spanish	14.4	14.2	***
Age in ninth grade (mean)[a]	14.8	15.0	***
Overage in ninth grade	16.1	28.5	***
Academic Characteristics			
Enrolled in a gifted and talented program	11.0	8.0	***
At risk for dropping out of school	46.8	47.8	**
Economically disadvantaged	50.9	37.7	***
Limited English proficiency	6.5	8.9	***
Special education services	5.4	12.3	***
Enrolled in a vocational or technical course	44.7	33.1	***
Enrolled in a vocational or technical education program	8.1	9.1	**
Number of Students	**4,169**	**331,386**	
Eighth-Grade Test Scores[b]			
Raw math score (number of questions correct)[c]	39.4	38.3	***
Percent scored in top 25 percent in state for math	25.9	26.7	
Percent scored in bottom 25 percent in state for math	21.5	26.7	***
Raw reading score (number of questions correct)[d]	36.2	34.4	***
Percent scored in top 25 percent in state for reading	26.7	25.6	
Percent scored in bottom 25 percent in state for reading	20.1	26.9	***
Score on essay test[e]	2.5	2.4	***
Missing test scores	7.6	18.5	***
Number of Students	**3,852**	**270,008**	

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by 10 Talent Search projects in 2000.

[a]Average age in years.
[b]Based on sample with nonmissing test scores only.
[c]Range on raw math test score is 0 to 60.
[d]Range on raw reading test score is 0 to 48.
[e]Range on essay score is 0 to 4.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

Appendix Table A.III.2 shows the characteristics of Talent Search participants and nonparticipants served by each of the 10 projects in this study.[19] In the target high schools the projects served, the participants and nonparticipants differed significantly in racial composition, economic and at-risk status, and test scores. Talent Search students also were more likely than nonparticipants to be female and black or Hispanic, as well as economically disadvantaged. Typically, however, participants had much higher test scores and were much more likely to be in programs for the gifted, and they also were more likely than nonparticipants to be the traditional age in the ninth grade.[20]

Table III.3 shows that Talent Search students, compared to all other students across the state, persisted from year to year at far higher rates than other students. The differences were larger within the high schools that Talent Search projects targeted (Appendix Table A.III.3). Although persistence through high school can be considered a result of participation in Talent Search, nearly 70 percent of the Talent Search participants identified were not served until 1998, the junior year in high school for students who persisted at grade level. Thus, in addition to differing from other students in the observable characteristics, Talent Search participants may have differed in other unobserved characteristics related to their persistence through high school.

Based on data the TEA provided, Talent Search projects in Texas appear to have served the population the program targeted: low-income students with average academic ability who were likely to complete high school. While students at the schools Talent Search targeted were

[19] Talent Search participants were identified by the project that served them. Characteristics of nonparticipants were reported in their respective high schools when they were in the ninth grade. Although it is the ninth-grade characteristics of participants that are reported, these students may not have been at the high school where they eventually participated in Talent Search when they were in the ninth grade.

[20] We classify students between 13 years and 9 months and 15 years and 3 months as "traditional age." Students older than 15 years and 3 months are considered overage in ninth grade.

TABLE III.3

BELOW GRADE AND PERSISTENCE OF TALENT SEARCH PARTICIPANTS AND ALL OTHER STUDENTS IN TEXAS
(Percents)

	Below Grade			Persistence		
	Participants	All Other Students		Participants	All Other Students	
1996–97	8.4	18.0	***	97.5	90.5	***
1997–98	7.3	18.1	***	96.7	89.1	***
1998–99	5.3	14.3	***	89.8	82.1	***
1996–99				84.7	66.1	***

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by 10 Talent Search projects by 2000. Nonparticipants include all students in Texas in the ninth grade in fall 1995.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level
***Difference is statistically significant at the 1 percent level.

generally more disadvantaged than students throughout Texas, Talent Search participants were stronger-than-average students at their own high schools.

C. COMPARISON GROUPS

The study's objective was to assess what would have happened to Talent Search students had the program not been available to them. As discussed in the methodology section of Chapter II, we drew a comparison group of students who were similar to Talent Search participants but who had not participated in the program. In the quasi-experimental framework, we wanted to draw the preferred set of comparison students from the same districts as the Talent Search students for each project, although not from the same high schools, and those students would have persisted to the same point in high school and would be similar on all observable characteristics.

The data file contains slightly more than 4,000 Talent Search participants distributed over 10 projects in Texas, thus preventing all these issues from being analyzed with one estimation strategy. For example, if one were to try to exactly match participants and comparison students on specific characteristics—such as race, gender, and students within the same districts and at the same point in time in school—the result would have been as many as 120 "groups" of participants, each with a unique comparison group.[21] Given that we used nearly two-dozen variables in the propensity score model, a model could not have been estimated for all groups.[22] Because the data were not comprehensive enough to follow the preferred approach, we created two comparison groups: one based on students within the target high schools, the other based on students in nontarget high schools within the district; however, we were only able to identify comparison students similar to Talent Search participants on observable characteristics within the target high schools. We describe our analytic approach for drawing comparison groups and the resulting samples in the following section.

Comparison Group One: Students in Target High Schools Within the District

Our initial attempt to draw nonparticipants students for comparison with Talent Search participants focused on observable characteristics. Using students from the same high schools as Talent Search participants provided a pool of potential comparison students who were in the same educational environment and had backgrounds more similar to participants than those from other schools in the district. While all students were in ninth grade in 1995, the time at which students first participated in Talent Search varied widely, with some entering the program for the

[21] This example assumes six combinations of race (black, white, and Hispanic) and gender, 10 projects, and two time periods (early and late) for persistence: 6 * 10 * 2 = 120.

[22] For example, with 4,000 participants spread over 120 matching groups, the average cell would have 33 participants, and many would have fewer. With a large number of explanatory variables, the likelihood of finding a combination of variables that perfectly predict participation or nonparticipation is high, leading to meaningless coefficients from the propensity score model.

first time early in high school and some much later. Therefore, to deal with issues related to persistence through high school, we divided the sample of students participating for the first time usually into two time periods per project. For example, if Talent Search participants entered the program for the first time fairly evenly over the high school years, this led to the creation of one early cohort (1996 and 1997) and one late cohort (1998 and later) of participants. The early group required potential comparison group members still to have been in school in 1996. The later group of participants required potential comparison group members to still be enrolled in Texas schools in 1998.

Table III.4 shows the aggregate results of drawing the comparison students by project and the years Talent Search participants were first served. The first set of columns, titled "Full Sample," provides mean values for the baseline characteristics of the participants and all potential comparison students, along with an indicator of the level at which the difference in means is statistically significant. The second set of columns, titled "Matched Sample," provides mean values for the baseline characteristics of the participant and comparison students matched using the propensity score model, also followed by an indicator of the level of statistical significance for the difference. The means for the full samples and matched participant sample are unweighted, whereas the matched comparison sample means are weighted to account for the results from matching. The table illustrates that even though the unmatched participant and comparison samples differed from each other, the matched samples resembled each other closely.

Comparison Group Two: Students in Nontarget High Schools Within the District

Our second attempt to draw nonparticipant students for comparison with Talent Search participants attempted to deal with selection bias. For each project, the pool of potential nonparticipant comparison students was limited to students who attended any high school in the

TABLE III.4

ASSESSING BALANCE BETWEEN TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN THE SAME HIGH SCHOOLS IN TEXAS
(Percents)

	Full Samples			Matched Samples	
	Participants	Nonparticipants		Participants	Nonparticipants
Demographic Characteristics					
Male	38.2	54.0	***	38.7	38.6
White	27.1	30.2	***	27.4	27.3
Black	25.4	17.8	***	25.1	24.3
Hispanic	46.8	51.0	***	46.9	46.9
Home language is Spanish	14.2	15.9	***	14.2	14.1
Age in ninth grade (mean)[a]	14.8	15.0	***	14.8	14.8
Overage in ninth grade	15.3	28.3	***	15.4	15.3
Academic Characteristics					
Enrolled in a gifted and talented program	11.1	6.3	***	10.6	10.3
At risk for dropping out of school	46.6	54.4	***	46.9	46.9
Economically disadvantaged	50.9	50.2		50.6	50.6
Limited English proficiency	6.3	11.2	***	6.3	6.2
Special education services	5.5	13.3	***	5.6	5.5
Enrolled in a vocational or technical course	45.0	39.1	***	45.0	45.4
Enrolled in a vocational or technical education program	8.1	9.5	***	8.1	7.8
Eighth-Grade Test Scores					
Raw math score (number of questions correct)	36.7	30.5	***	36.6	36.6
Percent scored in top 25 percent in state for math	24.2	16.8	***	23.9	23.7
Percent scored in bottom 25 percent in state for math	26.9	42.8	***	27.1	26.9
Raw reading score (number of questions correct)	33.8	28.0	***	33.7	33.7
Percent scored in top 25 percent in state for reading	24.9	17.4	***	24.6	24.6
Percent scored in bottom 25 percent in state for reading	25.5	42.4	***	25.6	25.4
Score on essay test	2.4	1.9	***	2.3	2.4
Missing test scores	7.0	15.7	***	7.0	6.9
Number of Students	**4,112**	**46,810**		**4,027**	**30,842**

Note: We matched nonparticipant comparison students to Talent Search students using a propensity score model as described in Chapter II. The participants' means for the matched sample differed slightly from the means for the full sample, as some participants had no suitable comparison students; these unmatched participants were dropped from the participant sample. The sample includes all 10 projects that provided data. The number of nonparticipants in the matched sample were those who matched to a participant; the sample was then weighted to equal the number of participants in the analysis.

[a]Average age in years.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

district that Talent Search did not target. This allowed for the selection of a comparison group comprised of students who did not have the opportunity to participate in Talent Search, and had therefore not made a decision not to participate. Table III.5 shows the results of matching Talent Search participants to nonparticipants who attended nontarget high schools within the district. This method was applicable to 8 of the 10 projects; in the remaining projects, all students in the district attended target high schools.

Although this approach may be appropriate for reducing self-selection bias among participants, the resultant samples of participants and nonparticipants remained significantly different in several key observable characteristics. Through matching, differences in means were eliminated for some variables, such as male, limited English proficiency, and raw reading test score, but this did not remove differences in racial composition or in economic or gifted status. Overall, the table reveals our inability to draw a sample of nonparticipants that was completely similar to the Talent Search participant group. Rubin (2001) states that regression analysis alone should not be relied on to adjust for substantial differences in the distribution of covariates between the two groups. Therefore, the remaining disparity in the matched samples suggests that we cannot be confident that the comparison group represents what would have happened to Talent Search participants without the program.[23]

D. RESULTS

There were moderate to large differences in secondary and postsecondary outcomes between Talent Search participants and comparison students drawn from the same target high schools. In

[23] Although comparison students drawn from nontarget high schools were not similar to Talent Search students based on characteristics available in the data, we analyzed the difference between Talent Search participants and students from nontarget high schools to test whether our findings were sensitive to the comparison group chosen. Our findings were similar using either comparison group.

TABLE III.5

ASSESSING BALANCE BETWEEN TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS AT DIFFERENT HIGH SCHOOLS IN THE SAME DISTRICTS IN TEXAS
(Percents)

	Full Samples			Matched Samples		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	37.8	52.7	***	38.0	38.5	
White	27.7	33.3	***	27.6	34.0	***
Black	26.5	20.7	***	26.3	20.9	***
Hispanic	45.2	43.0	***	45.4	40.4	***
Home language is Spanish	14.0	15.1	***	14.0	14.2	
Age in ninth grade (mean)[a]	14.8	14.9	***	14.8	14.7	***
Overage in ninth grade	14.7	24.9	***	14.7	14.5	
Academic Characteristics						
Enrolled in a gifted and talented program	11.3	7.9	***	11.1	15.0	***
At risk for dropping out of school	45.9	44.8		45.8	42.0	***
Economically disadvantaged	49.3	37.3	***	49.0	41.8	***
Limited English proficiency	5.9	8.4	***	5.9	5.9	
Special education services	5.5	11.8	***	5.5	4.7	
Enrolled in a vocational or technical course	45.7	38.1	***	45.7	40.9	***
Enrolled in a vocational or technical education program	7.9	5.2	***	7.5	2.4	***
Eighth-Grade Test Scores						
Raw math score (number of questions correct)	36.9	31.6	***	36.9	37.9	***
Percent scored in top 25 percent in state for math	24.6	20.1	***	24.4	30.0	***
Percent scored in bottom 25 percent in state for math	26.5	40.1	***	26.4	25.4	
Raw reading score (number of questions correct)	33.9	28.9	***	33.9	34.0	
Percent scored in top 25 percent in state for reading	25.5	20.4	***	25.3	28.6	***
Percent scored in bottom 25 percent in state for reading	25.3	39.5	***	25.3	24.7	
Score on essay test	2.4	2.0	***	2.4	2.4	***
Missing test scores	6.7	15.6	***	6.6	7.6	***
Number of Students	**3,853**	**85,110**		**3,789**	**30,557**	

Note: We matched nonparticipant comparison students to Talent Search students using a propensity score model as described in Chapter II. The participants' means for the matched sample differed slightly from the means for the full sample, as some participants had no suitable comparison students; these unmatched participants were dropped from the participant sample. The sample includes all 10 projects that provided data. The number of nonparticipants in the matched sample were those who matched to a participant; the sample was then weighted to equal the number of participants in the analysis.

[a]Average age in years.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

this section we present the differences and follow with a discussion of the findings. We used a regression-adjusted approach to estimate the relationship of participation in Talent Search to high school completion, first-time application for federal financial aid, and postsecondary enrollment.[24] This approach allowed us to make an adjustment for the remaining differences in observable characteristics between the participant sample and the matched comparison group and, thus, increased the precision of the estimates.

1. High School Completion

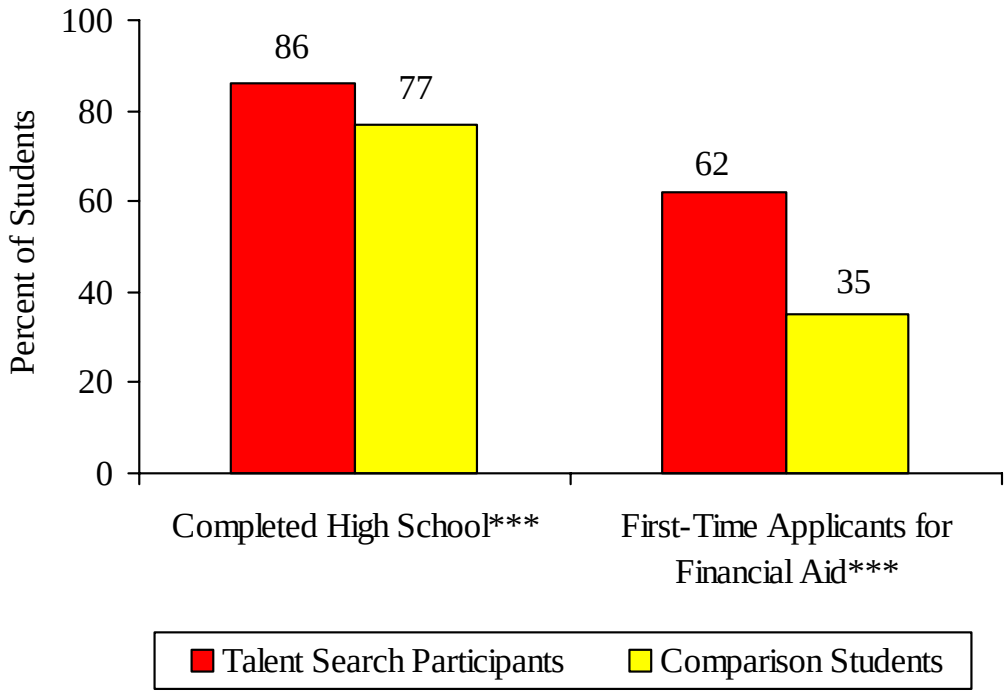
Talent Search participants were more likely to complete high school than comparison students drawn from target high schools; 86 percent of Talent Search students graduated from high school by 2000, which was 9 percentage points higher than the 77 percent graduation rate of the comparison students drawn from the same target high schools (Figure III.1). High school graduation rates for Talent Search participants and comparison students were much higher than the 60 percent overall graduation rate for the state. These rates were also much higher than the rate at any single project's target high schools or districts where the high schools were located, which ranged from 43 to 68 percent.

The difference in high school completion shown in Figure III.1 masks substantial variation by project and year of Talent Search participation, but nearly all the estimates are positive. Table III.6 shows differences by project and year of entry into Talent Search; as noted above, separating the participants in each project by the time at which they first entered Talent Search allows us to examine whether the entry year is related to the effect of participation. We found differences in high school completion rates between Talent Search participants and comparison

[24] See Chapter II for estimation details; control variables included the observable characteristics listed in the rows of Table III.1.

FIGURE III.1

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO COMPLETED HIGH SCHOOL AND WERE FIRST-TIME APPLICANTS FOR FINANCIAL AID FROM TEXAS IN 1999 OR 2000



***Difference in percentages is statistically significant at the 1 percent level.

students at most projects, and nearly all of the estimates are positive and statistically significant. Variation across projects is to be expected, given differences in comparison group activities across sites; however, the project-level analysis allows us to rule out the possibility that large impacts at isolated projects are driving the aggregate results.

2. Application for Financial Aid

There were large differences in first-time application for financial aid between Talent Search participants and comparison students (Figure III.1). Nearly twice as many participants (62 percent) as comparison students (35 percent) applied for aid in either the 1999–2000 or the

TABLE III.6

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO COMPLETED HIGH SCHOOL IN TEXAS, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Project 1				
1993–97	74.2	56.4	17.7	***
1998–2000	93.2	82.6	10.6	***
Project 2				
1998	87.1	68.2	18.9	***
1999–2000	94.2	78.7	15.5	***
Project 3				
1993–97	79.3	71.4	7.9	**
1998	88.5	78.2	10.3	***
1999–2000	97.1	92.2	4.9	***
Project 4				
1993–96	61.2	55.9	5.3	**
1997–2000	65.5	66.6	-1.1	
Project 5				
1994–98	72.7	61.2	11.5	***
1999–2000	91.5	88.4	3.2	
Project 6				
1997–2000	90.4	81.4	9.1	**
Project 7				
1997	77.7	75.5	2.2	
1998–2000	76.8	86.0	-9.2	**
Project 8				
1996–97	77.4	63.5	13.9	***
1998–2000	77.8	72.5	5.3	
Project 9				
1993–98	70.4	53.6	16.7	***
1999–2000	98.0	91.2	6.8	***
Project 10				
1995–96	76.3	66.2	10.1	***
1997–2000	59.7	64.4	-4.7	

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

2000–01 school year. The rate of first-time application for federal financial aid in these two years was 26 percent for the entire state and 21 to 38 percent at target high schools and districts. In terms of application for financial aid, the comparison students did not differ as dramatically from all students in the target high schools and districts. As Table III.7 shows, there were substantial differences across projects, though the difference is not concentrated in any one or two projects.

3. Postsecondary Enrollment

Talent Search participants were more likely than comparison students to enroll in a public postsecondary institution in Texas. Enrollment in a public postsecondary institution in 1999, 2000, or 2001 was 18 percentage points higher for participants (58 percent) than comparison students (40 percent), as shown in Figure III.2.[25] Talent Search participants also were more likely to be enrolled as full-time students; 38 percent of participants were enrolled full-time in 1999, 2000, or 2001, versus 25 percent of comparison students.[26]

The higher rates of overall postsecondary enrollment were the result of higher rates of enrollment at both two- and four-year institutions (Figure III.3) 38 percent of Talent Search participants enrolled in two-year institutions compared to 26 percent of comparison students and 27 percent of Talent Search students enrolled in four-year institutions compared to 19 percent of comparison students.

[25] The results reported were based on enrollment from 1999 to 2001. We also examined differences in enrollment in 1999, 2000, and 2001. Nearly all the differences in enrollment over the three years are the result of differences in enrollment in 1999. The differences after 1999, which indicate delayed entry into college after completing high school, are small and are not always statistically significant.

[26] We consulted with THECB staff, and defined a student as full-time if he or she earned at least 12 credits a semester.

TABLE III.7

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO WERE FIRST-TIME APPLICANTS FOR FEDERAL FINANCIAL AID IN 1999 OR 2000 IN TEXAS, BY PROJECT

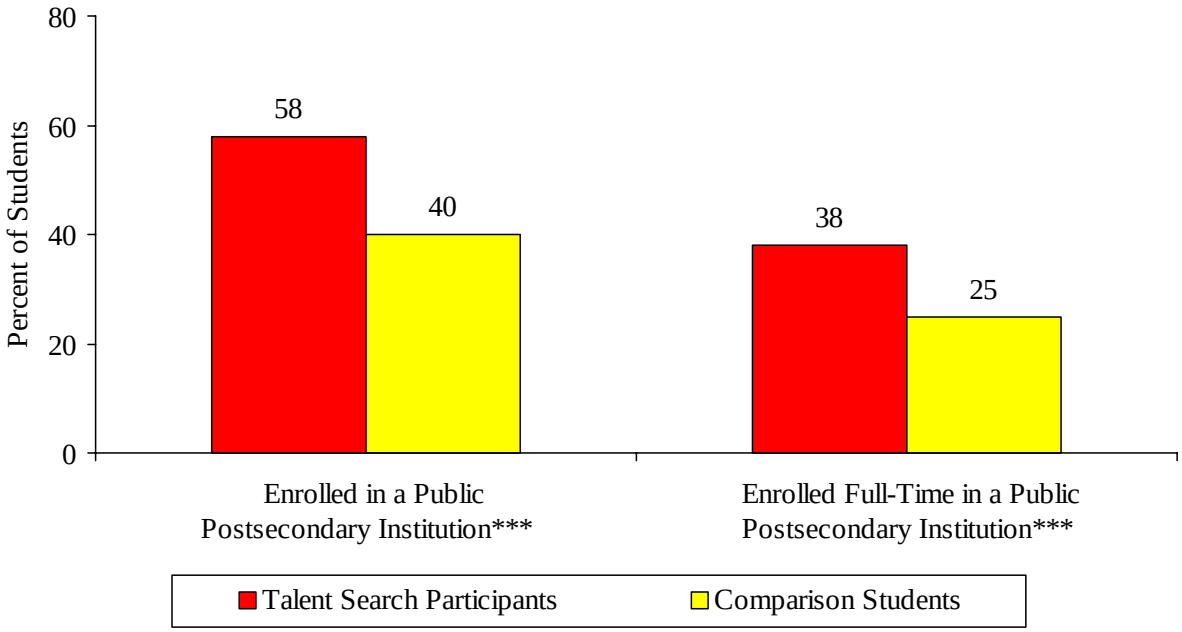
Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Project 1				
1993–97	49.2	33.5	15.7	***
1998–2000	73.0	48.7	24.3	***
Project 2				
1998	59.2	38.4	20.8	***
1999–2000	75.9	45.2	30.6	***
Project 3				
1993–97	45.3	33.1	12.2	*
1998	65.5	38.2	27.3	***
1999–2000	73.8	40.7	33.2	***
Project 4				
1993–96	31.6	27.4	4.3	
1997–2000	43.0	33.8	9.1	**
Project 5				
1994–98	46.2	37.5	8.7	**
1999–2000	80.5	50.6	30.0	***
Project 6				
1997–2000	42.5	34.0	8.5	
Project 7				
1997	42.2	31.5	10.7	**
1998–2000	42.9	32.2	10.6	*
Project 8				
1996–97	39.2	21.9	17.4	***
1998–2000	38.9	27.3	11.6	
Project 9				
1993–98	20.9	18.7	2.2	
1999–2000	81.1	32.4	48.8	***
Project 10				
1995–96	57.9	42.3	15.6	***
1997–2000	49.3	38.6	10.7	**

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

FIGURE III.2

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A PUBLIC POSTSECONDARY INSTITUTION IN TEXAS IN 1999, 2000, OR 2001



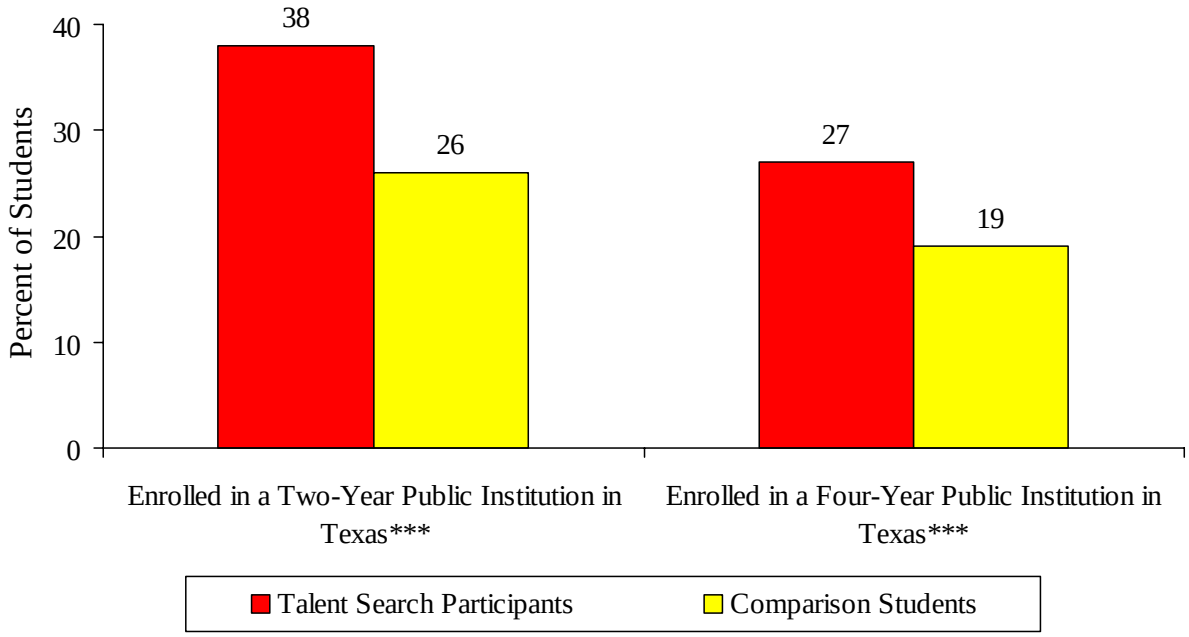
Note: Enrollment includes all Talent Search participants and comparison students who enrolled in a public college or university in Texas in 1999, 2000, or 2001.

*** Difference in percentages is statistically significant at the 1 percent level.

Statistically significant differences in enrollment across projects were more varied than differences in high school completion or first-time application for financial aid, with very small or no differences at 4 of the 10 projects (Table III.8). Notably, some differences in enrollment depended on the type of institution that served as the Talent Search host. For enrollment at four-year institutions, the projects with statistically significant differences were primarily those hosted by four-year institutions (Table III.9). For two-year institutions, the projects with statistically significant enrollment differences across the various years of entry into Talent Search were a mixture of two-year and community-based projects (Table III.10).

FIGURE III.3

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A PUBLIC POSTSECONDARY INSTITUTION IN TEXAS IN 1999, 2000, OR 2001, BY INSTITUTION TYPE



Note: Enrollment includes all Talent Search participants and comparison students who enrolled in a public college or university in Texas in 1999, 2000, or 2001.

*** Difference in percentages is statistically significant at the 1 percent level.

4. Postsecondary Persistence

Although no data were available on postsecondary degree completion, we examined several outcomes indicating persistence at a public college or university in Texas: (1) enrollment at a four-year institution for two consecutive years (1999 and 2000); (2) continuous full-time enrollment in a four-year institution for three consecutive years (1999, 2000, and 2001); (3) credits earned in either four- or two-year institutions by year (1999, 2000, and 2001); and (4) total credits earned over the three years.[27]

[27] Total credits earned over the three-year period reflected the overall intensity of enrollment, which may be a function of both continuous and full-time enrollment.

TABLE III.8

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN ANY PUBLIC POSTSECONDARY INSTITUTION IN TEXAS, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Project 1				
1993–97	48.3	34.4	14.0	***
1998–2000	70.3	51.0	19.2	***
Project 2				
1998	49.8	32.7	17.0	***
1999–2000	56.3	36.1	20.1	***
Project 3				
1993–97	52.8	38.4	14.5	***
1998	52.9	38.5	14.4	***
1999–2000	66.9	47.3	19.6	***
Project 4				
1993–96	33.7	30.5	3.1	
1997–2000	50.0	38.7	11.3	***
Project 5				
1994–98	44.1	38.5	5.6	
1999–2000	68.6	55.0	13.7	***
Project 6				
1997–2000	49.3	42.1	7.2	
Project 7				
1997	56.2	49.6	6.6	
1998–2000	57.1	54.0	3.2	
Project 8				
1996–97	49.2	42.4	6.8	*
1998–2000	44.4	45.2	-0.7	
Project 9				
1993–98	35.5	20.5	15.0	***
1999–2000	72.9	43.2	29.7	***
Project 10				
1995–96	50.9	44.4	6.5	
1997–2000	50.8	43.3	7.5	*

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE III.9

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A FOUR-YEAR PUBLIC POSTSECONDARY INSTITUTION IN TEXAS, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Project 1				
1993–97	10.0	7.4	2.7	
1998–2000	18.9	11.8	7.2	
Project 2				
1998	33.3	19.8	13.6	***
1999–2000	38.5	21.3	17.2	***
Project 3				
1993–97	15.1	13.6	1.5	
1998	27.6	14.9	12.7	***
1999–2000	28.0	18.1	9.9	***
Project 4				
1993–96	17.0	10.7	6.3	***
1997–2000	29.6	16.6	13.0	***
Project 5				
1994–98	13.3	10.4	2.9	
1999–2000	32.2	24.6	7.6	*
Project 6				
1997–2000	15.1	12.5	2.6	
Project 7				
1997	27.3	21.3	5.9	
1998–2000	25.0	22.5	2.5	
Project 8				
1996–97	22.7	21.4	1.2	
1998–2000	19.4	22.9	-3.5	
Project 9				
1993–98	9.9	8.2	1.7	
1999–2000	32.8	24.5	8.4	***
Project 10				
1995–96	16.7	7.6	9.1	***
1997–2000	14.9	8.8	6.2	

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE III.10

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A TWO-YEAR PUBLIC POSTSECONDARY INSTITUTION IN TEXAS, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Project 1				
1993–97	41.7	30.5	11.2	**
1998–2000	59.5	46.4	13.1	**
Project 2				
1998	17.4	16.9	0.6	
1999–2000	23.8	18.9	4.9	**
Project 3				
1993–97	41.5	29.0	12.5	**
1998	34.5	27.8	6.6	
1999–2000	50.9	35.9	15.0	***
Project 4				
1993–96	21.1	23.9	-2.9	
1997–2000	28.2	27.7	0.5	
Project 5				
1994–98	36.4	31.5	0.5	
1999–2000	47.5	38.7	8.7	*
Project 6				
1997–2000	35.6	31.3	4.3	
Project 7				
1997	39.7	37.9	1.8	
1998–2000	41.1	41.8	-0.7	
Project 8				
1996–97	35.4	28.0	7.4	*
1998–2000	30.6	31.9	-1.3	
Project 9				
1993–98	27.3	13.6	13.7	***
1999–2000	50.6	23.4	27.2	***
Project 10				
1995–96	48.3	41.5	6.8	
1997–2000	41.8	39.8	2.0	

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

As the first row of Table III.11 indicates, a higher percentage of Talent Search students than comparison students enrolled in a four-year institution in both 1999 and 2000—16 percent, compared to 11 percent. The differences in continuous full-time enrollment in a public four-year institution between Talent Search students and nonparticipants were very small: 9 versus 7 percentage points. Given the differences in initial enrollment, full-time enrollment, and continuous enrollment, Talent Search participants also earned more credits in public colleges in Texas than comparison students earned. Talent Search students earned, on average, 4.7 more credits than comparison students in the 1999 school year, and 9.7 more credits over the three schools years 1999, 2000, and 2001.[28] Over three years, Talent Search participants completed approximately three more courses than comparison students.

When we examined differences in college enrollment and persistence, we were concerned that some of the differences could be the result of differences that we observed in high school completion rates. Students who did not complete high school in Texas were, not surprisingly, less likely to enroll in a public postsecondary institution in Texas. When we examined differences in college enrollment and persistence among Talent Search participants and comparison students who did graduate from high school, we found, as expected, that high school graduates had higher college enrollment rates than students in the full cohort.[29] However, the differences in overall enrollment rates reported above were similar. Differences in continuous enrollment in a four-year institution were still very small—only two percentage points—and differences in total credits earned in 1999, 2000, and 2001 were evident. The latter group

[28] Credits earned include credits earned during the summer. One course at a public postsecondary institution in Texas usually is three credits.

[29] In studying high school graduates between the two groups, we used the matching process described earlier. However, we did not verify that the subset of high school graduates was similar based on baseline characteristics.

TABLE III.11

CONTINUOUS ENROLLMENT IN FOUR-YEAR INSTITUTIONS AND TOTAL CREDITS EARNED BY TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS IN TEXAS

	Participants	Comparison Students	Difference	
All Students in the Cohort				
Enrollment in a Four-Year Institution (Percent)				
Enrolled in 1999 and 2000	16.1	11.3	4.8	***
Enrolled full-time in 1999, 2000, and 2001	8.6	6.7	2.2	***
Total Credits (Average)				
Two- and four-year institutions in 1999	12.6	7.9	4.7	***
Two- and four-year institutions from 1999 to 2001	30.2	20.4	9.7	***
All High School Graduates in the Cohort				
Enrollment in a Four-Year Institution (Percent)				
Enrolled in 1999 and 2000	18.5	13.7	4.8	***
Enrolled full-time in 1999, 2000, and 2001	9.9	7.7	2.2	***
Total Credits (Average)				
Two- and four-year institutions in 1999	14.3	9.6	4.7	***
Two- and four-year institutions from 1999 to 2001	34.3	24.8	9.5	***
All Students in the Cohort Who Earned Some College Credits				
Total Credits (Average)				
Two- and four-year institutions in 1999	24.5	23.3	1.2	***
Two- and four-year institutions from 1999 to 2001	52.3	48.2	4.1	***

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome or the number of credits earned. Enrollment and credits earned were at public colleges and universities in Texas.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

earned, on average, 9.5 credits more than comparison students who completed high school in Texas. Thus, the large 18 percentage point difference in initial enrollment is complemented by Talent Search participants completing an average of 1.5 more courses in the first year and approximately three more courses over three years.

As a final test of the differences in both intensity and persistence of enrollment, we examined the total credits earned among students who had earned at least some credits.[30] In this case, the differences between Talent Search participants and nonparticipants were very small. Talent Search students earned one or two more credits in 1999 alone and three to four more credits (approximately one additional course) over the years 1999, 2000, and 2001. Most of the difference in total credits observed for the full cohort did not result from higher rates of persistence of Talent Search students conditional on earning some college credits. Rather, it followed from differences in initial enrollment, including differences in full-time enrollment and earning a few more credits in the first year of college.

E. DISCUSSION OF RESULTS

There were moderate to large differences between Talent Search participants and comparison students in high school completion, first-time application for financial aid, and postsecondary enrollment. Eighty-six percent of Talent Search participants completed high school in Texas, compared to 77 percent of comparison students; a difference of this magnitude is considered large in studies of effective dropout prevention programs (U.S. Department of Education 1998). Sixty-two percent of Talent Search participants were first-time applicants for federal financial aid, almost twice the percentage rate for comparison students. Differences in

[30] Only students with some college credit were studied between the two groups, but the propensity model was not reestimated to verify that the groups were similar in baseline characteristics.

postsecondary enrollment in public institutions in Texas were not as dramatic as differences in application for financial aid—58 versus 40 percent—but this difference is also large, compared to findings from studies of other programs designed to promote college enrollment (Myers et al. 2004; Perna and Swail 2002). The differences in secondary and postsecondary outcomes were consistent and statistically robust; they were generally positive and statistically significant at most Talent Search projects.

The difference in high school graduation rates occurred at nearly all projects. Without random assignment, however, our strategy for selecting comparison students had limitations. Students drawn from within the target high schools matched well on observable characteristics, but the students who chose to participate in Talent Search may have been fundamentally different in unmeasured characteristics, such as motivation and aspirations, from students who chose not to. If so, the estimated effect of participation based on comparisons between these two groups may be attributable, in part, to differences in these unobservable characteristics, potentially overstating the effect of Talent Search.

The magnitude of the difference in high school completion rates suggests that we could not account for some important unmeasured characteristics. For example, students who persisted through high school may be different from students who did not persist for reasons that are difficult to measure, such as motivation or a supportive home environment.[31] Although Talent Search projects report that persistence and completion of high school by participants is a goal of the program, services typically are not intensive and do not directly target retention. In Texas,

[31] In initial specifications that did not control for persistence by forcing a match on still being enrolled in high school at the point at which the participant entered Talent Search, the effect of Talent Search on high school graduation was found to be 15 percentage points, compared to 9 percentage points when persistence was included. Explicit controlling for persistence reduced the magnitude of the difference in high school completion by more than one-third.

Talent Search projects served nearly half the participants in this cohort for the first time during their senior year of high school. Therefore, when project staff offered assistance with college and financial aid, they may have targeted students most likely to complete the final high school year. The pattern of differences across projects and years indicates that Talent Search participants were more likely to graduate than similar comparison students, but the 9 percentage point difference in high school completion may be an upper bound with upward bias resulting from unmeasured characteristics.

The magnitude of the differences in first-time application for financial aid was also large. In this case, there are reasons to attribute this difference more to participation in Talent Search than to unmeasured characteristics. Three lines of evidence support this conclusion:

1. ***Talent Search staff often helped students complete applications for financial aid.***[32] Assistance was sometimes described as "hands-on," as staff members sat with students and completed their applications with them.
2. ***When controlled for persistence through high school, the magnitude of the differences in applications for financial aid was only slightly smaller than the specifications where no control was imposed.*** This suggests that unobservable characteristics may not play as strong a role in financial aid application as they did for high school graduation.
3. ***The magnitude of the differences in applications for financial aid were largest for students first served by Talent Search during their last year in high school.*** Services that focused on the financial aid and college application process for students in their last year of high school probably would generate a large difference associated with these particular students.

The 28 to 29 percentage point differences in first-time application for financial aid may be an upper bound because of unmeasured characteristics. It seems plausible, however, that Talent

[32] More than 95 percent of Talent search projects reported that they provided this service. For a discussion of the most commonly provided services, see Chapter I.

Search increased the likelihood of completing an application for financial aid for participants in this cohort, perhaps by less than this amount.

Differences in postsecondary enrollment also were large—the enrollment rate of Talent Search participants in public postsecondary institutions in Texas was 18 percentage points higher than for comparison students.[33] A random assignment study on the higher-intensity Upward Bound program found smaller differences in overall postsecondary enrollment than the Talent Search findings (Myers et al. 2004). However, the differences we found here were smaller than the differences found in enrollment in four-year institutions among students with low educational expectations in the Upward Bound study.

The difference in college enrollment between Talent Search participants and comparison students was not as large as the difference in first-time application for financial aid. Talent Search staff can work directly with students to help them complete applications for financial aid and for admission to a two- or four-year institution. However, staff may be able to do less to ensure that a student actually enrolls in, and attends, college. This also might explain why we found no differences in enrollment rates at four of the ten Talent Search projects and no difference in application for financial aid at one of the ten Talent Search projects.[34]

Finally, the pattern of differences in enrollment in two- and four-year institutions across projects suggest that Talent Search participants are more likely to enroll in the type of institution which is serving as the host for the Talent Search project. Talent Search participants may

[33] Talent Search participants also earned more credits than comparison students earned. These differences were smaller in magnitude than the differences in enrollment and were probably caused by differences in initial enrollment and, perhaps, early persistence, rather than by persistence through the first few years of college.

[34] If Talent Search participants were more likely to enroll in private or out-of-state institutions, the differences found between the two groups would be lower than if data were available on all types of enrollment. In addition, there may be students who enrolled in college but never applied for financial aid because they would not qualify based on family income. Given the characteristics of the students Talent Search projects targeted, however, this probably was uncommon among Talent Search participants.

become familiar with the host institution of their project or other institutions like it, which may make it more likely that they will enroll in the same type of institution.[35]

Although our analysis in Texas demonstrated the feasibility of compiling a comprehensive set of administrative records to estimate the effect of Talent Search on participants, the type of data available in these records lacked important characteristics that may contribute to a more rigorous analysis. One such missing characteristic is the students' college aspirations. Because the Talent Search staff may largely target students with college aspirations, it is difficult to know precisely how much this missing information generated a bias in the estimates. One way to assess this potential bias would be to conduct a similar analysis using data with information on aspirations and educational plans and to compare the magnitude of the differences in outcomes. Fortunately, analysis performed in other states allows for such a comparison. We present results of the analyses of data for Indiana in the next chapter.

[35] Information was available on the type of institution students enrolled in but not on the specific institution, so we could not test the hypothesis of Talent Search participants enrolling in their host institutions. We test this hypothesis in the chapter describing the results in Florida.

IV. INDIANA

A. INTRODUCTION

In this chapter, we present our findings for Talent Search programs in Indiana. We describe the data sources we used to compile records on students, the strengths and weaknesses of the data, and our analytic approach to identifying nonparticipants who are similar to Talent Search participants. We also describe our analyses of outcomes, including application for financial aid and postsecondary enrollment and persistence. Compared to similar nonparticipants, the students participating in Talent Search had higher rates of first-time application for federal financial aid and enrollment in public postsecondary institutions in Indiana. The magnitudes of these differences varied across projects in the state, but the largest and most consistent were the differences in application for financial aid.

The sources and type of data available for analyzing the effect of Talent Search on participants in Indiana differed from the data available for Florida and Texas. This limited our analysis in some ways, such as not allowing us to account for high school persistence and completion. However, it also allowed us to account for important factors we could not account for in the other states, such as education and career aspirations and self-reported concerns about the barriers students might face in obtaining education in the future. The data available in Indiana are a good test of the sensitivity of our findings on participation in Talent Search to different sources of data, types of information available, and samples of students included in the analysis.

B. DATA

Unlike Florida and Texas, Indiana does not maintain a system of records on secondary school students. As described below, data on the experiences, attitudes, and characteristics of

students when they were in secondary school were generated from a survey of ninth-graders administered by a state-supported center affiliated with Indiana University. No information was available on students' progression through high school, such as grade level each year and high school completion. Data on postsecondary outcomes, such as application for financial aid and enrollment in college in Indiana, were based on state and federal data sources and were similar to the data available in the other states.

Following are the main sources of data for our study in Indiana (Table IV.1):

- ***Secondary School Experiences and Educational and Career Expectations.*** We obtained these through a survey of students in ninth grade in Indiana in fall 1995, administered by the Indiana Career and Postsecondary Advancement Center (ICPAC).[36] This survey included information on demographic characteristics, such as age, race, gender, education level of parents, and family structure. In addition, the survey contained information on grades obtained before ninth grade, participation in several academic programs, educational expectations, career interests, and avenues of training students were considering, along with students' views on potential barriers for achieving education and career goals.
- ***Postsecondary Enrollment Information and Financial Aid Records.*** We obtained these from the Indiana Commission for Higher Education's Student Information System (SIS) and the State Student Assistance Commission of Indiana (SSACI). The SIS provided financial aid and postsecondary enrollment information for all students who attended public colleges and universities in Indiana. The SSACI contained similar information on students who received state grants but included students who attended private or out-of-state institutions. We obtained data for the 1999–2000, 2000–2001, and 2001–2002 school years.
- ***Talent Search Project Records.*** We obtained these from seven of the eight projects operating in Indiana in 1999.[37] Talent Search projects provided different types of data, but we obtained information on names and dates of birth of nearly all participants and social security numbers (SSNs) for some participants. In addition, projects indicated each year that Talent Search served a student.

[36] Appendix Table A.IV.1 describes the variables from the ninth-grade survey that we used in our analysis.

[37] One project that provided us with data began operating only in the 1998–99 school year, and only one student this project served matched the cohort. Therefore, the findings reported in this chapter apply to only six of the eight Talent Search projects in Indiana.

TABLE IV.1

INDIANA DATA SOURCES

Source	Variables	Years	Number of Students from the Fall 1995 Ninth-Grade Cohort
Indiana Career and Postsecondary Advancement Center	Data from survey completed by student includes basic demographic information and extensive information on academic and career plans	School year 1995–96 School year 1997–98	65,979
Indiana Commission for Higher Education's Student Information System	Postsecondary enrollment, application and receipt of federal and state financial aid	1999–2001	29,245
U.S. Department of Education, Office of Postsecondary Education (OPE)	First-time applicants for federal financial aid who were living in Indiana	School year 1999–2000 School year 2000–01	29,069
Talent Search Projects	Lists of students and years served	1993–2000	1,166

Note: Figures indicate the number of students in the ninth-grade cohort who were identified with records in the other data sources.

- ***Federal Financial Aid Application Records.*** We obtained these from the Office of Postsecondary Education (OPE) of the U.S. Department of Education (ED) for nearly all Indiana residents who were first-time applicants for federal financial aid in 1999–2000 and 2000–01.

We chose to study Indiana students who were in the ninth grade during the 1995–96 school year because of the extensive survey data available on this cohort as it began high school. This was the only cohort of students where this type of information was available, and it is the same cohort we studied in Florida and Texas. Students who graduated from this cohort "on time" in spring 1999 were first-time applicants for federal aid and enrolled in college in 1999. We collected information on application for financial aid and postsecondary enrollment for 1999 and

2000, to allow an additional year for some students to complete high school or wait a year after completing high school before applying for aid and enrolling in college. The postsecondary information also allows us to assess persistence in college for students who initially enrolled in 1999 but persisted through the first two years of college.

Compilation of the data sources yields 65,979 records on students who completed an ICPAC survey when they were in ninth grade in fall 1995. Talent Search projects providing us with data served 1,166 of these students, making it possible for us to identify enough Talent Search participants and potential comparison students to analyze outcomes for Talent Search participants and other, similar students who did not participate in Talent Search.

1. Strengths and Weaknesses of the Data

The compilation of survey data and administrative records in Indiana generated data with several strengths for studying the effect of Talent Search on participants:

- ***The survey data include several measures that are important predictors of application for financial aid and postsecondary enrollment.*** These predictors include students' educational expectations, career plans, and potential barriers for obtaining postsecondary education, as well as academic performance and interest in academic programs in high school. The aspiration measures, in particular, are important for assessing whether Talent Search students have high educational aspirations before entering the program and identifying other students who have similar aspirations.
- ***The sample consists of students who were willing to complete the ICPAC survey and who may already have been considering postsecondary options when they were in ninth grade.*** This self-selected sample may be more homogenous than the complete cohort of ninth-grade students in unobservable ways that affected the likelihood of their completing high school and enrolling in a postsecondary institution. This homogeneity may make it easier to identify comparison students suitable to match to Talent Search participants.
- ***Information on postsecondary enrollment and application for financial aid is based on administrative records and is more likely to be reliable than self-reported information.*** In addition, because we have complete postsecondary data for two years, we can examine initial persistence in postsecondary education.

The data also have limitations in assessing the relationship of participation in Talent Search to postsecondary outcomes:

- ***Information on ninth-grade characteristics is self-reported and does not include data on some important predictors of application for financial aid and postsecondary enrollment.*** For example, these data do not include information on family income or on test scores. Nor do they include administrative information on high school curriculum and persistence through high school.
- ***The sample does not include the full cohort of students in ninth grade in the fall of 1995.*** We cannot generalize our findings to all students in the cohort, as the missing students may include students who may have been served by Talent Search but who did not complete a questionnaire. In addition, we did not receive data from one Talent Search project; to the extent this project differs from the others, our findings cannot be generalized to all Talent Search projects.
- ***Information on postsecondary enrollment is not comprehensive.*** Students who did not apply for state aid and who attended a private or an out-of-state institution did not appear as being enrolled in a postsecondary institution in these data; therefore, we understate postsecondary enrollment. This will affect our estimates of the difference between postsecondary enrollment between Talent Search participants and the comparison students if they differ in this respect.
- ***Due to confidentiality restrictions on the ICPAC, SIS, and SSACI data, MPR staff were not allowed to merge the data across the various sources.*** Data provided to us contained no information that could be used to identify individuals, and we could not verify that the procedures used to match the data across the sources were accurate. Because SSNs were not available for most of the sample, matching the data across the sources was particularly challenging; however, the ICPAC, SIS, and SSACI data have been merged and used in other studies (see, for example, St. John et al. 2002).

Compilation of the records in Indiana demonstrates that it is feasible to compile information from administrative data with which to study the effect of Talent Search on participants. For this study, the Indiana data are an excellent complement to the data available in the other states, because they contain important details on the educational expectations that were not available in Florida or Texas. Because of the relative strengths and weaknesses of the data available in Indiana, we had to take a slightly different analytic approach to our analysis than we did in Florida and Texas.

2. Characteristics of Talent Search Participants and Potential Comparison Students

The characteristics of Talent Search participants and all other students differed for students in Indiana. Table IV.2 shows that, across the state, Talent Search participants were more likely than other students to be black, have a parent without a bachelor's degree, and live with only one parent. Participants were also more likely to be female, expect to attend a two-year college, and have participated in Indiana's 21st Century Scholar program (a program focused on low-income eighth-graders, designed to increase their commitment to taking the steps to prepare for college). While most of the demographic characteristics of participants are associated with lower average educational outcomes, the academic and educational expectations characteristics are correlated with higher educational outcomes. Given the goals of the Talent Search program, it is notable that Talent Search participants were slightly more likely than nonparticipants to believe they could not afford college and to have no one to advise them about their future. The characteristics of Talent Search students presented in Table IV.2 indicate that the program is serving the students the program was intended to reach: disadvantaged, potentially first-generation college students, with good academic performance in high school and with college aspirations.

In addition to differences between participants and other students across the state, participants often were quite different from nonparticipants even within the same high school. Frequently, these differences paralleled those found at the state level, although, in general, Talent Search participants were more likely to be interested in academic programs than nonparticipants within target high schools. Appendix Table A.IV.2 shows the characteristics of Talent Search participants and nonparticipants served by each of the groups of projects in this study.

TABLE IV.2

BASELINE CHARACTERISTICS OF TALENT SEARCH PARTICIPANTS
AND ALL OTHER STUDENTS IN NINTH GRADE IN FALL 1995
ALL OF INDIANA
(Percents)

	Participants	All Other Students	
Demographic Characteristics			
Age in ninth grade (mean)[a]	14.2	14.0	
Overage in ninth grade	16.4	14.0	**
Male	43.6	48.5	***
Race			
White	51.4	70.8	***
Black	21.2	6.3	***
All other races	15.0	12.6	**
Race is missing	12.4	10.3	**
Primary language spoken at home			
English	83.5	85.4	*
Other languages	1.5	1.3	
Language spoken is missing	15.0	13.3	
Parents' education			
Bachelor's degree	22.4	31.8	***
No bachelor's degree	48.4	43.1	***
Student does not know parents' education	18.6	16.4	*
Parents' education is missing	10.6	8.7	**
Student's living arrangement			
Lives with mother and father	39.4	55.2	***
Lives with parent and stepparent	16.6	15.9	
Lives with one parent	30.1	18.1	***
Lives with other guardian	4.9	2.9	***
Living arrangement is missing	9.1	7.8	
Academic Characteristics			
Educational expectations			
Will not complete high school	0.2	0.5	***
Complete high school	6.6	7.4	
Complete some college	5.9	5.6	
Complete two years of college	11.2	7.8	***
Complete four years of college	59.2	61.0	
Education plans are undecided	11.2	11.8	
Education plans are missing	5.8	5.8	
Grades in school[b]			
Mostly As	6.2	10.1	***
Mostly As and Bs	32.2	31.5	
Mostly Bs	7.3	8.1	
Mostly Bs and Cs	27.3	26.7	
Mostly Cs and below	21.4	17.6	***
Grades are missing	5.7	5.9	

Continued on next page

TABLE IV.2 *(continued)*

	Participants	All Other Students	
Academic programs of interest[c]			
21st Century Scholar Program	22.8	6.8	***
Indiana Core 40 Program	26.9	29.0	
Advanced Placement Program	33.7	34.5	
Indiana Academic Honors Diploma	12.7	14.3	
Indiana Academy for Science, Math, and Humanities	12.0	11.4	
Earning college credit in high school	46.8	42.5	***
Tech Prep program	17.8	17.1	
Consulted with career counselor	21.0	26.2	***
Interest in additional training after high school[c]			
Apprenticeship	49.1	45.4	***
Military training	16.0	15.9	
Employer training	26.6	24.7	
Job with no additional training	11.9	11.8	
Barriers to obtaining postsecondary education[c]			
Not sure I can afford it	35.1	32.3	**
Not sure I can succeed	13.6	13.0	
Not sure how to prepare	27.9	26.6	
Not sure I can get into schools I want	27.4	25.8	
No one to advise about future	5.3	3.2	***
Not sure what I want to do with my life	22.6	24.0	
No barriers	19.6	23.9	***
Future career interests[c]			
Agriculture and natural resources	5.4	6.5	
Arts and entertainment	29.8	29.4	
Building and construction trades	14.7	17.2	**
Business, management, and finance	28.0	25.7	
Communications	15.9	14.9	
Education	21.3	20.4	
Forestry, conservation, and environment	9.6	12.5	***
Industrial and manufacturing	3.2	4.2	*
Medical / Health services	33.9	33.0	
Office and clerical	9.3	7.4	**
Science, math, computer, or engineering	15.0	15.9	
Service	20.8	18.3	**
Technical	12.0	11.6	
Transportation	6.1	6.4	
Number of Students	**1,166**	**64,813**	

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by seven Talent Search projects in 2000.

[a]Average age in years.
[b]Categories of grades reflects the language on the ICPAC survey, and students' self-reporting of grades.
[c]Totals in these categories do not sum to 100 since students could record more than one response.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

C. COMPARISON GROUPS

As noted in Chapter II, it would be desirable for us to draw comparison students from nontarget high schools in the same districts as Talent Search participants, because doing so allows us to control for geographic differences while also limiting the self-selection of students who chose to participate in Talent Search when it was offered. Ultimately, we drew two comparison groups, one from within Talent Search projects' target high schools, the other from across the state. Below, we describe the characteristics of Talent Search projects and school districts that dictated our strategy for identifying comparison students in Indiana.

Due to the structure of Talent Search projects and districts in Indiana, we could not draw students from nontarget high schools within the districts for three main reasons. First, many districts in Indiana are relatively small, often consisting of only one high school and its feeder school. In these cases, there are *no* students within the same district who do not attend the target high school, forcing us to either drop a project from the analysis or widen the pool of potential comparison group members. Second, there were instances in which different Talent Search projects served target high schools in the same district, so we could not isolate potential comparison students by project.[38] Third, we only knew the school a student attended when the student was in ninth grade, and at that time, many students were not in the target school where Talent Search eventually served them.[39]

[38] We determined target schools in Indiana the same way we determined them in the other states, through MPR's survey of all Talent Search projects in 1999–2000 and through the projects' 1999 APRs.

[39] For example, a student may have been in a middle or high school not served by Talent Search when he or she was in ninth grade but may have moved to a target high school at some point after ninth grade. Approximately one-third of Talent Search participants did not appear to be in any target school served by Talent Search projects when they were in ninth grade.

To address some of the limitations discussed above, we created three project groupings based on the geographic location of the projects and the extent to which the projects served either the same target schools or different target schools within the same districts. These groupings are:

1. Project Group 1—only one project, which was not located near any other projects included in our analysis and did not serve any target high schools that other projects served
2. Project Group 2—two projects with overlapping high schools and districts
3. Project Group 3—four projects with overlapping target schools and districts[40]

Students who persisted longer in high school may have been fundamentally different than students who did not. To the extent that these differences are also associated with education outcomes and are not captured by the data we have available, this could limit our ability to generate valid estimates of the relationship between participation in Talent Search and postsecondary outcomes. The Indiana data are based on experiences and expectations in the ninth grade only, and there is no information that allows us to control for persistence in high school. This is a concern, because controlling for persistence in high school in Texas reduced by one-third the estimates of the effect of Talent Search on high school completion. This may be less of a problem in Indiana than it was in Texas, however, for two reasons: (1) a higher percentage of Talent Search participants in Indiana were served relatively early in their high schools careers—more than half the Talent Search participants were first served by 1997, the sophomore year in high school for students who were at grade level in high school; and (2) the data include a much richer set of background characteristics on educational aspirations, which

[40] One project in Group 3 is the project that served only one student in our cohort. We included this project in Group 3 because some students eventually served by other projects were in the target schools of this project before the project began operating in 1998–99.

may capture some of the underlying differences associated with high school persistence and postsecondary outcomes.

Because the pool of students within the same districts—but outside target high schools—often was small, we tested whether we could find a similar comparison group by using all nonparticipants in the entire state, while excluding those who were in the target high school of any Talent Search project. However, even when we used more than 60,000 nonparticipants across the state as potential comparison group members, we could not find a comparison group that was similar to the participants, due to the relative importance of various characteristics in the propensity score model.

Comparison Group One: Students Within the Target Schools of Talent Search Project Groups

One approach we used to identify comparison students similar to Talent Search participants was to draw from the narrowly defined population of students within the target high schools, as in Texas. This approach may introduce bias due to selection issues (although the problem can be reduced if the extensive set of background characteristics are correlated with those choosing to participate in Talent Search), but it also provides the opportunity to match with students who are in environments much more similar to those of participants. Table IV.3 displays the aggregate results of drawing the comparison students from within target high schools by group of projects, showing that, while the unmatched participant and comparison samples differ considerably, the matched participant and comparison samples had no remaining significant differences.

Comparison Group Two: Strata by Race and 21st Century Scholar Program Participation

Because of the difficulty in finding comparison students similar to Talent Search participants outside target schools, we refined our approach. First, we split the combined participant sample and the nonparticipants into three racial groups: “black,” “white,” and

TABLE IV.3

ASSESSING BALANCE BETWEEN TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN THE SAME HIGH SCHOOLS IN INDIANA
(Percents)

	Full Sample			Matched Samples		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Age in ninth grade (mean)[a]	14.8	14.8		14.8	14.8	
Overage in ninth grade	17.1	15.8		17.1	17.2	
Male	42.6	47.5	***	42.5	42.0	
Race						
White	51.6	56.7	***	52.4	51.8	
Black	21.6	17.1	***	20.7	21.1	
All other races	14.6	16.6	*	14.7	15.5	
Race is missing	12.2	9.6	***	12.3	11.6	
Parents' education						
Bachelor's degree	22.2	28.3	***	22.5	22.3	
No bachelor's degree	48.6	43.9	***	48.2	47.7	
Student does not know parents' education	19.1	19.8		19.1	20.0	
Parents' education is missing	10.1	8.0	***	10.2	9.9	
Student's living arrangement						
Lives with mother and father	39.3	50.3	***	39.8	39.5	
Lives with parent and stepparent	16.1	15.4		16.1	16.7	
Lives with one parent	30.9	23.2	***	30.5	30.8	
Lives with other guardian	5.0	4.2		4.9	4.7	
Living arrangement is missing	8.7	6.9	***	8.8	8.4	
Academic Characteristics						
Educational expectations						
Will not complete high school	0.1	0.7	***	0.1	0.6	***
Complete high school	6.4	8.2	***	6.3	6.5	
Complete some college	5.8	5.7		5.8	6.3	
Complete two years of college	11.1	9.1	***	11.0	10.7	
Complete four years of college	60.8	59.1		60.7	60.5	
Education plans are undecided	10.5	11.9		10.7	10.2	
Education plans are missing	5.4	5.4		5.5	5.4	
Grades in school[b]						
Mostly As	6.3	8.8	***	6.4	6.0	
Mostly As and Bs	33.1	28.6	***	33.0	32.6	
Mostly Bs	7.4	8.0		7.4	7.8	
Mostly Bs and Cs	27.1	29.0		27.3	27.2	
Mostly Cs and below	21.1	20.4		20.9	21.2	
Grades are missing	5.0	5.2		5.1	5.2	
Academic programs of interest						
21st Century Scholar Program	23.1	12.2	***	22.4	22.6	
Indiana Core 40 Program	27.1	22.6	***	26.8	27.0	
Advanced Placement Program	34.9	34.5		34.8	35.3	

Continued on next page

TABLE IV.3 *(continued)*

	Full Sample			Matched Samples	
	Participants	Nonparticipants		Participants	Nonparticipants
Indiana Academic Honors Diploma	12.9	13.8		12.8	13.0
Indiana Academy for Science, Math, and Humanities	12.4	12.9		12.6	12.5
Earning college credit in high school	48.5	48.4		48.3	48.3
Tech Prep program	17.8	18.7		18.0	17.7
Consulted with career counselor	20.9	20.5		20.5	20.4
Interest in additional training after high school					
Apprenticeship	49.8	49.4		49.8	50.0
Military training	16.0	15.1		15.9	16.1
Employer training	27.2	25.2		27.2	27.3
Job with no additional training	11.7	12.9		11.8	11.4
Barriers to obtaining postsecondary education					
Not sure I can afford it	36.1	31.6	***	35.9	36.0
Not sure I can succeed	13.4	12.3		13.5	14.0
Not sure how to prepare	28.6	27.2		28.4	28.4
Not sure I can get into schools I want	27.6	25.7		27.3	27.3
No one to advise about future	5.4	3.9	***	5.1	5.3
Not sure what I want to do with my life	22.5	22.8		22.4	21.9
No barriers	19.6	23.5	***	20.0	19.7
Future career interests					
Arts and entertainment	29.5	29.8		29.5	29.3
Building and construction trades	14.4	18.0	***	14.2	14.3
Business, management, and finance	29.0	27.5		28.5	29.0
Communications	16.0	14.8		15.9	15.8
Education	21.7	21.2		21.6	21.3
Industrial and manufacturing	3.3	4.4	***	3.2	3.4
Medical / Health services	34.9	33.0		34.9	35.0
Office and clerical	9.6	7.3	***	9.4	9.2
Science, math, computer, or engineering	15.4	15.7		15.3	15.7
Service	20.9	19.0		20.7	21.1
Technical	12.0	12.8		12.0	12.0
Number of Students	**1,102**	**10,700**		**1,083**	**9,844**

Note: We matched nonparticipant comparison students to Talent Search students using a propensity score model as described in Chapter II. The participants' means for the matched sample differed slightly from the means for the full sample, as some participants had no suitable comparison students; these unmatched participants were dropped from the participant sample. The number of nonparticipants in the matched sample were those who matched to a participant; the sample was then weighted to equal the number of participants in the analysis.

[a]Average ages in years.

[b]Categories of grades reflects the language on the ICPAC survey, and students' self-reporting of grades.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

"other." Next, we estimated the propensity score models and found the comparison group using only black participants and black nonparticipants; then we repeated the process for "white" and "other." By restricting the comparison groups to students of the same race, we eliminated many of the other differences in observable characteristics. However, there was still a higher level of participation in the 21st Century Scholar program for Talent Search participants. The 21st Century Scholar program focuses on low-income eighth-graders and is designed to increase their commitment to taking the steps to prepare for college. It includes support services, such as workshops, mentoring, and campus visits, to students and parents throughout the students' secondary schooling and supplements to state financial aid grants for postsecondary schooling. Because many Talent Search participants were also enrolled in the 21st Century Scholar program, and the two programs share some goals, the effects of participation in Talent Search could be confounded by participation in the 21st Century Scholar program. Thus, we felt it was important to match precisely on participation in the 21st Century Scholar program so that same percentage of Talent Search participants and comparison students participated in the 21st Century Scholar program.

To achieve the appropriate mix of 21st Century Scholar program participants among Talent Search participants and comparison students, we divided each of the three groups of Talent Search participants and nonparticipants into 21st Century Scholar program participants and nonparticipants. This resulted in six groups for matching, based on race (black, white, and other) and 21st Century Scholar program participation (participant or not). Overall, most of the differences in observable characteristics have been eliminated, with a few remaining differences, depending on the group. Looking at all six groups, however, we find few significant differences remaining between the matched participant and nonparticipant groups.

D. RESULTS

The two approaches to finding a comparison group yielded groups of nonparticipants who appear to be similar to Talent Search participants on observable characteristics, although the groups were generated using very different strategies and are distinct groups with no overlap. We estimated the relationship of participation in Talent Search on the outcomes of interest, using both comparison groups, to see whether the findings were sensitive to these differences. As the findings were quite similar, we present the findings for the comparison group made up of students from target high schools. Using a regression-adjusted approach, we estimated the relationship of participation in Talent Search to first-time application for federal financial aid, application for aid in Indiana, and postsecondary enrollment and persistence.[41]

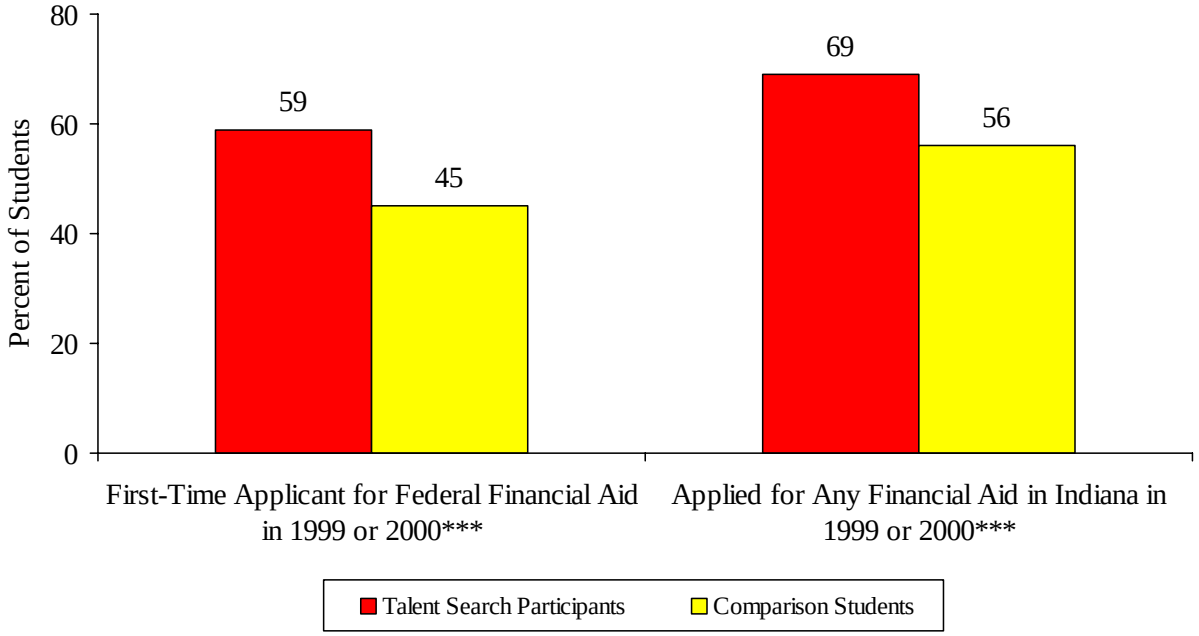
1. Application for Financial Aid

Figure IV.1 illustrates the difference in the percent of Talent Search participants and comparison students who applied for financial aid, based on federal data on first-time application for federal financial aid and based on state data on all applicants for financial aid in 1999–2000 or 2000–01. As the figure shows, 59 percent of Talent Search participants were first-time applicants for federal financial aid in 1999 or 2000, compared to 45 percent of the comparison students. The percentage of students who applied for aid based on state data is even higher, although the difference between Talent Search participants and comparison students is nearly the same: 69 percent, compared to 56 percent. Using two sources of financial aid application data, we estimate that the difference in rates of application for financial aid between Talent Search participants and comparison students was 13 to 14 percentage points.

[41] See Chapter II for estimation details; control variables included the observable characteristics listed in the rows of Table IV.1.

FIGURE IV.1

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS
WHO APPLIED FOR FINANCIAL AID IN INDIANA



Note: First-time applicants for federal aid include all students who applied for federal aid for the first time in 1999 or 2000. Applicants for financial aid from the state include all students who applied for federal or state aid in 1999 or 2000.

***Difference is statistically significant at the 1 percent level.

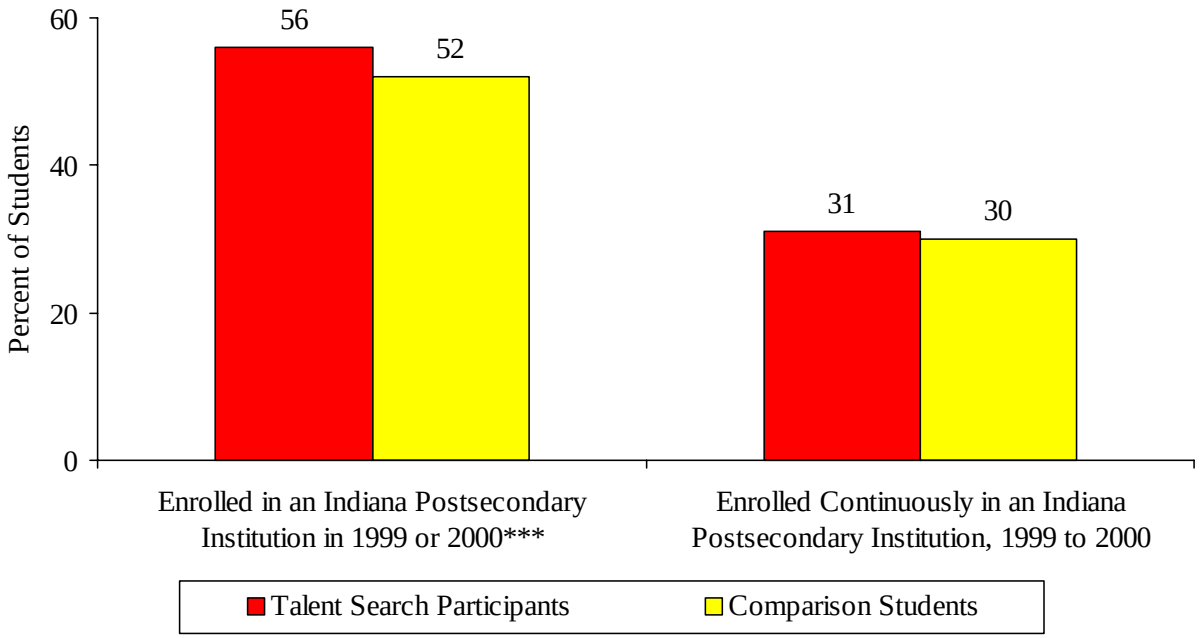
2. Postsecondary Enrollment

Figure IV.2 shows the difference in enrollment rates between Talent Search participants and comparison students in public colleges or universities in Indiana.[42] The left panel displays enrollment in either 1999–2000 or 2000–01, and the right panel displays continuous enrollment in both years. We find a difference of 4 percentage points for enrollment rates in either year—56 percent of Talent Search participants enrolled versus 52 percent of comparison students;

[42] Enrollment rates may include a small number of students who enrolled in private or out-of-state institutions who received a grant from the state.

FIGURE IV.2

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS
WHO ENROLLED IN COLLEGE IN INDIANA



Note: Enrollment includes all students in research sample who enrolled in a public college or university in Indiana in 1999 or 2000. Enrollment also includes students who received state financial aid but enrolled in a private or out-of-state institution.

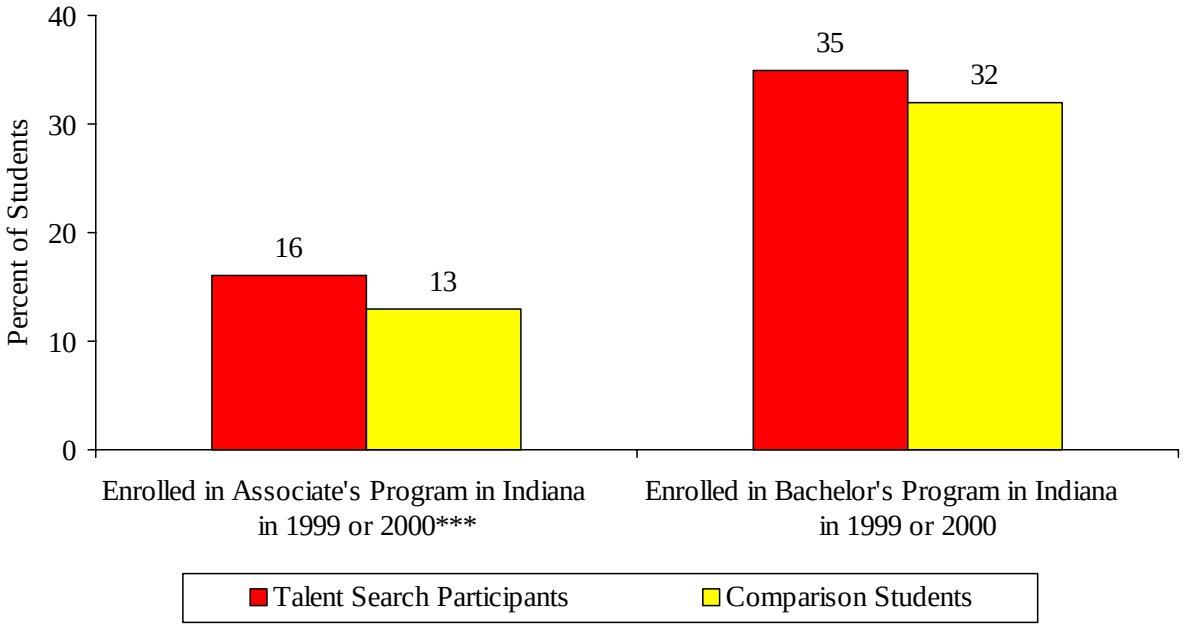
***Difference is statistically significant at the 1 percent level.

however, there was no significant difference in postsecondary persistence across the two years. Although Talent Search participants were more likely than comparison students to enroll in college, the most robust difference between the groups was in two-year college enrollment. Figure IV.3 shows the differences in enrollment in two- and four-year institutions: the difference in enrollment rates at both two- and four-year institutions is three percentage points, although only the difference for two-year institutions is statistically significant.

To further explore differences in enrollment in two- and four-year institutions, we present the differences in application for aid and postsecondary enrollment by project group. Table IV.4 shows the differences between Talent Search participants and comparison students, by project

FIGURE IV.3

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS
ENROLLED IN COLLEGE IN INDIANA, BY DEGREE PROGRAM



Note: Enrollment includes all students in research sample who enrolled in a public college or university in Indiana in 1999 or 2000. Enrollment also includes students who received state financial aid but enrolled in a private or out-of-state institution.

***Difference is statistically significant at the 1 percent level.

group, for the four enrollment variables: (1) enrollment in *either* 1999 or 2000, (2) enrollment in *both* 1999 and 2000, (3) enrollment in a two-year institution, and (4) enrollment in a four-year institution. The findings clearly differ by project group. The only project with a statistically significant difference in overall postsecondary enrollment is Project Group 3. The difference in enrollment in two-year institutions, however, is driven entirely by Project Group 2, and the difference in four-year enrollment by Project Group 3. There is no difference in postsecondary enrollment between Talent Search participants and comparison students in Project Group 1.

TABLE IV.4

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO APPLIED FOR FINANCIAL AID OR ENROLLED IN A POSTSECONDARY INSTITUTION IN INDIANA, BY PROJECT GROUP

	Participants	Comparison Students	Difference	
Applied for Federal Aid in 1999 or 2000				
Project Group 1	50.0	41.4	8.6	***
Project Group 2	60.6	45.8	14.8	***
Project Group 3	63.3	48.1	15.2	***
Applied for Aid from Indiana				
Project Group 1	52.7	52.7	0.0	
Project Group 2	72.9	57.5	15.4	***
Project Group 3	77.8	59.8	18.0	***
Enrolled in a Postsecondary Institution in Indiana in 1999–2000				
Project Group 1	44.4	47.2	-2.8	
Project Group 2	59.3	55.1	4.2	
Project Group 3	61.0	52.9	8.1	***
Enrolled in a Two-Year Institution in Indiana in 1999–2000				
Project Group 1	8.5	10.2	-1.8	
Project Group 2	28.1	17.1	11.1	***
Project Group 3	9.4	11.8	-2.5	
Enrolled in a Four-Year Institution in Indiana in 1999–2000				
Project Group 1	28.8	29.8	-0.9	
Project Group 2	28.5	32.1	-3.6	
Project Group 3	47.3	34.4	12.9	***

Note: Participants are all students in ninth grade in the fall of 1995 who were served by seven Talent Search projects by 2000.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

E. DISCUSSION OF RESULTS

Talent Search participants had higher rates of application for financial aid and postsecondary enrollment than comparison students from target high schools, but except for the higher rate of application for financial aid, there were substantial differences across project groups, suggesting that though financial aid services may be similar across projects, other services related to helping students in their college decisions may vary.

- ***Talent Search participants were 13 percentage points more likely than comparison students to be first-time applicants for federal financial aid and applicants for aid from the state.*** The differences in application for federal aid range from 11 to 15 percentage points across project groups, while the differences in application for aid from Indiana range from 0 to 15 percentage points.
- ***Talent Search participants were 4 percentage points more likely to enroll in a postsecondary institution in Indiana than comparison students in 1999 or 2000.*** Across project groups, the differences varied from 0 to 8 percentage points.
- ***There was no difference in persistence in college from 1999 to 2000 between Talent Search participants and comparison students.***
- ***Talent Search participants were 3 percentage points more likely than comparison students to enroll in a two-year institution in Indiana.*** However, there was no statistically significant difference in enrollment in a four-year institution. Talent Search had no statistically effect on any type of postsecondary enrollment at Project Group 1, a positive statistically significant effect on enrollment in a two-year institution at Project Group 2, and a positive statistically significant effect on enrollment in a four-year institution at Project Group 3.

The differences in postsecondary enrollment varied by the type of host institution for the Talent Search project. The host institution in Project Group 1 was not a postsecondary institution, one of the host institutions in Project Group 2 was a four-year institution and one was a two-year institution, and all the host institutions in Project Group 3 were four-year institutions. Thus, the difference in two-year enrollment was generated by the only project group that included a two-year host institution, and the difference in four-year enrollment was generated by the project group made up entirely of four-year host institutions. Our data do not allow us to

determine whether Talent Search participants are simply more likely to apply to their host institution or to other two- and four-year institutions as well. Regardless of where Talent Search students enroll, they are enrolling at a higher rate than comparison students, and this probably is beneficial for their educational achievement. Because there were no differences in persistence in college, it is difficult to determine whether Talent Search participants in Indiana also have higher rates of degree completion.

We cannot rule out the possibility that some of these findings are due to other important characteristics that influence application for financial aid and enrollment in college but that are not available—for example, indicators of family income and test scores of participants. However, data available in Indiana allow us to capture educational expectations and plans before most students participate in Talent Search. Controlling for initial educational expectations makes it more likely that some of the differences can be attributed to participation in Talent Search itself. Finally, the data in Indiana also did not include information on one key outcome of interest: high school completion. In the next chapter, we present our findings in Florida, where we analyzed the broadest range of secondary and postsecondary outcomes.

V. FLORIDA

A. INTRODUCTION

In 1999, eight Talent Search projects, serving a total of nearly 6,000 students, were operating in Florida (Cahalan et al. 2004). There were fewer projects and fewer students than in Texas, but the number of projects and students served was similar to Indiana.[43] School districts in Florida are large, and no Talent Search project served all high schools within a school district. Our analysis in this chapter is based on 908 Talent Search participants in five Talent Search projects from across Florida who were in ninth grade in the 1995–96 school year, along with similar nonparticipants who were in the same school districts.

The data available in Florida included secondary school records on the entire 1995–96 ninth-grade cohort and postsecondary school records on students in the cohort who enrolled in public postsecondary institutions in Florida. Estimates indicate that Talent Search participants had higher rates than similar nonparticipants of high school completion, of exam-taking for college entrance, of first-time application for federal financial aid, and of postsecondary enrollment, persistence and completion in public two-year institutions in Florida. As in other states, the magnitudes of these differences varied across projects, but differences in application for financial aid were largest and most consistent.

In the following sections of this chapter, we describe the data sources used to compile records on students, list the strengths and weaknesses of the data, and describe our analytic approach to identifying nonparticipating students who were similar to Talent Search participants.

[43] Though similar to Indiana in the absolute number of students served by Talent Search, Florida's programs serve a much lower percentage of low-income secondary students than either Indiana's or Texas's programs.

We also provide estimates of the relationship of participation in Talent Search to high school completion, financial aid application, and postsecondary enrollment.

B. DATA

We used three main sources of data for our study in Florida (Table V.1):

1. ***Secondary and Postsecondary School Records.*** We obtained these from the Florida Department of Education's (FLDOE's) K-20 Data Warehouse. The warehouse is a repository for records on all primary, secondary, and postsecondary public school students in Florida. The secondary school records include demographic, socio-economic, and academic characteristics, as well as school, grade level, and grade promotion status in each year. Secondary school records also include high school degree completion and college entrance exam test taking. Postsecondary records include information on enrollment, including name of institution.[44] We obtained data for the 1995–99 through 2002–03 school years.
2. ***Talent Search Project Records.*** We obtained these from seven of the eight Talent Search projects operating in 1999. However, only five projects provided information on, and served enough, students during the time period of interest for this study (1995–2000) to be included in the analysis.[45] Talent Search projects provided individual identifying information for most students and indicated each year that a student was served.
3. ***Federal Financial Aid Application Records.*** We obtained these for nearly all first-time applicants for federal financial aid who lived in Florida in 1999 and 2000 from the Office of Postsecondary Education (OPE), U.S. Department of Education (ED).

As noted in the other chapters, the cohort chosen for this study consisted of all students in ninth grade in the 1995–96 school year, to allow collection of retrospective data that enabled us to assess several outcomes related to the goals of the Talent Search program. The data available in Florida allowed us to examine the effect of Talent Search on more steps along the educational pathway: high school completion, test taking before college, application for financial aid, and

[44] We discerned the institution type (two- or four-year) from the institution name.

[45] One of the projects began operating in 1998–99 and did not serve enough students in the target cohort to be included in the analysis; another project did not send us data on all the students it served.

TABLE V.1

FLORIDA DATA SOURCES

Source	Variables	Years	Number of Students from Fall 1995 Ninth-Grade Cohort
Florida K-20 Education Data Warehouse	Demographic and academic information on secondary and postsecondary enrollment	1995–2002	233,188
U.S. Department of Education, Office of Postsecondary Education (OPE)	First-time applicants for federal financial aid who were living in Florida	School year 1999–2000 School year 2000–01	49,672
Talent Search Projects	Lists of students and years served	1993–2000	908

Note: Figures indicate the number of students in the ninth-grade cohort who were identified with records in the other data sources.

college enrollment and persistence.[46] Compilation of these data sources yielded records on 233,188 students who were in ninth grade in Florida public schools during the 1995–96 school year.[47] Talent Search projects that provided us with data served 908 of these students at some point during secondary school.

1. Strengths and Weaknesses of the Data

Compilation of administrative records generated a database with several strengths for studying the effect of Talent Search on participants:

[46] We also examined completion of two-year degrees, because students in the cohort who enrolled in a two-year institution soon after completing high school may have completed a degree by 2003.

[47] We restricted our analysis to students who were between 13.3 and 17.3 years old in ninth grade in the 1995–96 school year. This reduced our analysis sample to 223,903.

- ***The data are comprehensive and contain the full sample of ninth-graders in Florida public schools in 1995–96.*** Talent Search projects were spread throughout the state and differed in terms of the students served, so it is critical to be able to draw comparison students from similar environments.

- ***The data contain information on observable characteristics that are important predictors of educational outcomes.*** These characteristics include race, ethnicity, gender, economic status (defined as eligible for free or reduced-price lunches), disabilities, and participation in dropout prevention and gifted and talented programs.

- ***The data contain information on persistence through high school, which allows us to control for important characteristics in selecting comparison students.*** In addition, because we know which schools students attended each year, we are able to compare Talent Search participants to students who were in the same high schools as the participants at the precise time Talent Search served them.

- ***The data contain reliable information on key outcomes, such as high school completion status, application for federal financial aid, enrollment in college, and initial persistence in college.*** Because these data come from administrative sources, the outcomes are more likely to be accurate and may be more comprehensive than self-reported information.

However, these data also have limitations in terms of assessing the differences between Talent Search participants and similar nonparticipants:

- ***The data do not contain information on some characteristics that are important predictors of the outcomes we are studying***. These include test scores (an indicator of academic ability), education level of parents, family structure, and student educational and career aspirations and plans.

- ***Information on postsecondary enrollment is limited to attendance at public colleges and universities in Florida.*** Thus, we understate the overall postsecondary enrollment rates of students in this cohort. However, this only affects our estimates of the difference in postsecondary enrollment between Talent Search participants and comparison students if one group is more likely to enroll in private or out-of-state institutions.

- ***Because some projects did not send us data, we did not obtain data on all Talent Search participants in the ninth-grade cohort.*** If these projects are systematically different from those that provided data, our findings will not apply to all the students Talent Search served in Florida.

Compilation of the records in Florida again demonstrates that it is feasible to compile comprehensive and accurate information from administrative data with which to study the effect

of Talent Search on participants. However, the lack of information on test scores and educational aspirations may be a serious limitation of the data.

2. Characteristics of Talent Search Participants and Potential Comparison Students

The characteristics of Talent Search participants differed substantially from students across the state as a whole, as well as within the high schools that individual projects targeted. Across the state as a whole, Talent Search participants differed from other students on several characteristics, many of which are correlated with high school completion and college enrollment.[48] Compared with all other students in the state, Talent Search students were more likely to be black and economically disadvantaged (as measured by eligibility for free or reduced-price lunches) than other students. However, they were also more likely than other students to be female and the traditional age when entering ninth grade, less likely to have participated in a dropout prevention program, and slightly less likely to be classified as physically or learning disabled (Table V.2).[49] As students in our cohort progressed through high school, participants were much more likely than other students to persist and be at grade level in each year (Table V.3).[50] Therefore, Talent Search projects in Florida seem to have served the population the program sought to target: participants were from low-income families, but less at-risk academically than low-income students in general, and were likely to complete high school.

[48] Appendix Table A.V.1 describes the variables we used in the analysis.

[49] At all projects, Talent Search participants were more likely than nonparticipants to be female, economically disadvantaged, nonwhite, and a traditional age in ninth grade; however, there was variation across projects in participation in gifted and dropout prevention programs (Appendix Table A.V.2).

[50] At all projects, Talent Search participants were more likely than nonparticipants to persist through high school (Appendix Table A.V.2).

TABLE V.2

BASELINE CHARACTERISTICS OF TALENT SEARCH PARTICIPANTS AND ALL OTHER STUDENTS, ALL OF FLORIDA
(Percents)

	Participants	All Other Students	
Demographic Characteristics			
Male	33.9	52.9	***
Race			
White	44.6	55.3	***
Black	45.7	25.4	***
Hispanic	4.5	16.0	***
All other races	5.3	3.3	***
Primary language spoken at home			
English	96.9	86.4	***
Spanish	1.9	10.3	***
Other languages	1.2	3.4	***
United States citizen	94.7	86.4	***
Economically disadvantaged	63.1	37.2	***
Age in ninth grade (mean)[a]	14.6	14.9	***
Overage in ninth grade	9.7	26.3	***
Academic Characteristics			
Gifted	4.1	3.9	***
Any dropout prevention program	17.3	28.7	***
Dropout prevention for disruptive students	2.6	8.1	***
Dropout prevention for alternative education	13.2	18.9	***
Dropout prevention for Department of Juvenile Justice	5.1	7.9	***
Emotionally or physically disabled	5.8	8.2	***
Learning disabled	3.6	8.2	***
Number of Students	**909**	**222,995**	

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by five Talent Search projects in 2000.

[a]Average age in years.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE V.3

BELOW GRADE AND PERSISTENCE OF TALENT SEARCH PARTICIPANTS AND ALL OTHER STUDENTS IN FLORIDA
(Percents)

	Below Grade			Persistence		
	Participants	All Other Students		Participants	All Other Students	
1996–97	18.9	22.7	***	98	88	***
1997–98	20.2	28.5	***	96	87	***
1998–99	20.7	25.3	**	92	81	***
1996–99				86	62	***

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by five Talent Search projects by 2000.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

C. COMPARISON GROUPS

We drew two different samples of students who were similar to Talent Search participants but did not participate in the program: one sample from the same high schools as Talent Search participants, the other from the different high schools within the same districts.[51] Drawing comparison students from nonparticipants within target high schools yielded a sample of students most similar to Talent Search participants based on the characteristics available in the data. The samples were statistically equivalent on all characteristics, except for a very small difference in native language spoken at home (Table V.4). The school districts in Florida are larger than in Indiana or Texas, and we were more successful in matching comparison students with similar

[51] For a discussion of the relative merits of drawing comparison groups from students within and outside target high schools, see Chapter II.

TABLE V.4

ASSESSING BALANCE BETWEEN TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN THE SAME HIGH SCHOOLS IN FLORIDA
(Percents)

	Full Samples			Matched Samples		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	33.9	52.3	***	34.2	34.0	
Race						
White	44.6	60.3	***	45.0	44.2	
Black	45.6	24.8	***	45.3	45.6	
Hispanic	4.5	11.1	***	4.3	5.1	
All other races	5.3	3.9	*	5.3	5.2	
Primary language spoken at home						
English	96.9	91.9	***	97.0	96.2	
Spanish	1.9	5.9	***	1.8	1.9	
Other languages	1.2	2.2	***	1.2	1.9	*
United States citizen	94.7	88.2	***	94.8	94.7	
Economically disadvantaged	63.1	36.3	***	62.9	63.6	
Age in ninth grade (mean)[a]	14.6	14.8	***	14.6	14.6	
Overage in ninth grade	9.7	19.1	***	9.8	10.7	
Academic Characteristics						
Gifted	4.1	4.5		3.7	4.2	
Any dropout prevention program	17.2	23.7	***	17.2	19.7	*
Dropout prevention for disruptive students	2.5	4.2	***	2.6	2.8	
Dropout prevention for alternative education	13.1	15.1		13.1	13.3	
Dropout prevention for Department of Juvenile Justice	5.0	8.2	***	5.0	6.1	
Emotionally or physically disabled	5.8	8.3	***	5.8	5.8	
Learning disabled	3.6	8.8	***	3.7	4.2	
Number of Students	**908**	**67,049**		**900**	**42,514**	

Note: We matched nonparticipant comparison students to Talent Search students using a propensity score model as described in Chapter II. The participants' means for the matched sample differed slightly from the means for the full sample, as some participants had no suitable comparison students; these unmatched participants were dropped from the participants sample. The number of nonparticipants in the matched sample were those who matched to a participant; the sample was then weighted to equal the number of participants in the analysis.

[a]Average age in years.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

characteristics to Talent Search participants within the districts where Talent Search project were operating but not at the same high schools. The samples were similar on all characteristics except for race, participation in gifted programs, and participation in a dropout prevention program sponsored by the Department of Juvenile Justice (Table V.5).

Because the Florida data included information on persistence through high school, we used a strategy for identifying comparison students to Talent Search participants similar to the one we used in Texas. We drew comparison students by Talent Search project, and controlled for persistence through high school by dividing the participant sample into students first served early or later in their high school careers, requiring potential comparison group members to still have been in the same schools as Talent Search participants when the participants first participated in Talent Search.[52] We analyzed the differences in secondary and postsecondary outcomes between Talent Search participants and comparisons students using both comparison groups, and our findings were not sensitive to the comparison group chosen. Therefore, we report the findings based on comparison students drawn from the same target high schools, because those comparison students were most similar to Talent Search participants.

D. RESULTS

Talent Search participants were more likely than comparison students to complete each step on the path to higher educational achievement, including high school completion, college entrance test taking, application for financial aid, and college enrollment and persistence. We used a regression-adjusted approach to estimate the relationship of participation in Talent Search to secondary and postsecondary outcomes to (1) adjust for the remaining differences in

[52] When sample sizes permitted, we broke the sample into two time periods per project. However, as the Talent Search projects in Florida did not serve as many students from this cohort as those in Texas, we could not divide the sample of participants at two of the projects.

TABLE V.5

ASSESSING BALANCE BETWEEN TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS AT DIFFERENT HIGH SCHOOLS IN THE SAME DISTRICTS IN FLORIDA
(Percents)

	Full Samples			Matched Samples		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	33.9	52.7	***	34.6	34.3	
Race						
White	44.6	62.7	***	46.1	49.1	
Black	45.6	22.9	***	45.0	39.6	**
Hispanic	4.5	10.7	***	4.4	6.2	**
All other races	5.3	3.8	**	4.4	5.1	
Primary language spoken at home						
English	96.9	92.7	***	97.3	97.7	
Spanish	1.9	5.4	***	1.8	1.6	
Other languages	1.2	1.9	*	0.9	0.7	
United States citizen	94.7	89.4	***	94.9	95.7	
Economically disadvantaged	63.1	33.8	***	62.3	60.5	
Age in ninth grade (mean)[a]	14.6	14.8	***	14.6	14.6	
Overage in ninth grade	9.7	19.8	***	9.8	10.1	
Academic Characteristics						
Gifted	4.1	5.0		3.6	5.9	***
Any dropout prevention program	17.2	24.0	***	17.0	19.0	
Dropout prevention for disruptive students	2.5	4.5	***	2.6	3.1	
Dropout prevention for alternative education	13.1	14.8		12.8	10.7	
Dropout prevention for Department of Juvenile Justice	5.0	8.6	***	5.1	7.4	**
Emotionally or physically disabled	5.8	8.3	***	5.8	5.0	
Learning disabled	3.6	8.6	***	3.8	3.7	
Number of Students	**908**	**88,156**		**878**	**13,843**	

Note: We matched nonparticipant comparison students to Talent Search students using a propensity score model as described in Chapter II. The participants' means for the matched sample differed slightly from the means for the full sample, as some participants had no suitable comparison students; these unmatched participants were dropped from the participants sample. The number of nonparticipants in the matched sample were those who matched to a participant; the sample was then weighted to equal the number of participants in the analysis.

[a]Average age in years.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

observable characteristics between the Talent Search participant sample and the matched comparison group and (2) increase the precision of our estimates.[53] In this section, we present the differences in outcomes for participants and comparison students across Florida and by project; in the next section, we discuss our interpretation of these findings.

1. High School Completion, Application for Financial Aid, and College Entrance Test Taking

Talent Search participants were more likely than comparison students to take the steps necessary to enroll in college—that is, complete high school (through obtaining a high school diploma or GED), apply for financial aid, and take standardized college entrance and admissions exams. Eighty-four percent of Talent Search students completed high school by 2000—14 percentage points higher than the 70 percent rate of the comparison students. The difference in first-time application for financial aid was even larger—52 percent, compared to 33 percent of comparison students—a difference of 19 percentage points (Figure V.1). The differences also were evident in taking standardized college entrance and admission exams: Talent Search participants (45 percent) were more likely than comparison students (32 percent) to take the CPT or CLAST exams, with an even larger gap in test taking between participants (44 percent) and comparison students (27 percent) for the SAT or ACT exams.[54]

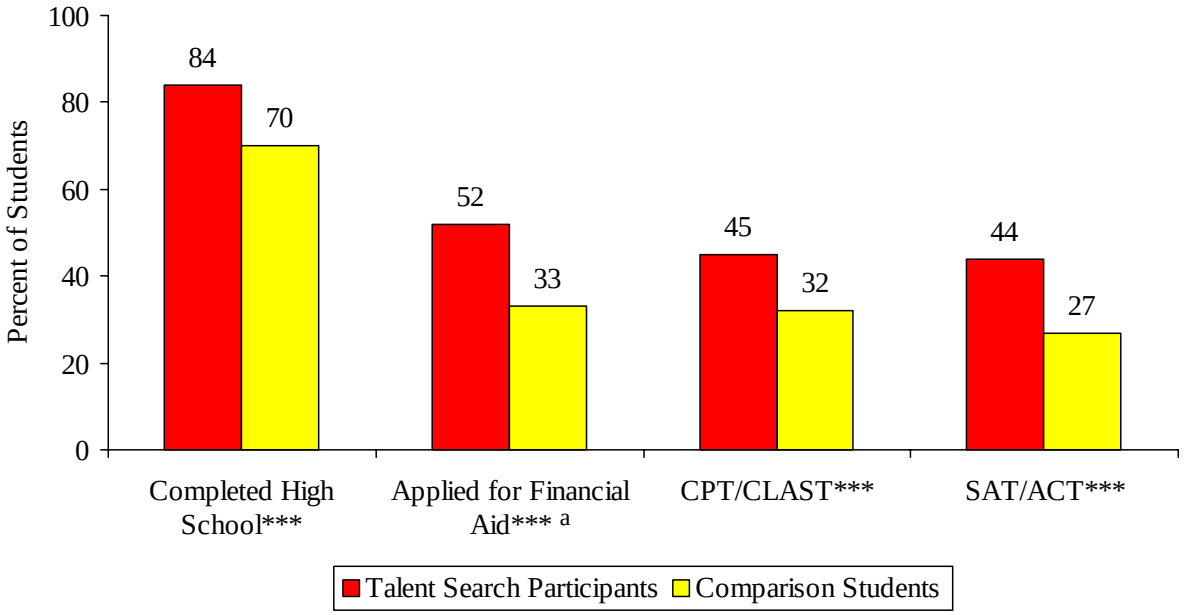
There were substantial differences in pre-college outcomes across projects. The difference in application for financial aid was most consistent, occurring at all five projects (Table V.6).

[53] See Chapter II for estimation details; control variables included the observable characteristics listed in the rows of Table V.1.

[54] The CPT is used as a college placement exam by public community colleges in Florida. The CLAST is a test of basic college communications and math skills; it is required for obtaining an associate's degree and entering a four-year institution from a two-year institution. The categories of these tests are not mutually exclusive; some students took more than one of these tests.

FIGURE V.1

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO COMPLETED HIGH SCHOOL, APPLIED FOR FINANCIAL AID, AND TOOK COLLEGE ENTRANCE EXAMS IN FLORIDA



[a]Indicates students who were first-time applicants for federal financial aid in Florida in 1999 or 2000.

***Difference in percentages is statistically significant at the 1 percent level.

The differences in high school completion and college entrance test taking were also fairly consistent, occurring in four of the five projects (Tables V.6 and V.7).

2. Postsecondary Enrollment

Talent Search participants were more likely than comparison students to enroll in public postsecondary institutions in Florida. We found that 1999–2000 enrollment in public postsecondary institutions in Florida was 15 percentage points higher for participants (51 percent) than comparison students (36 percent) overall, as well as at both two-year (39 versus 29 percent) and four-year (14 versus 9 percent) institutions (Figure V.2, left panel). When we expanded the enrollment window to 2003, the differences in enrollment rates were larger for both types of institutions (Figure V.2, right panel). Expanding the window of enrollment to 2003

TABLE V.6

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO COMPLETED HIGH SCHOOL AND APPLIED FOR FINANCIAL AID IN FLORIDA, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
High School Completion				
Project 1				
1993–96	76.9	68.9	8.0	***
1997–99	93.1	76.4	16.7	***
Project 2				
1996–2000	71.1	59.8	11.2	***
Project 3				
1993–98	76.5	63.5	13.0	***
1999–2000	79.7	85.6	-5.9	
Project 4				
1993–95	84.5	65.6	18.9	***
1996–99	96.7	71.9	24.8	***
Project 5				
1995–99	96.7	69.4	27.3	***
Application for Financial Aid				
Project 1				
1993–96	42.7	32.1	10.6	***
1997–99	47.5	39.7	7.8	***
Project 2				
1996–2000	46.3	33.9	12.4	***
Project 3				
1993–98	38.8	27.3	11.5	**
1999–2000	51.2	42.4	8.9	**
Project 4				
1993–95	54.3	26.2	28.1	***
1996–99	79.1	32.3	46.8	***
Project 5				
1995–99	61.7	28.2	33.5	***

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE V.7

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO TOOK COLLEGE ENTRANCE EXAMS IN FLORIDA, BY PROJECT

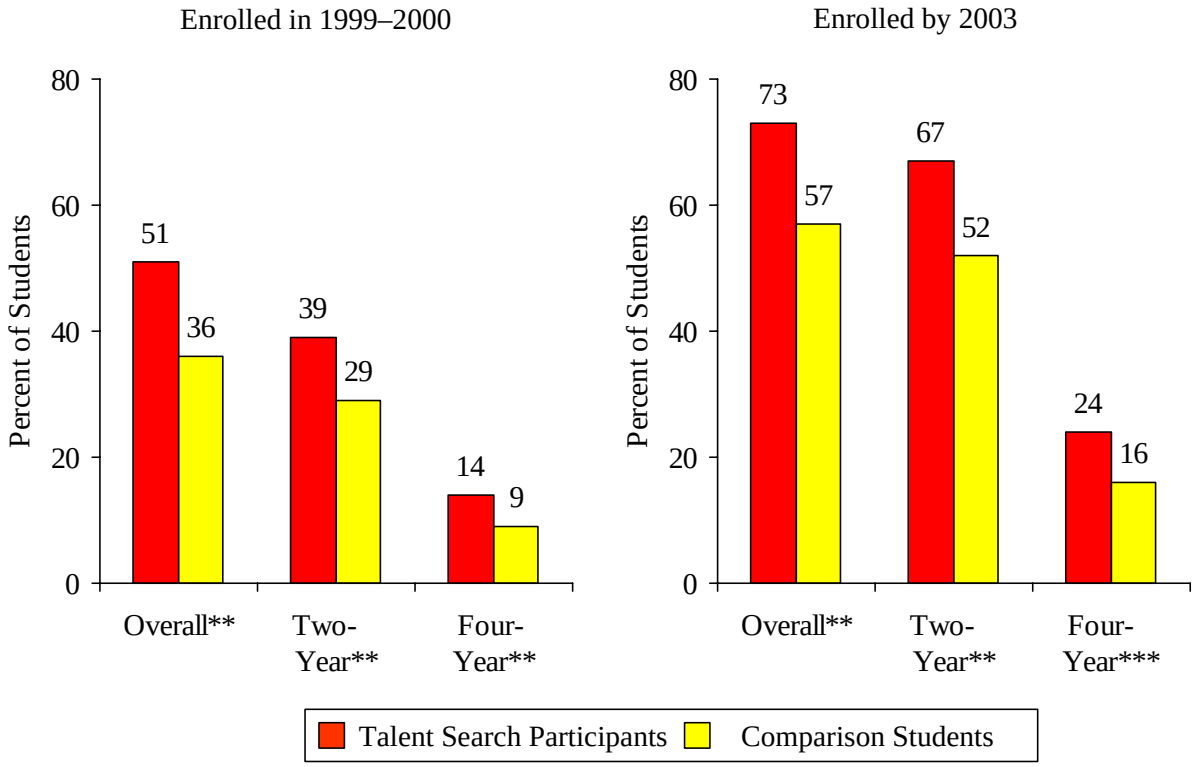
Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
CLP / CLAST				
Project 1				
1993–96	45.5	36.4	9.1	**
1997–99	57.4	38.8	18.6	***
Project 2				
1996–2000	36.4	24.7	11.7	***
Project 3				
1993–98	30.6	26.9	3.7	
1999–2000	31.7	35.0	-3.3	
Project 4				
1993–95	54.3	29.8	24.5	***
1996–99	48.4	33.7	14.7	***
Project 5				
1995–99	58.3	29.4	29.0	***
SAT / ACT				
Project 1				
1993–96	39.2	27.9	11.3	***
1997–99	58.4	35.1	23.3	***
Project 2				
1996–2000	30.6	22.8	7.8	**
Project 3				
1993–98	32.9	25.6	7.3	*
1999–2000	31.7	30.8	0.9	
Project 4				
1993–95	49.1	23.8	25.3	***
1996–99	74.7	31.1	43.7	***
Project 5				
1995–99	45.0	22.2	22.8	***

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

FIGURE V.2

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A PUBLIC POSTSECONDARY INSTITUTION IN FLORIDA



**Difference in percentages is statistically significant at the 5 percent level.
***Difference in percentages is statistically significant at the 1 percent level.

substantially increased enrollment at two-year institutions for participants and comparison students, suggesting that initial enrollment in two-year institutions occurs well after completion of high school.

There was substantial variation in overall enrollment and in two- and four-year enrollment by project. Although the magnitude of the differences in overall enrollment varied, there were positive and statistically significant differences at four of the five projects (Table V.8). There were also differences in two- and four-year enrollment that appear to be related to the type of host institution. At Projects 1 and 5, both hosted by two-year institutions, Talent Search

TABLE V.8

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN ANY PUBLIC POSTSECONDARY INSTITUTION IN FLORIDA, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
All Postsecondary Institutions, Enrollment by 1999–2000				
Project 1				
1993–96	40.6	37.4	3.2	
1997–99	48.5	38.8	9.7	**
Project 2				
1996–2000	42.2	28.0	14.2	***
Project 3				
1993–98	49.4	40.6	8.8	*
1999–2000	50.4	52.6	-2.2	
Project 4				
1993–95	51.7	31.8	19.9	***
1996–99	63.7	36.0	27.8	***
Project 5				
1995–99	64.2	29.2	35.0	***
All Postsecondary Institutions, Enrollment by 2003				
Project 1				
1993–96	71.3	61.1	10.3	***
1997–99	81.2	64.8	16.4	***
Project 2				
1996–2000	57.9	46.9	11.0	**
Project 3				
1993–98	70.6	65.2	5.4	
1999–2000	66.7	73.4	-6.7	
Project 4				
1993–95	67.2	46.0	21.3	***
1996–99	87.9	52.4	35.5	***
Project 5				
1995–99	83.3	49.2	34.2	***

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

participants were significantly more likely than comparison students to attend a two-year institution in 1999–2000, immediately after high school, with no significant difference at four-year institutions (Tables V.9 and V.10). Expanding the window for enrollment to 2003 reveals that Talent Search participants at these projects were more likely to eventually attend a four-year institution. Students from these two projects may have been more likely to attend a two-year school initially and transfer to a four-year school a few years later. On the other hand, at Projects 2 and 4, both hosted by four-year institutions, Talent Search participants were more likely than comparison students to enroll in a four-year college immediately following high school.

3. Postsecondary Persistence and Completion

The differences in postsecondary persistence between Talent Search participants and comparison students were smaller than the differences in initial enrollment but were positive and statistically significant. Talent Search participants were more likely than comparison students to stay in a two-year college for two consecutive years (23 versus 15 percent). Similarly, they were more likely to have attended a four-year institution for two consecutive years (14 versus 10 percent) (Figure V.3).[55] The persistence in two-year colleges appeared to translate into degrees: 13 percent of Talent Search participants received a two-year degree by 2003, compared with 8 percent of nonparticipants (Figure V.3).[56]

Across individual projects, there was a positive and statistically significant difference in the rate of persistence at two-year institutions at four of the five projects, while the difference in the rate of persistence at four-year institutions occurred at only one project (Table V.11). Notably

[55] We defined persistence in a two- or four-year institution as two consecutive years of enrollment between 1999–2003 at that type of institution. We did not verify that the two consecutive years of enrollment occurred at the same institution.

[56] We did not examine four-year degree completion, because our data do not extend far enough in time for most students to complete a four-year degree.

TABLE V.9

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A FOUR-YEAR PUBLIC POSTSECONDARY INSTITUTION IN FLORIDA, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Four-Year Institutions, Enrollment by 1999–2000				
Project 1				
1993–96	8.4	7.8	0.6	
1997–99	11.9	11.5	0.4	
Project 2				
1996–2000	14.1	8.0	6.1	**
Project 3				
1993–98	16.5	9.6	6.9	*
1999–2000	14.6	10.5	4.1	
Project 4				
1993–95	17.2	9.7	7.6	**
1996–99	29.7	11.8	17.9	***
Project 5				
1995–99	6.7	6.1	0.6	
Four-Year Institutions, Enrollment by 2003				
Project 1				
1993–96	18.9	15.2	3.7	***
1997–99	31.7	20.9	10.8	**
Project 2				
1996–2000	15.7	12.6	3.1	
Project 3				
1993–98	21.2	16.0	5.2	
1999–2000	19.5	16.2	3.4	
Project 4				
1993–95	26.7	14.7	12.0	***
1996–99	45.1	19.6	25.5	***
Project 5				
1995–99	18.3	11.0	7.3	**

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE V.10

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A TWO-YEAR PUBLIC POSTSECONDARY INSTITUTION IN FLORIDA, BY PROJECT

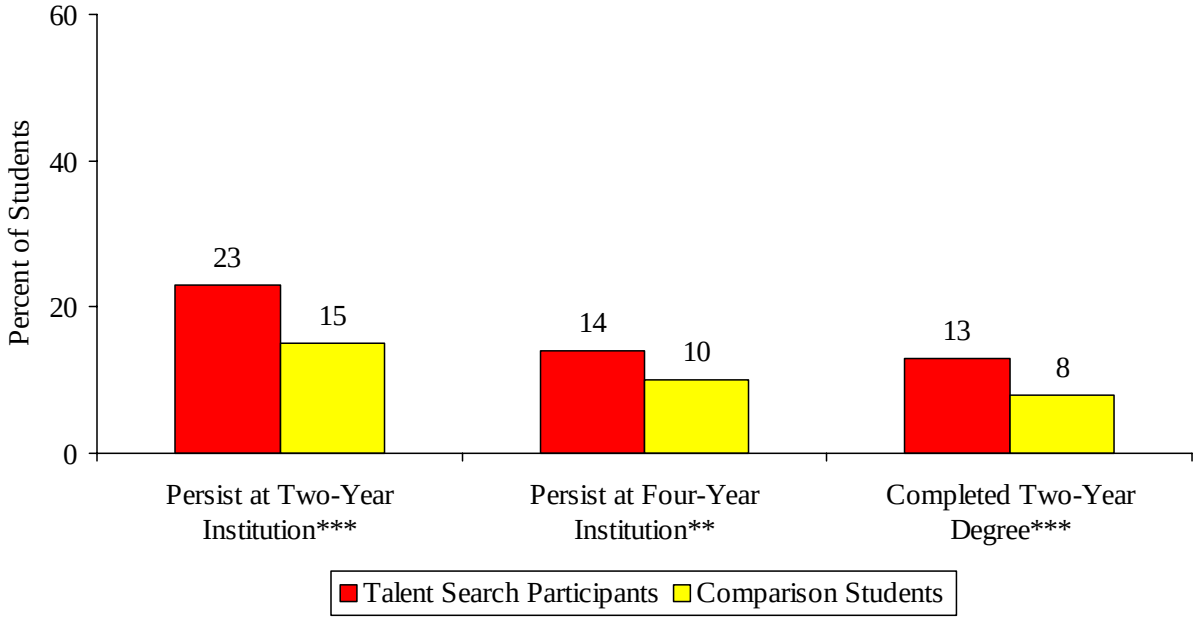
Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Two-Year Institutions, Enrollment by 1999–2000				
Project 1				
1993–96	34.3	30.8	3.5	
1997–99	38.6	28.4	10.2	**
Project 2				
1996–2000	30.6	21.0	9.6	**
Project 3				
1993–98	35.3	32.0	3.3	
1999–2000	38.2	43.1	-4.9	
Project 4				
1993–95	37.9	23.2	14.8	***
1996–99	39.6	25.6	14.0	***
Project 5				
1995–99	59.2	24.9	34.3	***
Two-Year Institutions, Enrollment by 2003				
Project 1				
1993–96	65.0	56.7	8.3	**
1997–99	72.3	59.1	13.2	***
Project 2				
1996–2000	51.2	40.4	10.9	**
Project 3				
1993–98	62.4	59.9	2.5	
1999–2000	61.8	68.2	-6.4	
Project 4				
1993–95	63.8	42.3	21.5	***
1996–99	80.2	47.4	32.8	***
Project 5				
1995–99	80.8	46.7	34.1	***

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

FIGURE V.3

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO PERSISTED IN PUBLIC POSTSECONDARY INSTITUTIONS IN FLORIDA[a]



[a]Persistence is defined as two consecutive years of enrollment in the type of institution specified between 1999–2003.

**Difference in percentages is statistically significant at the 5 percent level.
***Difference in percentages is statistically significant at the 1 percent level.

similar to the enrollment patterns, the positive and significant difference in two-year degree attainment was found only at Projects 1 and 5, projects hosted by two-year institutions (Table V.12).

E. DISCUSSION OF RESULTS

The breadth of data available in Florida allowed us to examine several steps along the educational career of the ninth-grade cohort of 1995–96. In general, the magnitudes of the differences between Talent Search participants and comparison students for these outcomes ranged from moderate to large. There were substantial differences in magnitudes across the projects. Talent Search participants, however, had higher rates of first-time application for

TABLE V.11

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO PERSISTED IN PUBLIC POSTSECONDARY INSTITUTIONS IN FLORIDA, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Four-Year College Persistence				
Project 1				
1993–96	10.5	9.0	1.5	
1997–99	20.8	13.6	7.2	*
Project 2				
1996–2000	9.9	7.8	2.1	
Project 3				
1993–98	11.8	10.4	1.4	
1999–2000	10.6	9.3	1.3	
Project 4				
1993–95	16.4	9.6	6.7	**
1996–99	33.0	12.5	20.5	***
Project 5				
1995–99	20.0	8.3	11.7	***
Two-Year College Persistence				
Project 1				
1993–96	21.7	16.7	5.0	
1997–99	25.7	16.4	9.3	**
Project 2				
1996–2000	19.0	9.9	9.1	***
Project 3				
1993–98	16.5	15.3	1.2	
1999–2000	22.0	21.0	1.0	
Project 4				
1993–95	22.4	13.4	9.0	**
1996–99	25.3	15.8	9.5	**
Project 5				
1995–99	30.0	14.1	15.9	***

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE V.12

PERCENTAGE OF TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO COMPLETED A TWO-YEAR DEGREE IN FLORIDA, BY PROJECT

Project and Year of Entry into Talent Search	Participants	Comparison Students	Difference	
Two-Year Degree				
Project 1				
1993–96	9.8	6.9	2.9	
1997–99	17.8	7.3	10.6	***
Project 2				
1996–2000	4.1	4.5	-0.3	
Project 3				
1993–98	11.8	9.7	2.0	
1999–2000	11.4	10.7	0.7	
Project 4				
1993–95	12.9	7.9	5.0	
1996–99	16.5	9.7	6.8	*
Project 5				
1995–99	20.0	8.3	11.7	***

Note: Means are regression-adjusted and indicate the percent of Talent Search participants and comparison students who achieved each outcome. The comparison student sample was weighted to equal the number of participants in the analysis.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

financial aid than comparison students at all five projects in the analysis. They also had higher rates of high school completion, college entrance test taking and enrollment in public postsecondary institutions at all but one of the five projects.

The type of institution hosting the Talent Search project appeared to be related to many of the postsecondary enrollment and persistence outcomes. Talent Search participants had higher rates of initial enrollment and were more likely to persist in two-year institutions at four of the five projects. The persistence was more likely to lead to completion of a two-year degree for participants at projects hosted by a two-year institution. On the other hand, Talent Search

participants had higher rates of initial enrollment in four-year institutions only at projects hosted by four-year institutions. The host institution may have played a direct role in some outcomes, as Talent Search participants were more likely than comparison students to enroll at the host institution for some of the projects.

The structure and type of the data available in Florida were similar to what was available in Texas, and the analysis has the same limitations. We cannot be confident that we have controlled for all unobserved differences in Talent Search participants and comparison students. Therefore, some of the differences in secondary and postsecondary outcomes could be the result of the type of students who chose to participate in Talent Search and not participation in the program itself. The differences in high school completion, in particular, were large relative to other interventions explicitly designed to increase high school completion and may reflect an estimation bias if Talent Search project staff chose to serve students who were most likely to complete high school based on characteristics beyond those included in our data. Differences in application in financial aid and college admissions test taking were also large and likely to suffer from the same estimation bias. However, it is reasonable to attribute these differences to participation in Talent Search, as helping students with application for financial aid and preparing for college entrance tests are services nearly all Talent Search projects offer.[57]

With regard to postsecondary outcomes, we are most confident that participation in Talent Search increased enrollment and persistence at two-year institutions. The differences were observed at four of the five projects, were largest at projects hosted by two-year institutions, and were driven in part by direct enrollment at the host institution. Thus, direct exposure and preparation for attending two-year institutions may be not only feasible given the relatively

[57] In addition, the magnitude of the differences for financial aid and college admission test taking persisted when restricting the sample to only students who completed high school.

modest intervention provided by Talent Search, it also appears to be effective for increasing attendance and completion at those institutions. Given the limited resources, improving persistence at four-year institutions may be beyond the scope of what most Talent Search projects can do.

VI. COMPARING FINDINGS ACROSS THE STATES

A. IMPLICATIONS OF THE DATA FOR STUDYING TALENT SEARCH

The compilation of data from administrative data sources to study the effect of Talent Search on participants succeeded in Florida, Indiana, and Texas. We assembled information on the characteristics and outcomes of the cohort of students who were in ninth grade during the 1995–96 school year, along with participation by any of the cohort members in Talent Search. We could not compile a suitable data file for analysis in Minnesota (due to a lack of access to state secondary school records) and Washington (due to missing or poor-quality Talent Search project data).[58] Obtaining student level data which included information identifying students to facilitate merging records across data sources was challenging to obtain for the years of interest, 1995–2000. Data from recent years should be easier to attain as more states develop systems for compiling secondary and postsecondary school records, and federal programs are more consistent in reporting information on the participants served and maintain records electronically.

The data files compiled in Florida, Indiana, and Texas contained a wealth of information on students before participation in Talent Search. This included important demographic information such as age, race, and gender; the school the student was enrolled in for ninth grade; and postsecondary outcomes, such as first-time application for financial aid and postsecondary enrollment. Because we compiled a large amount of data in each state, both in terms of the number of data elements available and the size of the student samples, we were able to use complex propensity score matching models to identify nonparticipating students who were most similar to Talent Search participants. However, comprehensive data on student characteristics

[58] For more detail on data compilation in each state, see Appendix B.

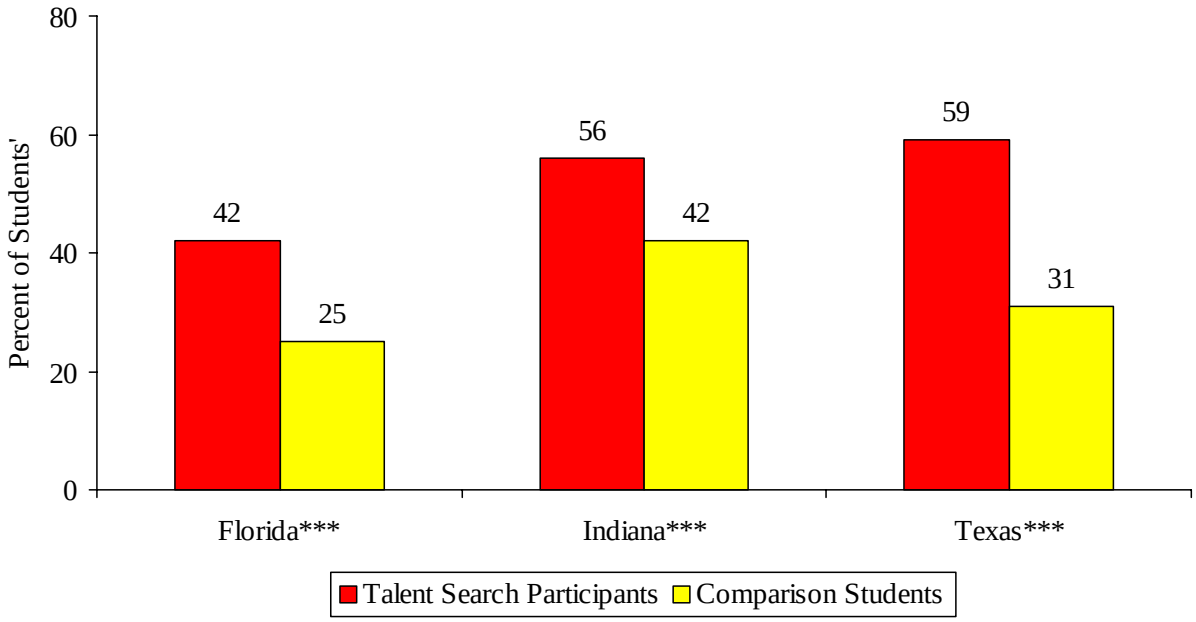
before participation in Talent Search and on secondary or postsecondary outcomes of interest were not available in all states, with the type of information missing differing across states. The most important differences were information on (1) special classifications in high school, including eligibility for free or reduced-price lunches, indicators for at-risk of dropping out of high school, and participation in gifted programs—these were available in Florida and Texas but not in Indiana; (2) persistence through high school and high school completion—these were available in Florida and Texas but not in Indiana; and (3) secondary and postsecondary aspirations—these were available in Indiana but not in Florida or Texas. Thus, analyzing the effect of Talent Search on participants in any one state had limitations. However, the variations in the data, as well as our strategies for drawing comparison students in each state, enabled us to test the sensitivity of the findings to using different data sources and comparison students. While we have reservations about attributing participation in Talent Search to improved outcomes in any one state, we are more confident of findings that are consistent across all three states.

B. FINDINGS

A few differences were consistently positive and statistically significant across states and projects. The largest of these was in application for federal financial aid: Talent Search participants were much more likely than comparison students to be first-time applicants for financial aid in the 1999–2000 school year. Figure VI.1 illustrates this result, presenting the overall finding for each of the three states using similar comparison groups—students drawn from the same target high schools as Talent Search participants. The gap in financial aid application for Talent Search participants and comparison students was 17, 14, and 28 percentage points, respectively, for Florida, Indiana, and Texas. The difference was smallest in Indiana, where we had the strongest measures of educational aspirations; even in Indiana,

FIGURE VI.1

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO WERE FIRST-TIME APPLICANTS FOR FEDERAL FINANCIAL AID, 1999–2000, BY STATE



Note: Talent Search participants were students in ninth grade in 1995–96 served by a Talent Search project that supplied data for this study. Comparison students are nonparticipants from the same target high schools as Talent Search participants who matched to a Talent Search participant.

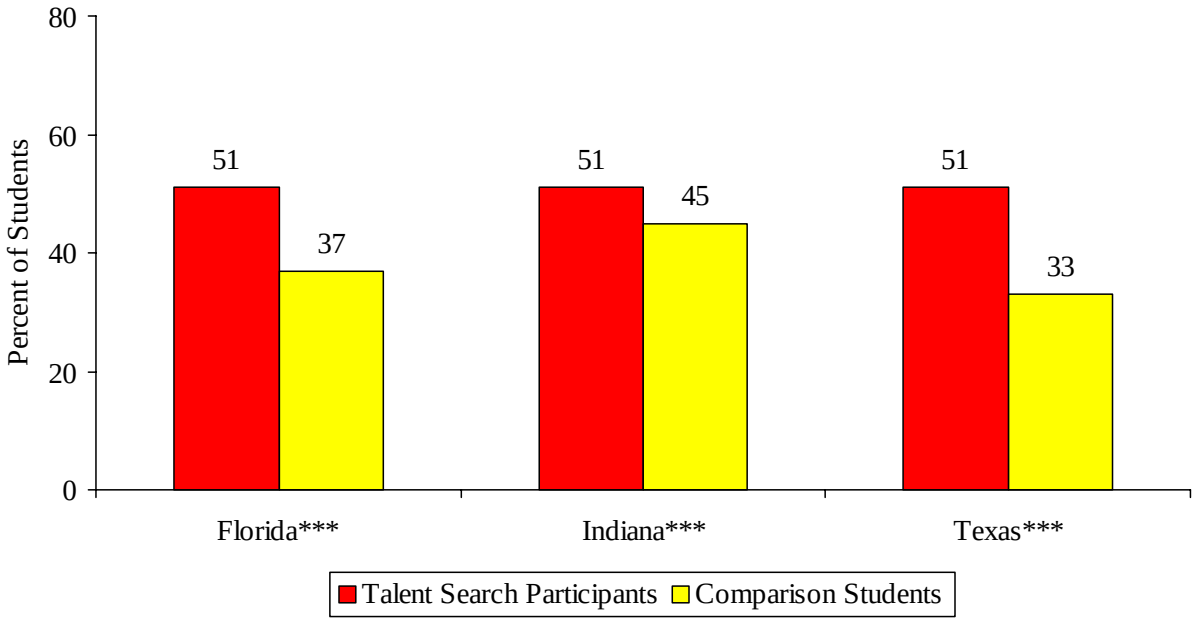
***Difference is statistically significant at the 1 percent level.

however, the gap represents application levels for financial aid that are one-third higher for Talent Search participants.

The next step, after the financial hurdle, is for the student to enroll in college. Here again, we found that Talent Search participants were more likely than comparison students to enroll in a public college or university in their state by the 1999–2000 school year. Figure VI.2 shows that initial enrollment in a postsecondary institution was higher by 14, 6, and 18 percentage points, respectively, for Florida, Indiana, and Texas. The gaps are smaller than for financial aid, but they follow the same pattern in magnitude across the states.

FIGURE VI.2

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A PUBLIC POSTSECONDARY INSTITUTION, 1999–2000, BY STATE



Note: Talent Search participants were students in ninth grade in 1995–96 served by a Talent Search project that supplied data for this study. Comparison students are nonparticipants from the same target high schools as Talent Search participants who matched to a Talent Search participant.

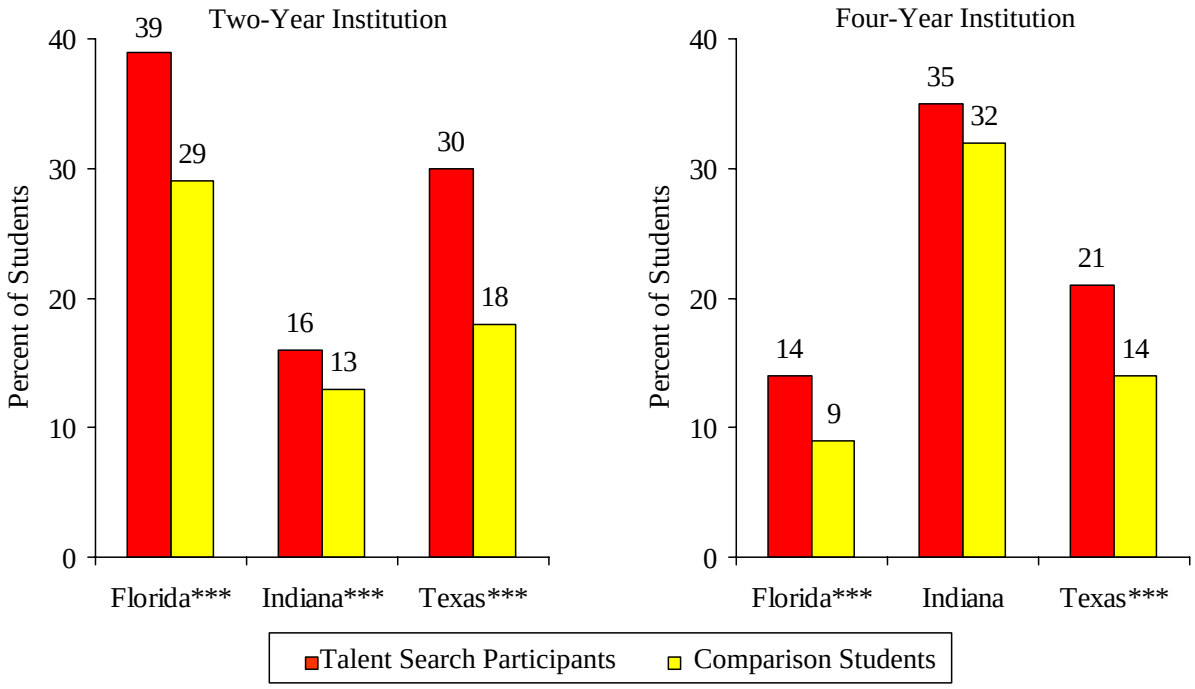
***Difference is statistically significant at the 1 percent level.

While we find differences in enrollment rates for both two- and four-year institutions, the differences are larger and more statistically robust for two-year enrollment, shown in Figure VI.3.[59] Our analyses also show some evidence that enrollment by type of institution was linked to type of institution hosting the Talent Search project. In general, projects did not increase enrollment in both types of institutions. Instead, Talent Search projects may increase enrollment by exposure to their type of institution, either specifically or in general.

[59] The level of enrollment in public two-year institutions was much lower and the level of enrollment in public four-year institutions much higher in Indiana than in Florida and Texas. We believe this is because Florida and Texas have many more public two-year institutions than Indiana does and, possibly, because of the self-selection of the students who chose to complete the ninth-grade survey in Indiana.

FIGURE VI.3

TALENT SEARCH PARTICIPANTS AND COMPARISON STUDENTS WHO ENROLLED IN A PUBLIC TWO-YEAR OR FOUR-YEAR INSTITUTION, 1999–2000, BY STATE



Note: Talent Search participants were students in ninth grade in 1995–96 served by a Talent Search project that supplied data for this study. Comparison students are nonparticipants from the same target high schools as Talent Search participants who matched to a Talent Search participant.

***Difference is statistically significant at the 1 percent level.

We also examined differences in high school completion in Florida and Texas, the only two states where this information was available. There were large differences in Florida and Texas—9 and 14 percentage points, respectively—between Talent Search participants and comparison students. However, we are less confident this finding can be attributed to participation in Talent Search than the findings on application for financial aid and initial college enrollment. Estimates of the differences in Florida and Texas could be biased upward if Talent Search project staff chose to serve students who were most likely to complete high school and most Talent Search project services do not directly target high school retention, so there is no program-based

explanation for generating a difference of this magnitude. Also, we cannot verify that Talent Search participants also had higher rates of high school completion in Indiana. The magnitude of the differences in high school completion suggests that the data available in Florida and Texas do not allow us to completely control for characteristics such as educational aspirations and motivation of students who participate in Talent Search when assessing the effect of the program on high school completion.

C. IMPLICATIONS

Because a randomized experiment was not used in the study, we cannot attribute differences in outcomes solely to participation in Talent Search. Other, unmeasured characteristics may explain some of the differences. However, despite limitations in the data, we are more confident that some of the differences in first-time application for financial aid and initial postsecondary enrollment can be attributed to participation in Talent Search, for several reasons. First, the magnitudes of the differences in first-time application for financial aid and postsecondary enrollment were larger than the difference in high school completion and persisted even when examining these outcomes among high school graduates only. This suggests that, even if unmeasured characteristics accounted for all the differences in high school completion, some of the differences in postsecondary outcomes could still arise from participation in Talent Search. Second, the higher rates of application for financial aid and postsecondary enrollment were consistent across all three states (although the differences were smallest in Indiana, where the two groups had similar educational aspirations). Finally, Talent Search projects report directly targeting services toward activities to increase application for financial aid and postsecondary enrollment.

From the research conducted for Phase I of this study, researchers found that help with application for financial aid is "hands on"—it involves sitting with students to complete their

paper-and-pencil applications or at a computer to complete the Web-based Free Application for Federal Student Aid (FAFSA). Talent Search project staff also reported providing college orientation activities, such as help completing college applications, visits to college campuses, and arranging for participants to shadow students—often Talent Search alumni—at the project's host institution. Looking at the findings across projects, the potential relationship between enrollment in a two- or four-year institution and the type of institution hosting the Talent Search project suggests that orientation to the host institution itself may increase postsecondary enrollment for participants.

The findings we present in this report suggest that assisting low-income students who have college aspirations to overcome information barriers—an important objective of the Talent Search program—may be effective in helping those students achieve their aspirations. Practical information—direct guidance on how to complete applications for financial aid and admission to college and what a college campus looks and feels like—may have been one of the key services that Talent Search projects delivered.

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APPENDIX A

CHAPTER TABLES

TABLE A.III.1

VARIABLE DESCRIPTIONS—TEXAS

Ninth-Grade Characteristics
Male—Student is a male.
White—Student is white not Hispanic.
Black—Student is black not Hispanic.
Hispanic—Student's ethnic origin is Hispanic.
Home Language Is Spanish—Student identified Spanish as the language spoken at home.
Age in Ninth Grade—Age of the students, in years, as of Sept. 1, 1995. The analyses were restricted to students between 13.7 and 17 years of age.
Overage in Ninth Grade—The student was 15.3 years of age or older on Sept. 1, 1995.
Gifted—The student participated in a state-approved gifted and talented program.
At Risk—The student was identified as at risk of dropping out of school based on state-defined criteria.
Economically Disadvantaged—The student was eligible for free or reduced-price meals or had some other economic disadvantage.
Limited English Proficiency—The student has been identified as limited in English proficiency by the Language Proficiency Assessment Committee.
Special Education—The student participated in a special education instructional and related services program.
Enrolled in a Vocational or Technical Course—The student was enrolled in a state-approved career and technology education course as an elective.
Enrolled in a Vocational or Technical Education Program—The student participated in the district's career and technology coherent sequence of courses program, or was a participant in the district's Tech Prep program.
Eighth-Grade Test Scores
Raw Math Score—Total number of multiple-choice math items answered correctly on the eighth-grade TAAS.
Percent Scored in Top 25 Percent in State for Reading—The student's indexed math score was in the top 25 percent of scores for the state.
Percent Scored in Bottom 25 Percent in State for Reading—The student's indexed reading score was in the bottom 25 percent of scores for the state.

Continued on next page

TABLE A.III.1 *(continued)*

Score on Essay Test—Final score on written composition in eighth-grade TAAS.
Missing Test Score—The student did not have a test score from the spring 1994 or spring 1995 administration of the TAAS.
Grade-Level Status
Below Grade—The student was below grade in a given year based on enrollment in ninth grade in fall 1995.

TAAS = Texas Assessment of Academic Skills.

TABLE A.III.2

BASELINE CHARACTERISTICS OF TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN TEXAS, BY PROJECT
(Percents)

	Project 1			Project 2		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	29.3	56.3	***	34.9	55.7	***
White	17.2	9.3	***	0.8	1.6	
Black	2.3	2.3		77.8	64.0	***
Hispanic	80.5	88.0	***	20.9	33.8	***
Home language is Spanish	16.3	25.0	**	13.9	19.4	***
Age in ninth grade (mean)[a]	14.8	15.3	***	14.7	15.6	***
Overage in ninth grade	16.3	40.7	***	15.0	54.5	***
Academic Characteristics						
Enrolled in a gifted and talented program	21.9	2.9	***	11.9	2.0	***
At risk for dropping out of school	56.7	72.6	***	42.2	53.3	***
Economically disadvantaged	60.9	75.4	***	37.0	39.3	
Limited English proficiency	12.1	23.1	***	5.4	11.2	***
Special education services	2.8	13.8	***	5.0	13.0	***
Enrolled in a vocational or technical course	39.1	34.0		48.6	56.4	***
Enrolled in a vocational or technical education program	3.3	5.0		0.5	0.8	
Number of Students	**215**	**1,626**		**765**	**5,760**	
Eighth-Grade Test Scores[b]						
Raw math score (number of questions correct)[c]	36.0	30.1	***	36.7	30.1	***
Percent scored in top 25 percent in state for math	19.4	7.2	***	17.6	7.5	***
Percent scored in bottom 25 percent in state for math	30.8	47.5	***	28.0	52.9	***
Raw reading score (number of questions correct)[d]	34.0	28.4	***	35.8	28.9	***
Percent scored in top 25 percent in state for reading	19.9	9.7	***	21.4	8.5	***
Percent scored in bottom 25 percent in state for reading	26.9	47.2	***	21.1	47.8	***
Score on essay test[e]	2.5	2.1	***	2.5	2.0	***
Missing test scores	6.5	16.6	***	8.5	30.5	***
Number of Students	**201**	**1,356**		**700**	**4,005**	

Continued on next page

TABLE A.III.2 *(continued)*

	Project 3			Project 4		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	36.6	55.5	***	42.2	54.4	***
White	21.8	39.1	***	12.1	16.7	
Black	4.5	2.9		46.1	35.5	***
Hispanic	73.2	57.8	***	40.5	43.2	
Home language is Spanish	13.8	8.6	***	16.7	19.1	
Age in ninth grade (mean)[a]	14.7	15.0	***	15.2	15.4	**
Overage in ninth grade	11.5	27.5	***	39.6	44.0	*
Academic Characteristics						
Enrolled in a gifted and talented program	9.6	7.0	*	2.8	2.5	
At risk for dropping out of school	48.6	51.6		45.9	43.8	
Economically disadvantaged	65.5	46.9	***	52.4	47.3	**
Limited English proficiency	10.1	6.0	***	4.1	9.1	***
Special education services	5.4	13.5	***	4.5	13.0	***
Enrolled in a vocational or technical course	41.3	39.1		33.3	32.5	
Enrolled in a vocational or technical education program	4.7	11.0	***	9.3	7.5	
Number of Students	**426**	**2,732**		**462**	**3,010**	
Eighth-Grade Test Scores[b]						
Raw math score (number of questions correct)[c]	39.0	37.2		37.6	35.8	***
Percent scored in top 25 percent in state for math	22.2	23.7		19.4	15.4	**
Percent scored in bottom 25 percent in state for math	21.3	29.4	***	30.5	32.4	
Raw reading score (number of questions correct)[d]	36.1	33.9	***	34.5	33.3	**
Percent scored in top 25 percent in state for reading	26.3	24.7		19.2	15.5	*
Percent scored in bottom 25 percent in state for reading	22.9	30.2	***	25.1	30.7	**
Score on essay test[e]	2.4	2.3	***	2.4	2.3	**
Missing test scores	2.8	12.8	***	11.9	22.3	**
Number of Students	**414**	**2,381**		**407**	**2,338**	

Continued on next page

TABLE A.III.2 *(continued)*

	Project 5			Project 6		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	33.6	55.0	***	33.3	51.6	***
White	1.8	13.4	***	60.0	68.1	
Black	0.7	0.5		33.3	29.9	
Hispanic	97.4	85.7	***	5.3	1.3	
Home language is Spanish	36.1	21.2	***	0.0	0.5	
Age in ninth grade (mean)[a]	14.8	15.0	***	14.6	14.9	***
Overage in ninth grade	15.3	27.4	***	2.7	21.6	***
Academic Characteristics						
Enrolled in a gifted and talented program	10.2	6.5	**	10.7	9.1	
At risk for dropping out of school	65.0	70.0	*	42.7	48.4	
Economically disadvantaged	81.0	68.4	***	54.7	37.3	***
Limited English proficiency	23.7	19.2	*	0.0	0.4	
Special education services	3.3	11.6	***	2.7	15.0	***
Enrolled in a vocational or technical course	42.3	33.8	***	73.3	63.2	*
Enrolled in a vocational or technical education program	3.6	6.1		4.0	11.2	**
Number of Students	**274**	**2,367**		**75**	**1,703**	
Eighth-Grade Test Scores[b]						
Raw math score (number of questions correct)[c]	36.9	33.7	***	43.3	39.7	**
Percent scored in top 25 percent in state for math	22.1	14.8	***	41.4	28.8	**
Percent scored in bottom 25 percent in state for math	27.3	39.4	***	14.3	21.7	
Raw reading score (number of questions correct)[d]	33.4	31.3	***	39.8	36.1	***
Percent scored in top 25 percent in state for reading	18.6	15.9		31.4	29.9	
Percent scored in bottom 25 percent in state for reading	31.6	37.2	*	8.6	20.1	**
Score on essay test[e]	2.4	2.2	***	2.8	2.5	***
Missing test scores	7.7	21.4	***	6.7	17.0	**
Number of Students	**253**	**1,850**		**70**	**1,413**	

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TABLE A.III.2 *(continued)*

	Project 7			Project 8		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	35.4	52.1	***	32.2	54.6	***
White	81.2	70.3	***	62.2	81.8	***
Black	14.4	17.4		16.7	5.2	***
Hispanic	2.8	11.4	***	19.7	12.3	***
Home language is Spanish	1.1	2.7		6.4	4.1	
Age in ninth grade (mean)[a]	14.8	14.9	*	14.7	15.0	***
Overage in ninth grade	16.6	18.2		12.9	23.0	***
Academic Characteristics						
Enrolled in a gifted and talented program	17.7	10.3	***	6.4	9.1	
At risk for dropping out of school	42.0	44.4		44.6	44.3	
Economically disadvantaged	35.9	35.5		38.2	22.0	***
Limited English proficiency	1.1	2.2		4.7	3.2	
Special education services	5.0	15.0	***	6.4	16.2	***
Enrolled in a vocational or technical course	35.9	44.9	**	46.8	43.2	
Enrolled in a vocational or technical education program	33.7	16.2	***	18.5	17.2	
Number of Students	**181**	**2,505**		**233**	**1,941**	
Eighth-Grade Test Scores[b]						
Raw math score (number of questions correct)[c]	43.7	41.3	***	41.0	40.9	
Percent scored in top 25 percent in state for math	40.7	34.2	*	27.1	33.5	*
Percent scored in bottom 25 percent in state for math	13.4	18.0		15.7	19.7	
Raw reading score (number of questions correct)[d]	38.8	36.3	***	37.5	36.1	
Percent scored in top 25 percent in state for reading	36.6	30.6		32.4	33.7	
Percent scored in bottom 25 percent in state for reading	11.0	20.7	***	15.2	21.7	
Score on essay test[e]	2.7	2.5	**	2.6	2.4	***
Missing test scores	5.0	13.8	***	9.9	16.7	***
Number of Students	**172**	**2,160**		**210**	**1,616**	

Continued on next page

TABLE A.III.2 *(continued)*

	Project 9			Project 10		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	42.1	54.9	***	48.0	53.4	
White	43.1	46.4	**	1.0	2.7	
Black	10.2	6.8	***	0.0	0.0	
Hispanic	46.1	46.1		99.0	97.0	
Home language is Spanish	11.5	10.5		26.0	34.2	**
Age in ninth grade (mean)[a]	14.7	14.9	***	15.2	15.6	***
Overage in ninth grade	8.7	23.3	***	35.7	51.1	***
Academic Characteristics						
Enrolled in a gifted and talented program	12.7	6.3	***	5.6	4.1	
At risk for dropping out of school	42.5	51.3	***	63.8	71.9	***
Economically disadvantaged	45.4	45.0		82.7	79.1	
Limited English proficiency	2.0	4.1	***	19.0	29.9	***
Special education services	6.9	17.2	***	6.1	12.6	***
Enrolled in a vocational or technical course	52.2	52.6		16.8	16.3	
Enrolled in a vocational or technical education program	8.8	11.9	***	13.8	10.7	
Number of Students	**1,342**	**2,705**		**196**	**4,542**	
Eighth-Grade Test Scores[b]						
Raw math score (number of questions correct)[c]	42.1	37.9	***	36.0	31.9	***
Percent scored in top 25 percent in state for math	34.4	24.0	***	11.0	9.2	
Percent scored in bottom 25 percent in state for math	14.3	26.4	***	27.6	44.6	***
Raw reading score (number of questions correct)[d]	37.5	34.2	***	34.3	29.6	***
Percent scored in top 25 percent in state for reading	34.0	24.5	***	12.9	11.5	
Percent scored in bottom 25 percent in state for reading	16.1	29.6	***	22.1	43.4	***
Score on essay test[e]	2.7	2.4	***	2.2	2.1	*
Missing test scores	6.0	14.6	***	16.8	29.2	***
Number of Students	**1,262**	**2,311**		**163**	**3,218**	

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by 10 Talent Search projects in 2000.

[a]Average age in years.
[b]Based on sample with nonmissing test scores only.
[c]Range on raw math test score is 0 to 60.
[d]Range on raw reading test score is 0 to 48.
[e]Range on essay score is 0 to 4.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE A.III.3

BELOW GRADE AND PERSISTENCE OF TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN TEXAS, BY PROJECT
(Percents)

	Below Grade			Persistence		
	Participants	Nonparticipants		Participants	Nonparticipants	
Project 1						
1996–97	7.2	30.4	***	96.3	87.8	***
1997–98	7.0	29.7	***	97.1	85.4	***
1998–99	5.1	25.8	***	87.6	73.4	***
1996–99				81.9	55.0	***
Project 2						
1996–97	11.7	42.8	***	99.3	87.5	***
1997–98	7.8	33.9	***	97.6	80.2	***
1998–99	5.6	30.6	***	93.2	72.6	***
1996–99				90.3	50.9	***
Project 3						
1996–97	4.8	16.1	***	99.1	91.8	***
1997–98	3.6	15.1	***	99.3	90.0	***
1998–99	2.5	12.4	***	94.7	82.3	***
1996–99				93.1	68.1	***
Project 4						
1996–97	21.6	24.5		93.0	91.8	
1997–98	19.9	28.6	***	88.5	86.7	
1998–99	17.0	22.3	**	76.7	75.2	
1996–99				63.1	59.8	
Project 5						
1996–97	7.2	20.8	***	97.0	90.0	***
1997–98	8.7	26.5	***	96.6	87.2	***
1998–99	7.4	21.9	***	90.6	80.1	***
1996–99				84.9	62.9	***

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TABLE A.III.3 *(continued)*

	Below Grade			Persistence		
	Participants	Nonparticipants		Participants	Nonparticipants	
Project 6						
1996–97	0.0	11.7	***	98.7	93.0	***
1997–98	0.0	10.4	***	97.3	89.6	***
1998–99	0.0	6.0	**	95.8	84.5	***
1996–99				92.0	70.4	***
Project 7						
1996–97	5.2	11.3	***	95.6	94.3	
1997–98	4.9	10.8	**	93.6	91.0	
1998–99	1.4	7.1	***	89.5	85.8	
1996–99				80.1	73.6	
Project 8						
1996–97	9.3	14.3	**	98.7	91.6	***
1997–98	9.0	12.7		98.7	88.4	***
1998–99	8.0	9.2		89.6	83.8	***
1996–99				87.3	67.9	***
Project 9						
1996–97	2.0	12.7	***	98.7	92.2	***
1997–98	3.1	13.2	***	99.5	89.5	***
1998–99	2.3	12.4	***	91.3	81.8	***
1996–99				89.7	67.5	***
Project 10						
1996–97	26.7	46.9	***	90.7	84.1	***
1997–98	20.5	39.8	***	85.8	84.1	***
1998–99	15.7	37.2	***	80.1	72.1	***
1996–99				62.4	51.0	***

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by 10 Talent Search projects by 2000. Nonparticipants include all students in Texas in the ninth grade in the fall of 1995.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE A.IV.1

VARIABLE DESCRIPTIONS—INDIANA

Age—Student's age as of Sept. 1, 1995, in years

Overage indicator—Indicates a student was older than 15.3 years old on Sept. 1, 1995

Male—Student is male

Race and Ethnicity

Black—Student is black not Hispanic
White—Student is white not Hispanic
All other races—Student is another race or Hispanic
Race is missing—No information on a student's race

Primary Language Spoken at Home

English—Primary language is English
Other languages—Primary language is not English
Language is missing—No information on primary language spoken at home

Parents' Education

Bachelor's degree—One or both parents have a college degree
No Bachelor's degree—Neither parent has a college degree
Not known—Student does not know parents' level of education
No information on parents' education

Student's Living Arrangement

Student lived with mother and father
Student lived with a parent and a stepparent
Student lived with one parent only
Student lived with a guardian who is not his or her parent
No information on the student's living arrangement

Highest Level of Education the Student Plans to Achieve

Will not complete high school
High school diploma
Two or fewer years of postsecondary education
Two years of college
Four years of college
Undecided
No information on student's educational expectations

Continued on next page

TABLE A.IV.1 *(continued)*

Grades in School up to Ninth Grade[a]

Mostly As
Mostly As and Bs
Mostly Bs
Mostly Bs and Cs
Mostly Cs and below
No information on student's grades

Participation in Academic Activities by Ninth Grade

21st Century Scholar program—Student enrolled in college scholarship program for low-income students in eighth grade
Student consulted with a career or education counselor

Academic Programs the Student May Pursue in High School

Indiana Core 40 Program—Minimum academic course work for public four-year college admission
Indiana Academic Honors Diploma—Core 40 plus more rigorous academic course work
Advanced Placement program
Indiana Academy for Science, Math, and Humanities Program
Earning college credit while in high school
Core 40 plus Tech Prep courses

Training Options the Student May Pursue After High School

Apprenticeship leading to a license in a skilled occupation after high school graduation
Military training
Employer training
No additional training after high school

Potential Barriers to Postsecondary Education or Training (listed on Table IV.1)

Career Areas of Interest to the Student (listed on Table IV.1)

[a]Categories of grades reflects the language on the ICPAC survey, and students' self-reporting of grades.

TABLE A.IV.2

BASELINE CHARACTERISTICS OF TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN NINTH GRADE IN FALL 1995, IN INDIANA, BY PROJECT GROUP
(Percents)

	Project Group 1			Project Group 2		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Age in ninth grade (mean)[a]	14.2	13.6	***	14.3	13.9	***
Overage in ninth grade	18.1	16.4		15.0	11.9	***
Male	55.7	46.0	***	39.9	48.4	***
Race						
White	42.2	56.2	***	67.7	72.1	*
Black	30.0	16.3	***	7.2	3.1	***
All other races	14.7	10.4	**	13.9	14.0	
Race is missing	13.1	17.1	*	11.3	10.7	
Primary language spoken at home						
English	81.3	81.8		87.1	83.3	**
Other languages	2.2	2.2		0.2	0.9	**
Language spoken is missing	16.6	15.9		12.7	15.8	*
Parents' education						
Bachelor's degree	24.1	32.8	***	19.4	28.7	***
No bachelor's degree	43.8	40.7		52.4	40.1	***
Student does not know parents' education	18.8	17.8		17.3	18.0	
Parents' education is missing	13.4	8.7	**	10.9	13.2	
Student's living arrangement						
Lives with mother and father	34.1	48.5	***	45.0	53.7	***
Lives with parent and stepparent	17.8	15.5		15.7	13.9	
Lives with one parent	32.2	24.4	***	25.4	17.1	***
Lives with other guardian	5.0	4.5		3.9	3.3	
Living arrangement is missing	10.9	7.2	*	9.9	12.0	
Academic Characteristics						
Educational expectations						
Will not complete high school	0.0	1.1	***	0.2	0.7	
Complete high school	10.3	8.8		5.3	6.6	
Complete some college	7.5	5.9		6.5	4.8	
Complete two years of college	11.3	9.6		10.6	9.7	
Complete four years of college	52.5	59.2	**	57.7	55.1	
Education plans are undecided	10.9	10.6		12.7	12.1	
Education plans are missing	7.5	4.8	*	6.9	11.1	***
Grades in school[b]						
Mostly As	5.0	10.4	***	7.6	11.4	***
Mostly As and Bs	24.4	29.1	*	32.3	28.0	*
Mostly Bs	7.8	8.3		6.5	8.0	
Mostly Bs and Cs	28.1	25.0		26.1	24.2	
Mostly Cs and below	28.8	22.1	**	19.6	17.4	
Grades are missing	5.9	5.1		7.9	11.1	**

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TABLE A.IV.2 *(continued)*

	Project Group 1			Project Group 2		
	Participants	Nonparticipants		Participants	Nonparticipants	
Academic programs of interest[c]						
21st Century Scholar Program	19.4	10.1	***	21.2	9.4	***
Indiana Core 40 Program	28.4	27.7		27.0	20.0	***
Advanced Placement Program	27.5	32.0	*	35.3	35.8	
Indiana Academic Honors Diploma	10.3	14.2	**	9.0	11.1	
Indiana Academy for Science, Math, and Humanities	13.1	15.0		11.3	13.9	
Earning college credit in high school	42.2	48.6	**	44.8	38.7	**
Tech Prep program	17.5	17.3		20.6	22.4	
Consulted with career counselor	20.0	10.7	***	18.5	13.7	**
Interest in additional training after high school[c]						
Apprenticeship	46.0	50.3		45.7	43.8	
Military training	19.7	16.2		15.0	15.5	
Employer training	27.2	28.1		27.5	21.5	***
Job with no additional training	14.1	13.6		11.3	10.3	
Barriers to obtaining postsecondary education[c]						
Not sure I can afford it	30.0	38.0	***	37.9	28.2	***
Not sure I can succeed	15.6	15.3		15.5	12.3	*
Not sure how to prepare	25.0	30.7	**	28.2	24.6	
Not sure I can get into schools I want	26.3	28.1		27.5	23.0	**
No one to advise about future	6.3	4.4		5.8	3.7	*
Not sure what I want to do with my life	24.7	25.4		23.6	21.7	
No barriers	17.2	20.7		19.6	22.8	
Future career interests						
Agriculture and natural resources	4.7	2.0	*	7.6	8.5	
Arts and entertainment	30.6	33.9		26.3	24.2	
Building and construction trades	17.8	15.3		15.7	15.3	
Business, management, and finance	26.6	26.0		24.2	23.9	
Communications	13.4	16.1		15.2	12.7	
Education	18.1	21.1		24.5	21.9	
Forestry, conservation, and environment	8.4	9.1		13.2	14.2	
Industrial and manufacturing	4.7	4.7		2.5	3.5	
Medical / Health services	30.9	31.7		37.2	32.4	*
Office and clerical	10.0	6.8	*	8.5	6.9	
Science, math, computer, or engineering	17.2	15.7		13.6	14.5	
Service	20.3	21.3		17.1	16.2	
Technical	12.8	11.5		9.9	12.2	
Transportation	4.7	5.1		8.1	6.4	
Number of Students	**320**	**1,889**		**433**	**2,968**	

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TABLE A.IV.2 *(continued)*

	Project Group 3		
	Participants	Nonparticipants	
Demographic Characteristics			
Age in ninth grade (mean)[a]	13.9	13.9	
Overage in ninth grade	16.5	15.7	
Male	38.0	48.3	***
Race			
White	41.4	47.7	**
Black	29.1	23.8	**
All other races	9.2	9.2	
Race is missing	20.3	19.3	
Primary language spoken at home			
English	81.6	81.7	
Other languages	2.2	3.1	
Language spoken is missing	16.2	15.3	
Parents' education			
Bachelor's degree	24.2	25.9	
No bachelor's degree	47.7	45.8	
Student does not know parents' education	19.9	21.0	
Parents' education is missing	8.2	7.2	
Student's living arrangement			
Lives with mother and father	37.5	47.3	***
Lives with parent and stepparent	16.5	15.5	
Lives with one parent	33.4	25.8	***
Lives with other guardian	5.8	4.9	
Living arrangement is missing	6.8	6.5	
Academic Characteristics			
Educational expectations			
Will not complete high school	0.2	0.6	
Complete high school	5.1	9.5	***
Complete some college	4.1	6.4	**
Complete two years of college	11.6	8.6	*
Complete four years of college	65.9	58.2	***
Education plans are undecided	9.7	12.0	
Education plans are missing	3.4	4.7	
Grades in school[b]			
Mostly As	5.6	6.6	
Mostly As and Bs	38.0	27.2	***
Mostly Bs	7.7	7.9	
Mostly Bs and Cs	27.8	31.6	
Mostly Cs and below	17.4	22.4	**
Grades are missing	3.4	4.3	

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TABLE A.IV.2 *(continued)*

	Project Group 3		
	Participants	Nonparticipants	
Academic programs of interest[c]			
21st Century Scholar Program	27.1	13.9	***
Indiana Core 40 Program	25.7	21.0	**
Advanced Placement Program	36.8	32.8	
Indiana Academic Honors Diploma	18.4	14.4	**
Indiana Academy for Science, Math, and Humanities	11.9	11.7	
Earning college credit in high school	52.5	51.1	
Tech Prep program	15.0	17.1	
Consulted with career counselor	24.5	25.8	
Interest in additional training after high school[c]			
Apprenticeship	55.2	50.5	*
Military training	14.0	14.8	
Employer training	25.2	25.2	
Job with no additional training	10.9	13.9	*
Barriers to obtaining postsecondary education[c]			
Not sure I can afford it	36.1	30.4	**
Not sure I can succeed	9.9	11.6	
Not sure how to prepare	29.8	26.9	
Not sure I can get into schools I want	28.1	25.7	
No one to advise about future	4.1	4.0	
Not sure what I want to do with my life	19.9	22.0	
No barriers	21.5	23.4	
Future career interests			
Agriculture and natural resources	3.6	3.4	
Arts and entertainment	32.7	30.4	
Building and construction trades	11.1	19.9	***
Business, management, and finance	32.9	29.2	
Communications	18.4	14.8	*
Education	20.3	20.0	
Forestry, conservation, and environment	6.8	8.8	
Industrial and manufacturing	2.7	4.8	**
Medical / Health services	32.7	32.1	
Office and clerical	9.4	7.2	
Science, math, computer, or engineering	14.8	15.9	
Service	24.9	19.3	***
Technical	13.6	13.3	
Transportation	5.1	5.7	
Number of Students	**413**	**6,699**	

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by seven Talent Search projects in 2000. Nonparticipants include all other students in Indiana in the ninth grade in the fall of 1995.

[a]Average age in years.
[b]Categories of grades reflects the language on the ICPAC survey, and students' self-reporting of grades.
[c]Totals in these categories do not sum to 100 because students could record more than one response.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE A.V.1

VARIABLE DESCRIPTIONS—FLORIDA

Ninth-Grade Characteristics

Male—Student is a male.

White—Student is white not Hispanic.

Black—Student is black not Hispanic.

Hispanic—Student's ethnic origin is Hispanic.

Other Race—Student is not black, white, or Hispanic.

U.S. Citizen—Indicates that student is a United States citizen.

Home Language Is English—Student identified English as their native language.

Home Language Is Spanish—Student identified Spanish as their native language.

Other Language—Student's home language is neither Spanish nor English.

Age in Ninth Grade—Age of the students, in years, as of Sept. 1, 1995. The analyses were restricted to students between 13.3 and 17.3 years of age.

Overage in Ninth Grade—The student was 15.3 years of age or older on Sept. 1, 1995.

Gifted—Indicates that the student is identified as gifted on state educational records, using state-defined criteria.

Any Dropout Program—Indicates that the student was ever placed in any dropout prevention program, using state-defined criteria. There were three main categories of dropout prevention programs:

Programs for disruptive students
Programs for alternative education
Programs for juvenile offenders and other programs

Economically Disadvantaged—The student was eligible for free or reduced-price meals in secondary school.

Emotionally or Physically Disabled—Indicates that the student was ever classified as emotionally or physically disabled.

Learning Disabled—Indicates that the student was ever classified as learning disabled.

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TABLE A.V.1 *(continued)*

Grade Level Status
Grade—Student's grade level in a given academic year.
Below Grade—The student was below grade in a given academic year based on enrollment in ninth grade in the fall of 1995.
Outcome Measures
High School Diploma or GED—Indicates that a student received a high school diploma or some other high school equivalency degree.
SAT/ACT—Admission exam, generally only required at four-year institutions.
CPT—Florida college entry level placement test for community colleges.
CLAST—Test of basic college level communications and math skills. The CLAST is required for obtaining an Associated degree and proceeding to a four-year institution.
Two-Year Degree—Indicates that the student received a two-year (AA, AS, or other) degree.

TABLE A.V.2

BASELINE CHARACTERISTICS OF TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN FLORIDA, BY PROJECT
(Percents)

	Project 1			Project 2		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	31.0	52.5	***	32.2	54.5	***
Race						
White	47.8	66.0	***	3.3	49.0	***
Black	41.6	27.9	***	95.9	46.5	***
Hispanic	0.4	2.0	***	0.0	2.4	***
All other races	10.2	4.2	***	0.8	2.1	
Primary language spoken at home						
English	96.7	99.0	*	100.0	99.0	***
Spanish	0.4	0.1		0.0	0.7	***
Other languages	2.9	0.9	*	0.0	0.3	***
United States citizen	96.3	91.0	***	95.0	81.1	***
Economically disadvantaged	76.3	44.9	***	81.0	34.7	***
Age in ninth grade (mean)[a]	14.3	14.5	***	14.9	15.0	
Overage in ninth grade	3.7	9.0	***	24.0	26.8	
Academic Characteristics						
Gifted	4.1	4.8		0.0	6.9	***
Any dropout prevention program	15.5	30.8	***	28.9	28.9	
Dropout prevention for disruptive students	4.1	10.6	***	3.3	4.1	
Dropout prevention for alternative education	9.8	20.5	***	24.8	21.8	
Dropout prevention for Department of Juvenile Justice	4.1	7.1	**	5.8	7.3	
Emotionally or physically disabled	4.9	6.1		3.3	7.0	**
Learning disabled	1.6	8.6	***	2.5	8.8	***
Number of Students	**245**	**11,318**		**121**	**4,982**	

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TABLE A.V.2 *(continued)*

	Project 3			Project 4		
	Participants	Nonparticipants		Participants	Nonparticipants	
Demographic Characteristics						
Male	39.5	51.9	***	33.8	51.9	***
Race						
White	55.2	74.5	***	48.1	54.8	*
Black	39.0	18.0	***	29.5	23.1	**
Hispanic	2.4	4.4	*	15.7	17.6	
All other races	3.3	3.1		6.7	4.5	
Primary language spoken at home						
English	99.5	97.3	***	91.4	86.7	**
Spanish	0.5	1.9	***	6.7	9.9	*
Other languages	0.0	0.9	***	1.9	3.4	
United States citizen	96.7	93.7	**	88.1	86.0	
Economically disadvantaged	49.0	32.6	***	46.7	32.7	***
Age in ninth grade (mean)[a]	14.7	14.8	***	14.6	14.8	***
Overage in ninth grade	13.3	20.0	***	7.1	19.8	***
Academic Characteristics						
Gifted	3.3	5.0		7.1	4.5	
Any dropout prevention program	25.7	22.9		8.1	20.8	***
Dropout prevention for disruptive students	3.3	3.0		1.0	2.7	***
Dropout prevention for alternative education	19.5	13.3	**	6.2	12.5	***
Dropout prevention for Department of Juvenile Justice	9.0	10.1		2.9	8.6	***
Emotionally or physically disabled	6.7	10.5	**	5.7	8.2	
Learning disabled	7.1	8.9		1.9	8.7	***
Number of Students	**210**	**7,358**		**210**	**36,853**	

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TABLE A.V.2 *(continued)*

	Project 5		
	Participants	Nonparticipants	
Demographic Characteristics			
Male	32.0	53.4	***
Race			
White	54.9	74.6	***
Black	42.6	20.0	***
Hispanic	1.6	3.7	*
All other races	0.8	1.6	
Primary language spoken at home			
English	99.2	98.5	
Spanish	0.8	1.3	
Other languages	0.0	0.2	***
United States citizen	99.2	95.8	***
Economically disadvantaged	71.3	48.4	***
Age in ninth grade (mean)[a]	14.5	14.9	***
Overage in ninth grade	5.7	25.7	***
Academic Characteristics			
Gifted	4.1	1.7	
Any dropout prevention program	9.8	25.1	***
Dropout prevention for disruptive students	0.0	3.1	***
Dropout prevention for alternative education	9.0	18.0	***
Dropout prevention for Department of Juvenile Justice	2.5	7.7	***
Emotionally or physically disabled	9.0	11.7	
Learning disabled	5.7	10.2	**
Number of Students	**122**	**6,330**	

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by five Talent Search projects by 2000. Nonparticipants include all other students in Florida in the ninth grade in the fall of 1995.

[a]Average age in years.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

TABLE A.V.3

BELOW GRADE AND PERSISTENCE OF TALENT SEARCH PARTICIPANTS AND NONPARTICIPANTS IN FLORIDA, BY PROJECT
(Percents)

	Below Grade			Persistence		
	Participants	Nonparticipants		Participants	Nonparticipants	
Project 1						
1996–97	28.0	26.4		97.6	96.4	***
1997–98	30.9	36.7	*	97.5	90.7	***
1998–99	33.0	37.1		92.3	83.9	***
1996–99				87.8	73.3	***
Project 2						
1996–97	25.0	26.0		99.2	89.8	***
1997–98	22.5	28.9		92.5	87.7	***
1998–99	22.7	26.2		87.4	84.0	***
1996–99				80.2	66.1	***
Project 3						
1996–97	13.3	21.6	***	96.7	92.4	***
1997–98	13.8	23.5	***	93.1	91.3	***
1998–99	11.7	23.7	***	99.5	89.0	***
1996–99				89.5	75.1	***
Project 4						
1996–97	16.1	17.1	***	98.6	91.2	***
1997–98	12.7	29.2	***	95.2	88.0	***
1998–99	12.4	24.8	***	94.4	83.4	***
1996–99				88.6	67.0	***
Project 5						
1996–97	19.0	25.7	*	99.2	88.3	***
1997–98	19.8	30.9	***	100.0	86.7	***
1998–99	19.5	27.0		97.5	81.8	***
1996–99				96.7	62.6	***

Note: Participants were all students in the ninth grade in the fall of 1995 who were served by five Talent Search projects by 2000. Nonparticipants include all other students in Florida in the ninth grade in the fall of 1995.

*Difference is statistically significant at the 10 percent level.
**Difference is statistically significant at the 5 percent level.
***Difference is statistically significant at the 1 percent level.

APPENDIX B

COMPILATION OF DATA SOURCES AND FEASIBILITY OF EVALUATIONS BASED ON ADMINISTRATIVE RECORDS

A. INTRODUCTION

Throughout this report, we addressed the first research question posed in Chapter II: Is it possible to rely on administrative records to compile a complete, retrospective record of participation in Talent Search, characteristics of students while in secondary school, and secondary and postsecondary outcomes? In each state included in the final analysis for this study—Florida, Indiana, and Texas—we were able to compile retrospective records on participation in Talent Search, as well as on secondary and postsecondary outcomes. We described the strengths and weakness of the data as they relate specifically to the evaluation of Talent Search in each state in each chapter. In this appendix, we describe in greater detail our process for obtaining and compiling data from each source described in the report. We also describe our experiences in two states—Minnesota and Washington—where we were not successful in compiling a retrospective record of Talent Search participation and secondary and postsecondary outcomes.

The main advantages of using administrative records to compile information on Talent Search participation and secondary and postsecondary outcomes were:

- ***We compiled data on secondary and postsecondary outcomes for one cohort of ninth-grade students in Florida, Indiana, and Texas. Our sample included more than 600,000 students in these three states, who attended thousands of different secondary and postsecondary institutions.*** We identified more than 4,000 students as Talent Search participants. Collecting longitudinal information on this many students using a survey or directly from schools would have required many more resources.
- ***In Florida and Texas, the sample was a complete census of ninth-grade students in 1995–96. In Indiana, it was nearly 80 percent of the cohort.*** No state could track all students through high school, but all states had information on 70 to 80 percent of the students four years later, in 1999. This rate is comparable to what a survey administered at the same two time periods might have achieved.
- ***Except for the baseline information in Indiana, the data are based on administrative information. This information is more likely to be accurate than self-reported information, particularly retrospective self-reported information.***

The main limitations of this approach were:

- ***We were not successful in compiling records of Talent Search participation and secondary and postsecondary outcomes in Minnesota or Washington.*** In Minnesota, we could not negotiate access to state secondary data. In Washington, we did not receive complete information from enough Talent Search projects to continue with the analysis.
- ***We could not obtain a comprehensive measure of postsecondary enrollment in any state.*** We also could not examine some important outcomes, such as high school completion and college admission test taking, in every state.
- ***The data available for estimating propensity score models to identify comparison students to Talent Search participants varied substantially across the states.*** Information on students' educational aspirations and postsecondary plans were only available in Indiana.
- ***In Florida and Indiana, we were not given access to individual identifying information and relied on consultants or state agency staff to properly identify students and compile the data.*** Although we were able to check the data to determine whether characteristics and outcomes for the students seemed reasonable, we cannot document that the data were merged accurately across all data sources in every state.

In the rest of this appendix, we describe our process for collecting Talent Search project records, data on first-time application for federal financial aid, and secondary and postsecondary outcomes from state agencies. We describe research on additional data sources to compile more complete information on postsecondary outcomes. We conclude with a discussion on using administrative records for future program evaluations.

B. TALENT SEARCH PROJECT DATA

Based on research conducted as part of the feasibility study for this evaluation (Maxfield et al. 2000), we collected Talent Search project records in five states: Florida, Indiana, Minnesota, Texas, and Washington. Our goal was to collect data from every project operating in

the states in 1999–2000 and to collect records from 1993–2000.[60] The data we hoped to collect included (1) student-identifying information, such as name, Social Security number (SSN), and date of birth, so we could match Talent Search records with other data sources; (2) specific years of participation in Talent Search, including the year first served by Talent Search, to determine the point in high school during which students participated in Talent Search; (3) intensity of participation in Talent Search, such as number of years or number of hours of participation per year, to determine whether more intensive participation is related to improved secondary and postsecondary outcomes; and (4) participation in specific activities, to determine if specific activities are related to improved secondary and postsecondary outcomes.

The main barrier to collecting data from every project in every state was that some projects provided no data, incomplete data, or data that appeared to be inaccurate. We contacted all projects several times about providing data. Some never responded, and some refused to provide data. Others responded that they would provide data, but they never did. In addition, some projects provided data for only one year of participants or for far fewer participants than they reported that they had served in their Annual Performance Reports, and we were unable to resolve the discrepancy. Finally, in each state except Minnesota, at least one project began operating in 1998 and served too few of the students in our target cohort to be included in the analysis. Table B.1 summarizes our Talent Search project data collection efforts in each state.

We could not obtain Talent Search project records at most of the projects in Washington, so we did not proceed with any further analysis of outcomes in that state. Although the one remaining project in Washington served a moderate number of students, our findings may not have been representative of the experiences of most Talent Search participants in the state. In

[60] We collected data as early as 1993, when available, to capture students in our target cohort who may have been served in middle school. Many projects could not provide any data before 1995.

TABLE B.1

SUMMARY OF TALENT SEARCH PROJECT RECORD DATA COLLECTION

State	Total Number of Projects Operating in 1999–2000	Number of Projects Providing Data	Number of Projects with Partial or Inaccurate Data	Number of Projects That Began Operating in 1998	Number of Projects Providing Data
Florida	8	7	1	1	5
Indiana	8	7	0	1	7
Minnesota	7	6	1	0	5
Texas	17	13	2	1	10
Washington	4	3	1	1	1

addition, if relatively few students served by the project matched to our target cohort, we may have been unable to estimate propensity score models to identify similar nonparticipants. Conducting this type of analysis in a state with few projects is risky, because the loss of one or two projects results in a lower proportion of participants represented in the analysis than in states with several projects.

The other major challenge in collecting and processing the Talent Search project data was the variability of data quality. Project data were inconsistent in the format and type of information provided. We received lists of participants on paper, which had to be scanned or key-entered into electronic files, and data on tapes, which we had to be sent out to a contractor who specialized in reading old data formats. We also received data entered using the Blumen software, which was relatively easy to process after we obtained the software. The type of information provided ranged from names, SSNs, and the year a student was served by a project, to extensive information on the types and frequencies of services that students received.

The variability in the quality of the Talent Search project data posed three additional difficulties: (1) processing project data required far more resources than any other task in this

phase of the study; (2) collecting and processing the project data took more than one year, longer than any other task in this phase of the study; and (3) we could not conduct any analysis on the relative effectiveness of more intense participation in services or on different types of services. In general, data from early program years were more difficult to process than data from later years. Processing of data may become less costly as computerized data entry becomes universal. However, the variability in the type of information projects recorded did not change over the years. This may not change unless projects are required to record specific data elements at the student level.

C. FEDERAL FINANCIAL AID DATA

Our effort to collect and compile information on first-time applications for federal financial aid was very successful. The Office of Postsecondary Education (OPE) in the U.S. Department of Education (ED) provided consistent, comprehensive data that were relatively easy to use and did not require a great deal of resources to process. Although we focused only on first-time applications for federal financial aid, all applications for federal financial aid are available through this data source.

The data source for all applications for federal financial aid is the Free Application for Federal Student Aid (FAFSA). The main outcome of interest was first-time application for financial aid.[61] However, we also collected applicants' names, SSNs, and dates of birth, so we could merge this information into other data sources. As discussed in Chapter II, we collected this information for the 1999–2000 and 2000–01 school years to allow an extra year for completing high school and enrolling in college. Other information on the applicant data files

[61] We requested data on first-time applicants only, to assess whether participation in Talent Search influences initial application for financial aid. Application for financial aid over several years could be influenced by participation in Talent Search, but is partly a function of persisting through college.

included demographic information, estimated family contribution, and Pell Grant eligibility status.

We provided OPE with a data request, and an OPE contractor processed the data and provided them in the format we requested. It took two to three months to negotiate access to the data and prepare the data request, and another two months to receive the data. The data were easy to use and consistent across all states, because the source of the data did not vary by state. The data had two limitations: (1) due to confidentiality restrictions, we could obtain data only on participants living in a study state when they applied to an institution in one of the study states; and (2) some applicants did not have valid SSNs. The confidentiality restrictions did not limit the sample substantially, because most applicants apply to at least one institution in their home state. The OPE contractor checked the number of applicants from the study states who did not apply to any institution in one of the study states and reported that this number was very small. Approximately 10 percent of students had invalid SSNs. In all cases with missing or invalid SSNs, MPR staff or staff in the state agencies used names, dates of birth, and gender to match records across data sources, although there were some students we could not match in each state.

D. STATE SECONDARY AND POSTSECONDARY DATA

The structure and the type of student-level secondary and postsecondary data available differed in each state, as did our process for obtaining the data. In Chapters III through V, we discussed the differences in the type of data available. Here, we discuss the structure of the data in each state, mention the agency responsible for collecting and maintaining the data, and describe our negotiations with the state to obtain the data. The four main differences in the structure of the data, and our access to them, were:

1. A centralized system for student-level information on public secondary school students, available in Florida and Texas

2. Information on public, secondary and postsecondary students integrated into a data system with common IDs, available in Florida
3. Reliable identifying information on students to allow matching across data sources, available in all three states but most reliable in Florida and Texas
4. Access by MPR staff to student-identifying information to allow merging across data sources, available in Texas

1. Texas

The Texas Education Agency (TEA), through the Public Education Management Information System (PEIMS), provided the data on students in public secondary schools. The TEA assigns an ID to all students as part of PEIMS. PEIMS also includes student-identifying information, such as first and last name, SSN, and date of birth. If a student had no SSN, the state created an additional ID similar to an SSN. As discussed in Chapter III, PEIMS also includes basic demographic and socioeconomic information, as well as enrollment information, including grade level and courses taken each year. In addition, the TEA records a high school exit status for students who complete or leave high school.

The TEA also provided 8th- and 10th-grade test scores for most of the target cohort. Test score data came from the Student Assessment Division, a division separate from PEIMS. However, the test score data are linked to students by the same PEIMS ID.

A separate agency—the Texas Higher Education Coordinating Board (THECB)—maintained data on students in public postsecondary institutions. This data included student-identifying information—first and last name, SSN, and date of birth, but not the PEIMS ID—as well as information on enrollment in public postsecondary institutions in Texas, including institution type (two- or four-year), and total credits earned. THECB data are recorded for three semesters each year: fall, spring, and summer.

We made formal data requests and signed confidentiality agreements with the TEA and THECB. The same confidentiality agreements covered collecting both PEIMS and test score data from the TEA, although we had to prepare separate data requests. The TEA processed our request and provided the PEIMS data within two months of our initial request. We identified the target cohort from the PEIMS data, then prepared the data request for test scores from the Student Assessment Division. That division took a few additional months to process and prepare our request.[62] All the data provided by the TEA were clean and well-documented. Access to postsecondary data from the THECB required a separate confidentiality agreement and data request. The THECB took five to six months after our initial data request to provide the data. The reasons for this delay were (1) a change in the commissioner in spring 2004 and (2) a more cumbersome process for reviewing the confidentiality agreement than at the TEA. The data provided were also clean and well-documented.

MPR staff merged data across all data sources: (1) student secondary information and test scores for 1995–2000; (2) postsecondary information for 1999, 2000, and 2001; (3) Talent Search project data for 1993–2000; and (4) federal financial aid data for 1999 and 2000. Using the PEIMS ID, we easily merged all data the TEA provided. We merged the TEA data to all other sources by SSN, name, and date of birth. Merging was difficult when no SSNs were available, but we were able to merge many records by name, date of birth, and demographic information, such as gender. However, we could not conclusively match some cases. Therefore, we might not have identified some Talent Search participants in the cohort, and our financial aid and postsecondary outcomes might be slightly understated.

[62] The delay was mostly due to our request falling during the spring test administration of the Texas Assessment of Academic Skills (TAAS). After our contact in the division was able to turn to the request, we received the data within a few weeks.

2. Indiana

When we began our discussions to obtain secondary and postsecondary data in Indiana, the state had no system for collecting and accessing student-level data for public secondary school students. Through our research for this phase of the study, we learned that the Indiana Career and Postsecondary Advancement Center (ICPAC), a state-supported center at Indiana University, administered a survey to ninth-grade students in 1995–96 and a follow-up survey to students in 11th grade two years later. ICPAC staff were involved in a project to merge the ICPAC survey data with data from the Indiana Commission for Higher Education's Student Information System (SIS). One goal of the data merge project was to determine the effectiveness of Indiana's 21st Century Scholars program, a college preparation program with target students and goals similar to those of Talent Search.

The data we obtained from the ninth-grade survey include basic demographic and academic information, extensive information on academic plans and interests for high school, and postsecondary plans and aspirations. There is also information on what students view as potential barriers to achieving their aspirations. The data from the SIS contain information on enrollment, including part- and full-time status along with institution type (two- or four-year). The SIS also includes information about receipt of both federal and state financial aid.

MPR staff did not have direct access to any of these data and were not allowed access to any student-level identifying information. We subcontracted the entire data merge to staff at ICPAC, which included faculty and graduate students at Indiana University. ICPAC faculty and graduate students associated with Indiana University's Education Policy Center merged information from the SIS to information from the ICPAC survey, using identifying information such as name, date of birth, gender, ethnicity, home ZIP Code, and SSN when available. MPR turned over Talent Search project data and application for federal financial aid data to ICPAC staff. Those staff

members merged records from these data sources to determine which students in the 1995–96 ninth-grade cohort were Talent Search participants and which were first-time applicants for federal financial aid. SSNs were not available for most of the students in the ICPAC sample, so merging across all data sources was complex and relied heavily on name, date of birth, and gender. ICPAC staff returned a data file with records from all data sources merged together, but stripped of all individual identifying information.

The data merge required much more ICPAC staff time than needed by staff in Florida or Texas agencies. MPR could not verify the accuracy of the data merge, because it did not have access to identifying information. However, ICPAC staff were experienced researchers and had conducted this type of data merge for other analyses. While we were conducting our research, ICPAC was dissolved, which presented some challenges in obtaining data.[63] However, we were able to continue working with faculty and staff at Indiana University to obtain the data.

3. Florida

Florida was the only state in the study that had a fully integrated data system with student-level information on students in public primary, secondary, and postsecondary schools in the state. The Florida K-20 Education Data Warehouse, maintained by the Florida Department of Education (FLDOE), is a single repository of data from many sources. It contains longitudinal information on students, beginning in 1995. The data requirements for this study overlap with the earliest period for which the warehouse maintains data. The warehouse contains student-identifying information such as SSN, first and last name, and date of birth, as well as a warehouse-assigned ID. In addition to basic demographic information, the warehouse contains

[63] Recently, the Learn More Resource Center replaced ICPAC. The new center is designed to integrate education resources in Indiana from Pre-K through college.

information on secondary school enrollment, including school attended, grade level, courses taken, and promotion status each year. It also includes information on secondary degrees earned, such as a high school diploma, GED, or other certificate.[64] In addition, the warehouse data included precollege outcomes, such as taking a college admission test or community college entrance exam. Finally, the warehouse data contained information on postsecondary outcomes, such as receipt of financial aid and scholarships and enrollment, including the name of the institution where the students enrolled and postsecondary degrees earned.

The warehouse does not allow access to individual identifying information. Warehouse staff provided MPR with data files containing secondary and postsecondary information on students in ninth grade in 1995–96. All files were stripped of individual identifying information but included the warehouse ID. MPR staff submitted data files with individual identifying information from Talent Search project records and federal financial aid application files. Warehouse staff identified those individuals in the warehouse data and added the warehouse ID to students in those files. Warehouse staff returned the Talent Search and federal financial aid data files to MPR, stripped of identifying information except the warehouse ID, so MPR staff were able to merge records across all data sources. While we cannot verify the accuracy of the assignment of warehouse IDs to the students from the Talent Search and federal financial aid data files, MPR staff can verify the accuracy of the merge across all the data sources.

Obtaining the data took longer in Florida than in Texas. It took six to seven months to receive data after our initial request. This was due, in part, to the length of time it took to receive approval from the FLDOE. It was also partly due to delays at the end of summer 2004 because of four hurricanes hitting the state, which placed tremendous strain on the FLDOE. The

[64] The data do not include information on secondary school test scores in 1995. Test scores have been available since 1997–98.

documentation for the data is fairly detailed but not quite as easy to use as the documentation Texas provided. Warehouse staff were very responsive in answering questions and making corrections to data files when needed. The warehouse database is comprehensive: its staff were able to identify more than 85 percent of the students who appeared in the Talent Search project records and the application for federal financial aid records.

4. Minnesota

We also pursued obtaining student-level secondary and postsecondary data in Minnesota. During the time frame for this study, Minnesota undertook a major reorganization of state agencies. The Minnesota Department of Children, Families, and Learning had provided all services related to child welfare, including education. Therefore, we conducted our initial research and conversations about the feasibility of obtaining the data with a staff member at the department. During the time of our study, Minnesota created a state department of education. We were not able to establish a new contact or determine whether student-level data would be available during the reorganization.

A separate agency—the Minnesota Higher Education Services Office (HESO)—was to provide postsecondary data; however, our contact at HESO could not help us obtain secondary data. Given the design of the study, obtaining postsecondary data alone would not have been valuable. We determined that we did not have enough time to begin the data research and acquisition process with the new state department of education, process the data, and conduct the analysis within the time frame for this study.

E. OTHER DATA SOURCES

We were able to analyze postsecondary enrollment only in public, postsecondary institutions in each state.[65] As discussed in each chapter, this may not affect our findings on the difference in postsecondary enrollment between Talent Search participants and comparison students if they enroll in private or out-of-state institutions at the same rate. We understate overall postsecondary enrollment, however, it is possible that the difference between Talent Search participants and nonparticipants is larger or smaller than what we report due to missing private and out-of-state enrollment. To obtain information on private and out-of-state enrollment, we pursued two additional data sources: (1) the Pell Grant recipient files and (2) the National Student Clearinghouse.

1. Pell Grant Recipient Files

We obtained information on applications for financial aid and an indicator of eligibility for a Pell Grant from the financial aid applicant files, which are based entirely on the FAFSA. The recipient files maintain information on the receipt of a Pell Grant, including the institution where the grant was awarded. Because most Talent Search participants who applied for aid were eligible for a Pell Grant, the Pell Grant recipient files could have provided additional postsecondary enrollment information on some students.

Using Pell Grant recipient files would still have resulted in a problematic measure of postsecondary enrollment, for two reasons:

1. Not all Talent Search participants and comparison students were eligible for Pell Grants, so we would still have been missing information for some students.

[65] Indiana's SIS contained some information on private and out-of-state enrollment but only for the small number of students who received state grants or scholarships.

2. We would have been using information based on an outcome, applying for federal financial aid, as a potential source to determine another outcome, postsecondary enrollment.

In addition, after initial promising negotiations with OPE to obtain Pell Grant recipient data, OPE staff decided confidentiality restrictions prevented them from providing individual identifying information on Pell Grant recipients. Thus, it would not have been possible to merge this information with the data files compiled in all three states.

2. National Student Clearinghouse

The National Student Clearinghouse is a repository of information on enrollment, loans, and degrees awarded for postsecondary institutions that join the clearinghouse as members. The clearinghouse is a nonprofit organization that began with support from ED to verify enrollment for student loan recipients. Currently, the clearinghouse is an enrollment and degree verification resource for ED, colleges and universities, and employers. It is supported by fees paid by the member institutions, as well as fees for enrollment and degree searches. Currently, the clearinghouse has 2,800 member institutions, which represent more than 90 percent of all students enrolled in college.[66] The clearinghouse can provide information on enrollment if provided with name, SSN, and date of birth of the students.

To test the comprehensiveness of the clearinghouse, we submitted names of 200 students we obtained from Talent Search project files in Florida, Indiana, Minnesota, and Texas. We submitted names of students Talent Search projects indicated had enrolled in college. We submitted some students with name, SSN, and date of birth information, and others with some of this information missing. The clearinghouse provided enrollment information on 110 of these

[66] Figures are based on clearinghouse profile found on their Web site [www.studentclearinghouse.org/about/pdfs/Clearinghouse_profile.pdf]. Cited April 2006.

students—just over half of the sample. Most of the institutions represented among the 110 students were public institutions in the study states, but a few private institutions were represented. The clearinghouse could not locate records on students unless they had all three pieces of identifying information, so we did not receive any enrollment information on students missing SSN, name, or date of birth. The clearinghouse provided the data quickly—within a week of our request—and the data were clean and easy to use.

We did not pursue using the clearinghouse further because (1) based on our test, we did not think the clearinghouse provided postsecondary information on enough of the students in the sample and (2) Florida and Indiana would not provide us with identifying information to turn over to the clearinghouse.[67] The target cohort for this study began entering college in fall 1999. The clearinghouse did not have as many member institutions in 1999 and 2000 as it does now, and it probably is a much more comprehensive source of postsecondary enrollment information now than it was five years ago.

3. Summary

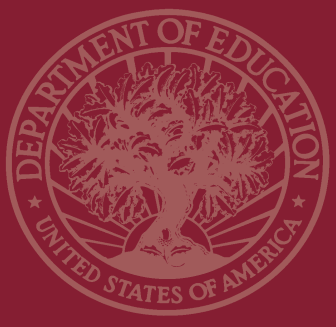
We had mixed success using administrative data to assess the effect of Talent Search on participants. We conducted an informative analysis in three states, but we were not able to conduct the analysis in two states. The resources required to conduct the analysis in three states were far less than if we had relied on a longitudinal survey or even one survey with retrospective questions. Some specific baseline and outcome information, such as participation in programs and special classification in secondary school, and postsecondary enrollment, may be more

[67] Staff at the Florida K-20 Education Data Warehouse had worked with the clearinghouse in the past and indicated they might be willing to submit names and obtain the data if MPR provided the resources.

reliable than self-reported information. Other information, such as test scores and applications for financial aid, are probably much more reliable than self-reported information.

The two main barriers to using administrative records for this project were (1) the availability and quality of the Talent Search project records and (2) restructuring of state agencies during the project. The quality of the Talent Search project data was certainly compromised by the time frame for this study. Maintaining electronic records was not as routine in 1995 as it is now, so this should be less of a barrier for future studies. However, refusal to provide data or providing incomplete data always may be a barrier to obtaining comprehensive project data as long as projects are not required to comply with participation in studies or to record specific data elements. While turnover of staff in state agencies always will present a challenge for data collection that relies heavily on contacts with specific staff, two states in this study—Indiana and Minnesota—went through major restructuring of state agencies during the study.[68] A review of the Web sites for the state departments of education in Indiana and Minnesota suggests the states have restructured and more fully integrated services and data collected on primary through postsecondary public education. Although restructuring of state agencies presented major challenges for this particular study, our experience working with Florida and Texas demonstrates that, if more states develop accessible, comprehensive, and relatively easy-to-use information on secondary and postsecondary education, evaluations of interventions designed to improve education outcomes should become more comprehensive and far less costly to execute.

[68] The restructuring and creation of state departments of education during this study may have been caused by the requirements for testing and documenting progress required under the *No Child Left Behind Act*.



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