



Characteristics of career academies in 12 Florida school districts





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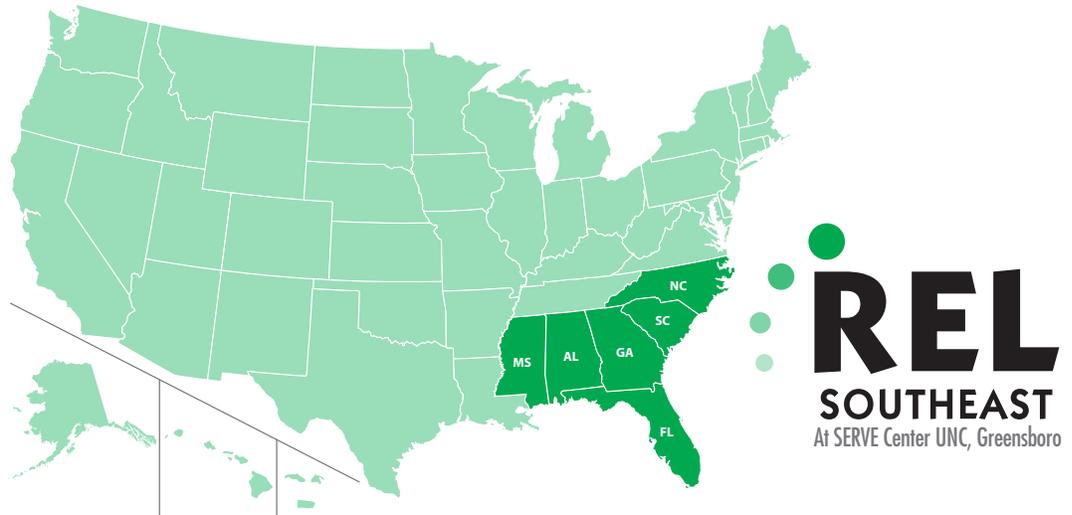
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March 2011

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Characteristics of career academies in 12 Florida school districts

This report describes career academies in 12 Florida school districts in the 2006/07 school year. It examines their structure and career clusters, the high schools offering them, and the students enrolled.

Career academies are a leading high school reform designed to engage students and better prepare them for college and the workplace. They offer small, more personalized learning environments; integrated academic and technical courses organized around career themes; and work-based learning opportunities.

This report responds to a Florida Department of Education request for information on Florida career academies prior to enactment of the 2007 Career and Professional Education Act, requiring each school district to open at least one career academy (Florida Legislature 2007a) and establishing benchmarks and procedures to support high-quality career academies (Florida Legislature 2007b).

The Florida Department of Education chose for this study the 12 school districts most consistently reporting career academy data. Student data were drawn from files provided by the state's PK–20 Education Data Warehouse (Florida Department of Education 2007a). School data were drawn from the state's Master School Identification file (Florida

Department of Education 2007b) and the U.S. Department of Education's Common Core of Data (U.S. Department of Education 2007).

This study is one of the first to investigate both career academy structure and clusters using multiple data sources. It provides state education leaders and other stakeholders with baseline trends and patterns to use in tracking and evaluating Florida career academy development.

This study is driven by three research questions on career academies in the 12 Florida school districts in 2006/07:

- How many career academies were there, and of what types?
- What were the characteristics of high schools offering career academies?
- How many students were enrolled in career academies, and what were their characteristics?

The findings indicate that:

- Seventy-nine percent of high schools (145 of 183) offered career academies in 2006/07, for a total of 596 career academies.

- Of the 145 high schools offering career academies, 70 (48 percent) used a school-within-a-school structure (career academies embedded in an existing high school), and 45 (31 percent) used a wall-to-wall career academy structure (an entire school organized around multiple career academies). Information on school structure was missing for the remaining 30 high schools (21 percent).
- Most schools with wall-to-wall career academies (40 of 45; 89 percent) were in the Miami-Dade district.
- In school-within-a-school career academy structures, the most common career cluster (the field around which a career academy curriculum is organized) was hospitality and tourism (27 of 230; 12 percent). In wall-to-wall structures, the most common was arts, audiovisual technology, and communication (38 of 266; 14 percent).
- Schools configured as wall-to-wall career academies had larger average enrollment (2,356) than did schools organized as school-within-a-school career academies (1,968).
- On average, high schools offering wall-to-wall career academies had higher rates of students eligible for free or reduced-price lunch (42 percent compared with 37 percent), of racial/ethnic minority students (84 percent and 53 percent), and of students receiving special education services (25 percent and 13 percent) than their school-within-a-school counterparts.
- Of the 332,010 students enrolled across the 12 school districts, 49,795 (15 percent) were enrolled in a career academy.
- More girls (54 percent) than boys (46 percent) enrolled in career academies.
- More students were enrolled in school-within-a-school career academies (25,587; 8 percent) than in wall-to-wall career academies (20,818; 6 percent).
- A higher percentage of students enrolled in wall-to-wall career academies were Hispanic (45 percent compared with 16 percent) and received special education services (25 percent compared with 13 percent) than their school-within-a-school counterparts.
- The transportation, distribution, and logistics cluster had the smallest percentage of female students (8 percent), and education and training had the largest (84 percent).

March 2011

TABLE OF CONTENTS

| | |
|---|-----------|
| Why this study? | 1 |
| Reviewing the literature | 1 |
| Career academy legislation: before and after | 2 |
| Study focus | 3 |
| Findings | 5 |
| How many career academies were there, and of what types? | 5 |
| What were the characteristics of high schools offering career academies? | 9 |
| How many students were enrolled in career academies, and what were their characteristics? | 11 |
| Florida Comprehensive Assessment Test scores and career academy structure | 13 |
| Study limitations and need for additional research | 13 |
| Appendix A Methods | 15 |
| Appendix B Student career academy enrollment by student and school characteristics | 19 |
| Appendix C Analyzing grade 8 Florida Comprehensive Assessment Test data | 21 |
| Notes | 22 |
| References | 23 |
| Boxes | |
| 1 Three basic components of career academies | 2 |
| 2 Key terms | 3 |
| 3 Data sources and methods | 4 |
| Figures | |
| B1 Student career academy enrollment in 12 sample Florida school districts, by gender and career academy cluster, 2006/07 (percent) | 19 |
| B2 Student career academy enrollment in 12 sample Florida school districts, by free or reduced-price lunch eligibility and career academy cluster, 2006/07 (percent) | 19 |
| B3 Student career academy enrollment in 12 sample Florida school districts, by English language learner status and career academy cluster, 2006/07 (percent) | 20 |
| B4 Student career academy enrollment in 12 sample Florida school districts, by special education status and career academy cluster, 2006/07 (percent) | 20 |
| Tables | |
| 1 High schools with career academies by 12 sample Florida school districts, 2006/07 | 5 |
| 2 Structure of high schools with career academies by 12 sample Florida school districts, 2006/07 | 6 |
| 3 Career academies by cluster and 12 sample Florida school districts, 2006/07 (number, unless otherwise indicated) | 7 |

| | | |
|-----------|---|-----------|
| 4 | Career academy cluster by career academy structure in 12 sample Florida school districts, 2006/07 | 8 |
| 5 | Mean high school characteristics by career academy structure in 12 sample Florida school districts, 2006/07 (percent, unless otherwise indicated) | 9 |
| 6 | Mean high school characteristics in 12 sample Florida school districts, by career academy cluster, 2006/07 (percent, unless otherwise indicated) | 10 |
| 7 | Career academy enrollment in 12 sample Florida school districts, by career academy structure and student characteristics, 2006/07 (percent, unless otherwise indicated) | 11 |
| 8 | Race/ethnicity of student enrollment by career academy cluster in 12 sample Florida school districts, 2006/07 (percent) | 12 |
| A1 | High schools and student enrollment by 12 sample Florida school districts, 2006/07 | 15 |
| A2 | Data sources and variables | 16 |
| A3 | Career academy clusters and codes for the career academy participant data element | 17 |
| C1 | Math and reading proficiency rate in 12 sample Florida school districts, by career academy structure, 2006/07 | 21 |

This report describes career academies in 12 Florida school districts in the 2006/07 school year. It examines their structure and career clusters, the high schools offering them, and the students enrolled.

WHY THIS STUDY?

Career academies, in use for nearly 40 years (Kemple and Willner 2008), are a leading high school reform designed to engage students and better prepare them for college and the workplace.¹ Initially intended to provide vocational training to students at risk of dropping out of school, they have since become a comprehensive high school strategy (Stern, Dayton, and Raby 2000), offering small, more personalized learning environments; integrated academic and technical courses organized around career themes; and work-based learning opportunities.

This report responds to a Florida Department of Education request for information on the status of Florida career academies prior to enactment of the 2007 Career and Professional Education (CAPE)

Act, requiring each school district to open at least one career academy (Florida Legislature 2007a) and establishing benchmarks and procedures to support high-quality career academies (Florida Legislature 2007b).

The report focuses on a nonrandom sample of 12 districts using student data provided by the Florida Department of Education's PK–20 Education Data Warehouse (Florida Department of Education 2007a) and school data from the state's Master School Identification file (Florida Department of Education 2007b) and the U.S. Department of Education's Common Core of Data (U.S. Department of Education 2007) for 2006/07—the first school year for which data have been systematically collected and recorded for career academy structures (how a career academy is implemented) and clusters (the field around which a career academy curriculum is organized; Florida Department of Education 2006b).

Though career academies vary across schools and districts, they share three basic components: a small learning community, curricula organized by career cluster, and partnerships with employers, the community, and local postsecondary institutions (box 1; Brand 2009; Stern, Dayton, and Raby 2000). These components, identified and codified by national organizations that support career academies across the country (the National Career Academy Coalition, the National Academy Foundation, and the Career Academy Support Network), have also been adopted by Florida to standardize data collection and reporting.

Reviewing the literature

Expansion of career academies can be attributed to their overlap with two other high school reform efforts: the college and career movement, which emphasizes academic rigor and practical experience, and the small learning community movement, which encourages supportive relationships in smaller educational settings to improve teaching and learning conditions (Stern, Dayton, and Raby 2000).

BOX 1

Three basic components of career academies

Career academies are small learning communities. Academies comprise groups of students who take several classes together for at least two years. Courses are taught by teams of teachers from academic and career and technical education disciplines

who coordinate course content and instructional approaches.

Career academies follow a college preparatory curriculum, organized around a career cluster. Designed to expose students to the skills and knowledge needed for their career cluster, coursework is structured to help students understand the link between academics and work.

Career academies are built around partnerships with employers, the community, and local postsecondary institutions. Drawing on their collective resources, these partners provide students with workplace experience, connect them with adult mentors, and support the acquisition of the skills and training needed to succeed in college.

Source: Florida Office of Program Policy Analysis and Government Accountability 2006.

Numerous career academy studies report positive student outcomes, including early evaluations in California and Pennsylvania (Reller 1984; Stern, Raby, and Dayton 1992; Raby 1995; Dayton, Weisberg, and Stern 1989; Stern et al. 1989) and an MDRC random-assignment study in nine sites across the country (Kemple and Willner 2008). The MDRC study, offering the most conclusive results, shows that positive labor market outcomes for career academy enrollees can be attributed to career academy participation rather than to unmeasured characteristics of enrolled students. The MDRC study also shows how career academy structure contributes to career academy success. For example, a small learning environment allows for the positive relationships necessary to successfully implement other career academy components.

Other research suggests that career academies with a strong school-within-a-school structure achieve positive results (Hanser and Stasz 1999; Maxwell 2001; Elliot and Hanser 2002; Linnehan 1996). These findings motivated comprehensive high school reform models and prompted large urban school districts to adopt a wall-to-wall structure, dividing entire schools into career academies. Less is known about the wall-to-wall approach, and it has not been compared with the traditional school-within-a-school approach of embedding a single career academy within a larger high school. But several studies suggest more challenges for wall-to-wall academies, including a weaker sense of community, scheduling complications, lack of common planning time, and

the potential for de facto tracking (Kemple 2004; Allen, Almeida, and Steinberg 2001).

Research and practice indicate that career academy clusters are intended to align with local labor market demands (Bradby et al. 2007; Kemple and Willner 2008). The process of identifying clusters, as exemplified by Florida, Nebraska, and South Carolina, entails assessing student interests, identifying growing local and global industries, and collaborating with area business leaders, workforce boards, and other stakeholders (States' Career Clusters Initiative n.d.; Florida Department of Education 2006a). Identifying the clusters appropriate for the local economy is important in ensuring that students can get internships and find work once they graduate (Brand 2009; see box 2 for definitions of *structure* and *cluster*).

Career academy legislation: before and after

Between 1993 and 2001, Florida appropriated funds to develop new career academies (Florida Department of Education 2006a). In 2005 Florida launched the SUCCEED Florida Career Paths program, providing \$6 million for public schools to develop and redesign existing career academies (Florida Office of Program Policy Analysis and Government Accountability 2006).² This funding continued into 2006, and in 2007 Florida enacted the CAPE Act to increase the number and quality of career academies across the state (Florida Office of Program Policy Analysis and Government

BOX 2

Key terms

Career academy structure refers to how a career academy is implemented. The structure is either *school-within-a-school* or *wall-to-wall*. School-within-a-school career academies are part of an existing high school and provide courses in a thematic cluster. Wall-to-wall career academies structure the entire school around multiple career academies and enroll all students in the school.

Career academy cluster is the field around which a career academy's curriculum is organized. Florida's 16 career clusters (see appendix A), following the U.S. Department of Education taxonomy, are: agriculture, food, and natural resources; architecture and construction; arts, audio-visual technology, and communications; business, management, and administration; education and training; finance; government and public administration; health science; hospitality and tourism; human services;

information technology; law, public safety, and security; manufacturing; marketing, sales, and service; science, technology, engineering, and mathematics; and transportation, distribution, and logistics. This report also presents an additional category: "no selected career cluster."

Note: In 2009/10, "energy" was added as a 17th cluster in Florida (Florida Department of Education n.d.).

Source: Florida Department of Education 2006b.

Accountability 2008). The CAPE Act requires that each school district open at least one career academy. It established benchmarks and procedures for schools and districts developing new career academies and designing curricula and mandates that core academic courses in career academies meet state curriculum standards by providing both rigorous academic and occupation-specific training.³

Before the CAPE Act was passed, there were no formal state-sanctioned career academy criteria in Florida, so career academies varied greatly in structure, organization, curricula, and standards (Florida Office of Program Policy Analysis and Government Accountability 2008). Thus, when the Florida Department of Education began mandating that school districts report the numbers, structures, and clusters of their career academies in 2006/07—the school year just before the CAPE Act was passed—data on career academy students could not be reported consistently and systematically. But after the CAPE Act was passed, Florida adopted a formal definition of a career academy—incorporating the core components used nationally (see box 1)—to standardize data collection and reporting. It began a concerted effort to collect better data on career academies and on the students enrolled.

Since 2007/08, the Florida Department of Education has required that each district register its career academies annually and that superintendents certify

that their academies meet the legislative requirements. In 2007/08, 246 career academies were registered; by 2008/09, the total had reached 490 (Florida Department of Education 2009). And districts now must report whether career academy students took and passed an industry certification assessment.

Study focus

This study is one of the first to investigate both career academy structure and clusters using multiple data sources. It responds to the need for descriptive, baseline data on career academies in 12 Florida school districts as they existed before the CAPE Act. The districts, chosen by the Florida Department of Education as those most consistently reporting career academy data, are Alachua, Charlotte, Citrus, Duval, Escambia, Hillsborough, Marion, Miami-Dade, Okeechobee, Palm Beach, St. Lucie, and Volusia.

The information in this report will serve as a baseline for the Florida Department of Education and others in the state in understanding the development and expansion of Florida academies. The study focuses on all the sample career academies, but data from studies of career academies since the introduction of the CAPE Act will separate unregistered and registered career and professional education academies that meet the requirements as defined in the CAPE legislation.

This study is driven by three research questions on career academies in the 12 Florida school districts in 2006/07:

- How many career academies were there, and of what types?
- What were the characteristics of high schools offering career academies?

- How many students were enrolled in career academies, and what were their characteristics?

See box 3 for a summary of the data sources and study methodology.

BOX 3

Data sources and methods

Data sources. Three data sources were used for this study:

- *Student data from the Florida Department of Education's PK–20 Education Data Warehouse* on gender, race/ethnicity, eligibility for free or reduced-price lunch, English language learner status, and special education status (Florida Department of Education 2007a). Data on the clusters in which students enrolled were used to determine the number of career academies in a school and which clusters career academy schools offered.
- *The Florida Department of Education's Master School Identification file*, which provided school-level data on whether career academies were structured as school-within-a-school or wall-to-wall (Florida Department of Education 2007b).
- *The National Center for Education Statistics Common Core of Data*, which provided school-level data on school size, percentage of students eligible for free or reduced-price lunch, and racial/ethnic composition (U.S. Department of Education 2007). It also provided district-level data on locale.

Sample selection. As recommended by the Florida Department of Education, this study focuses on the 12 districts identified as having the most consistent reporting of student-level career academy enrollment data in the state data system (Alachua, Charlotte, Citrus, Duval, Escambia, Hillsborough, Marion, Miami-Dade, Okeechobee, Palm Beach, St. Lucie, and Volusia). Appendix A describes the 12 districts in detail.

Data analysis. Descriptive statistics, including tabulations and frequency distributions, were used to analyze career academy participation and the characteristics of enrollees. Using a combination of unique district and school identifiers, data were merged across the sources.

The presence of a career academy was determined using *career academy participation*, a categorical variable from the student data file (Florida Department of Education 2007a) indicating the career academy cluster in which a student participated. The student-level data were aggregated to the school level to calculate the number of schools in each district that housed career academies. Any career academy with three or more students was included in the analyses.

Next, to determine whether certain clusters were more prevalent in school-within-a-school structures or wall-to-wall structures, the

distribution of career academies by cluster and structure were calculated for each district.

School-level analyses were conducted to describe schools offering at least one career academy and, for comparison, schools offering no career academies. Selected school characteristics were calculated, including mean student enrollment, percentage eligible for free or reduced-price lunch, and racial/ethnic composition.

To determine career academy structure, the Master School Identification file (Florida Department of Education 2007b) was linked to the student data file (Florida Department of Education 2007a). Thirty career academies in the student data file were missing school structure information in the Master School Identification file. These career academies were included in the analyses as a separate category and are noted in the applicable tables.

Protection of confidentiality. The Florida Department of Education provided student-level data with random identification numbers linked to administrative records. In accordance with National Center for Education Statistics guidelines, the tables do not report information on cases with fewer than three data points (Seastrom 2003).

For a more detailed discussion of the methods, see appendix A.

FINDINGS

This study is one of the first to investigate both career academy structure and clusters using multiple data sources.

The findings reveal substantial career academy activity across the 12 Florida school districts in 2006/07. Almost 80 percent of schools had at least one career academy, and there were 596 distinct career academies across the 145 schools offering them. Of those, most operated as school-within-a-school career academies embedded in a larger high school, with most students not participating. Fewer schools reported wall-to-wall academies, where all students participate, and these were primarily in Miami-Dade. Of the 332,010 sample high school students, 49,795 (15 percent) were identified as academy participants.

Schools with wall-to-wall academies tended to be larger, and their academies served a more disadvantaged student population (as proxied by the percentage of students eligible for free or reduced-price lunch), on average. Wall-to-wall academies also tended to address more general career clusters, such as arts, audiovisual technology, and communication, and human services. By contrast, school-within-a-school career academies tended to be in smaller schools and serve more advantaged students. School-within-a-school academies also tended to address more specific career clusters, such as hospitality and tourism.

The following sections present the findings for the three research questions for the 12 Florida sample school districts for 2006/07.

How many career academies were there, and of what types?

There were 183 high schools across the 12 sample districts (from 2 in Okeechobee to 56 in Miami-Dade) after excluding 227 nontraditional schools.⁴ Of these 183 schools, 145 (79 percent) offered career academies in 2006/07 (table 1). By district, high schools with career academies ranged from

50 percent of the total in one district (Okeechobee) to 100 percent in four districts (Charlotte, Citrus, Marion, and St. Lucie). The average number of career academies per high school ranged from 1 each in Citrus and Hillsborough to 10 in St. Lucie.

Career academy structure. More schools reported using the school-within-a-school structure (70; 48 percent) than the wall-to-wall structure (45; 31 percent; table 2).⁵ In school-within-a-school settings, 22 schools offered only one career academy, and the remaining school-within-a-school settings offered more than one academy (results not presented here). The school-within-a-school structure was more prevalent in 9 of the 12 districts (Alachua, Citrus, Duval, Escambia, Hillsborough, Okeechobee, Palm Beach, St. Lucie, and Volusia); just four districts reported wall-to-wall academies (Citrus, Duval, Miami-Dade, and Palm Beach). Although wall-to-wall structures suggest more career academies per high school, this study found that St. Lucie, reporting only school-within-a-school

TABLE 1
High schools with career academies by 12 sample Florida school districts, 2006/07

| School district | Number of high schools ^a | High schools with career academies | | Average number of career academies per school |
|-----------------|-------------------------------------|------------------------------------|-----------|---|
| | | Number | Percent | |
| Alachua | 7 | 6 | 86 | 2 |
| Charlotte | 3 | 3 | 100 | 3 |
| Citrus | 4 | 4 | 100 | 1 |
| Duval | 22 | 17 | 77 | 3 |
| Escambia | 10 | 6 | 60 | 2 |
| Hillsborough | 25 | 15 | 60 | 1 |
| Marion | 8 | 8 | 100 | 4 |
| Miami-Dade | 56 | 46 | 82 | 5 |
| Okeechobee | 2 | 1 | 50 | 2 |
| Palm Beach | 30 | 25 | 83 | 3 |
| St. Lucie | 6 | 6 | 100 | 10 |
| Volusia | 10 | 8 | 80 | 2 |
| Total | 183 | 145 | 79 | 3 |

a. Excludes nontraditional schools.

Source: Authors' analysis based on student data file (Florida Department of Education 2007a).

TABLE 2
**Structure of high schools with career academies
 by 12 sample Florida school districts, 2006/07**

| School district | High schools with school within a school career academies | High schools with wall to wall career academies | Number of high schools missing information on career academy structure ^a |
|--|---|---|---|
| Alachua | 6 | 0 | 0 |
| Charlotte | 0 | 0 | 3 |
| Citrus | 3 | 1 | 0 |
| Duval | 6 | 2 | 9 |
| Escambia | 4 | 0 | 2 |
| Hillsborough | 15 | 0 | 0 |
| Marion | 0 | 0 | 8 |
| Miami-Dade | 0 | 40 | 6 |
| Okeechobee | 1 | 0 | 0 |
| Palm Beach | 21 | 2 | 2 |
| St. Lucie | 6 | 0 | 0 |
| Volusia | 8 | 0 | 0 |
| Total | 70 | 45 | 30 |
| Percent of all career academies | 48 | 31 | 21 |

a. Career academies identified in the student data file (Florida Department of Education 2007a) but with no corresponding information in the Master School Identification file (Florida Department of Education 2007b).

Source: Presence of career academies, student data file (Florida Department of Education 2007a); career academy structure, Master School Identification file (Florida Department of Education 2007b).

structures, had the highest average number of career academies per high school (10; see table 1). St. Lucie's five largest high schools (each with more than 1,000 students) offered 9–12 career academies and served 48–60 percent of students.

Of the 45 schools using the wall-to-wall structure, 40 schools were in Miami-Dade, where at least 40 of the 46 schools with academies used the wall-to-wall structure. (Six schools were missing information for the structure variable.) Outside Miami-Dade, the wall-to-wall structure was rare—found in only 2 of 17 schools (12 percent) with career academies in Duval, 2 of 25 (8 percent) in Palm Beach, and 1 of 4 (25 percent) in Citrus.

Career academy cluster. The most prevalent cluster overall was arts, audiovisual technology, and communication (66; 11 percent; table 3); the least prevalent was manufacturing (2; less than 1 percent). Of the reported academies, 45 (8 percent) had no identified career cluster. In half the districts, no career clusters dominated: Alachua had 13 academies across 10 clusters, Charlotte had 10 across 8 clusters, Escambia had 17 across 11 clusters, Okeechobee had 3 across 3 clusters, St. Lucie had 58 across 14 clusters, and Volusia had 21 across 10 clusters.

Career academies in the other six districts tended to group into one or more dominant career clusters, reflecting a focus of the local economy. The modal career cluster in Miami-Dade was arts, audiovisual technology, and communication, (40 of 262 academies; 15 percent), reflecting the needs of a large urban labor market. In Palm Beach, the two most prevalent clusters were government and public administration, and information technology (13 each of 95 academies; 27 percent), also reflecting a more urban outlook. In Citrus, the most prevalent cluster was agriculture, food, and natural resources (4 of 5; 80 percent); in Duval, it was health science (14 of 56; 25 percent); in Hillsborough, it was hospitality and tourism (8 of 25; 32 percent); and in Marion, it was architecture and construction (7 of 31; 23 percent).

Cluster variation by structure. Some clusters occur more in one structure than the other (table 4). No human services cluster academies were reported in school-within-a-school structures, but 21 were reported in wall-to-wall structures. Similarly, several clusters were less frequent in wall-to-wall settings (business, management, and administration; health science; marketing, sales, and service; transportation, distribution, and logistics) but more frequent in school-within-a-school settings.

In wall-to-wall structures, the most common cluster was arts, audiovisual technology and communication (38 academies; 14 percent). In school-within-a-school structures, the most common was hospitality and tourism (27 academies; 12 percent).

TABLE 3
Career academies by cluster and 12 sample Florida school districts, 2006/07 (number, unless otherwise indicated)

| Career academy cluster | Alachua | Charlotte | Citrus | Duval | Escambia | Hillsborough | Marion | Miami Dade | Okeechobee | Palm Beach | St. Lucie | Volusia | Total Number | Total Percent |
|---|---------|-----------|--------|-------|----------|--------------|--------|------------|------------|------------|-----------|---------|--------------|---------------|
| Agriculture, food, and natural resources | 2 | 1 | 4 | 0 | 1 | 1 | 1 | 13 | 0 | 3 | 5 | 2 | 33 | 5.5 |
| Architecture and construction | 1 | 0 | 0 | 3 | 1 | 0 | 7 | 10 | 1 | 8 | 5 | 2 | 38 | 6.4 |
| Arts, audiovisual technology, and communication | 0 | 1 | 0 | 5 | 2 | 1 | 1 | 40 | 0 | 8 | 5 | 3 | 66 | 11.1 |
| Business, management, and administration | 0 | 1 | 0 | 2 | 0 | 3 | 3 | 1 | 0 | 1 | 5 | 0 | 16 | 2.7 |
| Education and training | 1 | 0 | 0 | 4 | 1 | 0 | 1 | 7 | 0 | 7 | 6 | 1 | 28 | 4.7 |
| Finance | 1 | 0 | 0 | 2 | 0 | 4 | 1 | 25 | 1 | 4 | 2 | 1 | 41 | 6.9 |
| Government and public administration | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 14 | 0 | 13 | 0 | 2 | 34 | 5.7 |
| Health science | 1 | 2 | 1 | 14 | 4 | 1 | 2 | 3 | 0 | 9 | 5 | 3 | 45 | 7.6 |
| Hospitality and tourism | 1 | 1 | 0 | 2 | 1 | 8 | 4 | 13 | 0 | 11 | 5 | 2 | 48 | 8.1 |
| Human services | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 21 | 3.5 |
| Information technology | 1 | 0 | 0 | 3 | 1 | 2 | 3 | 30 | 0 | 13 | 5 | 0 | 58 | 9.7 |
| Law, public safety, and security | 2 | 1 | 0 | 1 | 2 | 1 | 0 | 12 | 0 | 3 | 4 | 0 | 26 | 4.4 |
| Manufacturing | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0.3 |
| Marketing, sales, and service | 2 | 0 | 0 | 11 | 0 | 3 | 0 | 1 | 0 | 1 | 5 | 0 | 23 | 3.9 |
| Science, technology, engineering, and mathematics | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 32 | 0 | 11 | 1 | 4 | 53 | 8.9 |
| Transportation, distribution, and logistics | 1 | 0 | 0 | 3 | 1 | 0 | 6 | 0 | 1 | 3 | 4 | 0 | 19 | 3.2 |
| No selected career cluster | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 42 | 0 | 0 | 0 | 1 | 45 | 7.6 |
| Total number of high schools | 7 | 3 | 4 | 22 | 10 | 25 | 8 | 56 | 2 | 30 | 6 | 10 | 183 | 100 |
| Number of high schools with career academies | 6 | 3 | 4 | 17 | 6 | 15 | 8 | 46 | 1 | 25 | 6 | 8 | 145 | 100 |
| Total number of career academies | 13 | 10 | 5 | 56 | 17 | 25 | 31 | 262 | 3 | 95 | 58 | 21 | 596 | 100 |

Note: High schools can have more than one career academy.

Source: Authors' analysis based on student data file (Florida Department of Education 2007a).

This report does not explore the reasons behind cluster variation by type of structure. Nearly all the sample schools using the wall-to-wall structure were in Miami-Dade, so the predominance of certain clusters in the wall-to-wall structure is

driven largely by career academy development in that district. Further study is needed to establish a clear relationship between a cluster's prevalence and career academy structure.

TABLE 4

Career academy cluster by career academy structure in 12 sample Florida school districts, 2006/07

| Career academy cluster | School within a-school | | Wall to wall | | Missing information on school structure ^a | | Total | |
|---|------------------------|---------|--------------|---------|--|---------|------------|---------|
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Agriculture, food, and natural resources | 16 | 7.0 | 13 | 4.9 | 4 | 4.0 | 33 | 5.5 |
| Architecture and construction | 17 | 7.4 | 11 | 4.1 | 10 | 10.0 | 38 | 6.4 |
| Arts, audiovisual technology, and communication | 16 | 7.0 | 38 | 14.3 | 12 | 12.0 | 66 | 11.1 |
| Business, management, and administration | 11 | 4.8 | 1 | 0.4 | 4 | 4.0 | 16 | 2.7 |
| Education and training | 16 | 7.0 | 8 | 3.0 | 4 | 4.0 | 28 | 4.7 |
| Finance | 13 | 5.7 | 26 | 9.8 | 2 | 2.0 | 41 | 6.9 |
| Government and public administration | 15 | 6.5 | 15 | 5.6 | 4 | 4.0 | 34 | 5.7 |
| Health science | 25 | 10.9 | 4 | 1.5 | 16 | 16.0 | 45 | 7.6 |
| Hospitality and tourism | 27 | 11.7 | 14 | 5.3 | 7 | 7.0 | 48 | 8.1 |
| Human services | 0 | 0.0 | 21 | 7.9 | 0 | 0.0 | 21 | 3.5 |
| Information technology | 20 | 8.7 | 30 | 11.3 | 8 | 8.0 | 58 | 9.7 |
| Law, public safety, and security | 11 | 4.8 | 13 | 4.9 | 2 | 2.0 | 26 | 4.4 |
| Manufacturing | 1 | 0.4 | 0 | 0.0 | 1 | 1.0 | 2 | 0.3 |
| Marketing, sales, and service | 15 | 6.5 | 2 | 0.8 | 6 | 6.0 | 23 | 3.9 |
| Science, technology, engineering, and mathematics | 16 | 7.0 | 32 | 12.0 | 5 | 5.0 | 53 | 8.9 |
| Transportation, distribution, and logistics | 9 | 3.9 | 1 | 0.4 | 9 | 9.0 | 19 | 3.2 |
| No selected career cluster | 2 | 0.9 | 37 | 13.9 | 6 | 6.0 | 45 | 7.6 |
| Total number of career academies | 230 | | 266 | | 100 | | 596 | |

a. Career academies identified in the student data file (Florida Department of Education 2007a) but with no corresponding structure information in the Master School Identification file (Florida Department of Education 2007b).

Source: Presence of career academies, authors' analysis based on student data file (Florida Department of Education 2007a); career academy structure, authors' analysis based on data from Master School Identification file (Florida Department of Education 2007b).

What were the characteristics of high schools offering career academies?

This research question looks at whether certain high school characteristics (average enrollment, percentage of students eligible for free or reduced-price lunch, racial/ethnic minority concentration)⁶ are related to the establishment of career academies or to a particular career academy structure or career cluster.

On average, sample schools with career academies were more than twice as large (1,969 students) as schools without them (915; table 5). Schools in both groups did not differ substantially in the percentage of students eligible for free or reduced-price lunch or in the concentration of ethnic/racial minority students.

Average enrollment in high schools with a school-within-a-school structure was 1,968, less than that for schools with a wall-to-wall structure (2,356)

and nearly identical to the average enrollment in all schools with career academies (1,969). The percentage of students eligible for free or reduced-price lunch was higher, on average, in schools with wall-to-wall structures (42 percent) than in those with a school-within-a-school structure (37 percent). Concentration of racial/ethnic minority students was also higher in high schools with wall-to-wall career academies (84 percent) than in either high schools with school-within-a-school academies (53 percent) or with no career academies (63 percent). Hispanic students made up 51 percent of the total in wall-to-wall career academies but only 16 percent in high schools with school-within-a-school structures. Recall, however, that the characteristics of Miami-Dade high schools, with at least 40 of 46 wall-to-wall career academies, dominate the data on high schools offering wall-to-wall academies.

Average enrollment varied from 1,031 students in high schools offering a career academy with a manufacturing career cluster to 2,523 students in

TABLE 5

Mean high school characteristics by career academy structure in 12 sample Florida school districts, 2006/07 (percent, unless otherwise indicated)

| Characteristic | All high schools (<i>n</i> = 183) | High schools with a career academy | | | | High schools without a career academy (<i>n</i> = 38) |
|--|---------------------------------------|------------------------------------|---|---|--|---|
| | | All (<i>n</i> = 145) | With a school-within-a-school structure (<i>n</i> = 70) | With a wall-to-wall structure (<i>n</i> = 45) | Missing information on school structure ^a (<i>n</i> = 30) | |
| Enrollment (number) | 1,750 | 1,969 | 1,968 | 2,356 | 1,390 | 915 |
| Eligible for free or reduced-price lunch | 38.4 | 37.5 | 37.0 | 41.5 | 32.5 | 41.8 |
| Racial/ethnic minority | 62.1 | 62.0 | 52.5 | 84.4 | 50.5 | 62.5 |
| American Indian ^b | 0.3 | 0.3 | 0.4 | 0.2 | 0.3 | 0.4 |
| Asian ^c | 2.1 | 2.2 | 2.6 | 1.7 | 1.9 | 2.0 |
| Black ^d | 29.3 | 30.0 | 30.5 | 30.0 | 28.6 | 27.0 |
| Hispanic ^e | 28.2 | 27.4 | 16.4 | 51.2 | 17.6 | 31.0 |

a. Schools with a career academy identified in the student data file (Florida Department of Education 2007a) but with no corresponding structure information in the Master School Identification file (Florida Department of Education 2007b).

b. Includes Alaska Native.

c. Includes Native Hawaiian or Other Pacific Islander.

d. Includes African American.

e. Includes Latino.

Source: School characteristics information, authors' analysis based on the National Center for Education Statistics Common Core of Data (U.S. Department of Education 2007); school structure information, authors' analysis based on the Master School Identification file (Florida Department of Education 2007b).

TABLE 6

Mean high school characteristics in 12 sample Florida school districts, by career academy cluster, 2006/07 (percent, unless otherwise indicated)

| Career academy cluster ^a | Student enrollment (number) | Eligible for free or reduced-price lunch | Racial/ethnic minority ^b | | | | |
|--|-----------------------------|--|-------------------------------------|-------|-------|----------|--------------------|
| | | | American Indian | Asian | Black | Hispanic | Total ^c |
| Human services (<i>n</i> = 21) | 2,523 | 47.8 | 0.1 | 1.3 | 39.6 | 48.7 | 90.7 |
| No selected career cluster (<i>n</i> = 45) | 2,297 | 43.2 | 0.2 | 1.3 | 30.7 | 51.3 | 84.4 |
| Law, public safety, and security (<i>n</i> = 26) | 2,137 | 49.9 | 0.2 | 1.5 | 45.4 | 27.4 | 76.2 |
| Arts, audiovisual technology, and communication (<i>n</i> = 66) | 2,204 | 40.3 | 0.2 | 1.6 | 30.4 | 40.8 | 74.7 |
| Information technology (<i>n</i> = 58) | 2,221 | 41.9 | 0.2 | 1.6 | 32.5 | 38.6 | 74.6 |
| Finance (<i>n</i> = 41) | 2,467 | 40.8 | 0.2 | 1.7 | 26.7 | 43.8 | 73.9 |
| Science, technology, engineering, and mathematics (<i>n</i> = 53) | 2,446 | 40.6 | 0.2 | 1.6 | 26.1 | 43.2 | 72.5 |
| Government and public administration (<i>n</i> = 34) | 2,345 | 40.2 | 0.3 | 2.3 | 40.3 | 26.5 | 71.2 |
| Marketing, sales, and service (<i>n</i> = 23) | 1,708 | 39.4 | 0.2 | 2.4 | 46.6 | 14.7 | 66.3 |
| Education and training (<i>n</i> = 28) | 1,938 | 40.2 | 0.3 | 2.1 | 39.1 | 21.8 | 65.4 |
| Hospitality and tourism (<i>n</i> = 48) | 2,089 | 39.8 | 0.3 | 2.2 | 31.2 | 27.1 | 63.2 |
| Architecture and construction (<i>n</i> = 38) | 2,001 | 37.2 | 0.4 | 2.0 | 25.7 | 28.7 | 58.9 |
| Agriculture, food, and natural resources (<i>n</i> = 33) | 2,153 | 38.5 | 0.4 | 1.7 | 29.5 | 23.9 | 57.5 |
| Health science (<i>n</i> = 45) | 1,857 | 36.6 | 0.3 | 2.3 | 39.6 | 12.5 | 56.8 |
| Business, management, and administration (<i>n</i> = 16) | 2,052 | 41.5 | 0.4 | 2.2 | 27.8 | 21.5 | 54.5 |
| Transportation, distribution, and logistics (<i>n</i> = 19) | 1,734 | 36.1 | 0.5 | 2.2 | 24.8 | 14.9 | 45.3 |
| Manufacturing (<i>n</i> = 2) | 1,031 | 34.2 | 0.7 | 1.8 | 19.3 | 16.9 | 42.9 |
| All high schools (<i>n</i> = 183) | 1,750 | 38.4 | 0.3 | 2.1 | 29.3 | 28.2 | 62.1 |
| Has a career academy (<i>n</i> = 145) | 1,969 | 37.5 | 0.3 | 2.2 | 30.0 | 27.4 | 62.0 |
| No career academy (<i>n</i> = 38) | 915 | 41.8 | 0.4 | 2.0 | 27.0 | 31.0 | 62.5 |

a. Clusters are displayed in descending order by overall racial/ethnic minority rates.

b. Black includes African American, Hispanic includes Latino, Asian includes Native Hawaiian or Other Pacific Islander, and American Indian includes Alaska Native.

c. Total refers to racial/ethnic minority groups only. Totals do not sum to 100 percent because "White" is omitted.

Source: Presence of career academies, authors' analysis of student data file (Florida Department of Education 2007a); school characteristics, authors' analysis of data from the National Center for Education Statistics Common Core of Data (U.S. Department of Education 2007).

schools offering human services (table 6). Eligibility for free or reduced-price lunch varied from an average of 34 percent in schools with a manufacturing cluster to 50 percent in schools with a law, public safety, and security cluster.

The average proportion of racial/ethnic minority groups other than White varied from 43 percent in

schools offering a career academy with a manufacturing cluster to 91 percent in schools offering human services. In schools offering a career academy with a manufacturing cluster, 19 percent of students were Black; in schools offering a career academy with a marketing, sales, and service cluster, 47 percent of students were Black. Schools offering a career academy with a health science

cluster had the smallest percentage of Hispanic students (13 percent); schools offering a career academy with no selected career cluster had the largest (51 percent).

How many students were enrolled in career academies, and what were their characteristics?

The previous section describes the schools offering career academies. This section describes the students enrolled in career academies.

Career academy structure. Of the 332,010 students enrolled across the 12 school districts, 49,795 (15 percent) were enrolled in a career academy (table 7). More girls (54 percent) than boys (46 percent) enrolled in career academies. More students enrolled in school-within-a-school career academies (25,587) than in wall-to-wall career academies (20,818). School-within-a-school academies served a more advantaged group of students, on average, than did wall-to-wall academies (as proxied by the percentage of students eligible for

TABLE 7
Career academy enrollment in 12 sample Florida school districts, by career academy structure and student characteristics, 2006/07 (percent, unless otherwise indicated)

| Student characteristic | Total | All | Students in a career academy | | | |
|--|---------|--------|---|-------------------------------|---|-------------------------|
| | | | With a school within a school structure | With a wall to wall structure | Missing school structure information ^a | Not in a career academy |
| Enrollment (number) | 332,010 | 49,795 | 25,587 | 20,818 | 3,390 | 282,215 |
| Gender | | | | | | |
| Male | 49.6 | 45.8 | 47.7 | 43.2 | 48.0 | 50.3 |
| Female | 50.4 | 54.2 | 52.3 | 56.8 | 52.0 | 49.7 |
| Other characteristics | | | | | | |
| Eligible for free or reduced-price lunch | 38.4 | 38.6 | 33.4 | 45.2 | 37.9 | 38.4 |
| English language learner student | 6.1 | 2.2 | 2.3 | 2.3 | 0.8 | 6.8 |
| Special education student | 19.1 | 18.2 | 13.3 | 24.8 | 14.6 | 19.3 |
| Race/ethnicity^b | | | | | | |
| American Indian | 0.3 | 0.3 | 0.3 | 0.2 | 0.6 | 0.3 |
| Asian | 2.4 | 2.5 | 2.7 | 2.5 | 2.1 | 2.3 |
| Black | 26.3 | 29.4 | 27.1 | 33.2 | 24.3 | 25.7 |
| White | 38.1 | 37.4 | 51.3 | 16.8 | 58.6 | 38.2 |
| Hispanic | 30.9 | 28.0 | 16.1 | 45.3 | 11.5 | 31.4 |
| More than one race | 2.1 | 2.4 | 2.6 | 2.0 | 2.9 | 2.1 |
| Grade | | | | | | |
| 9 | 28.9 | 29.1 | 25.1 | 32.2 | 40.0 | 28.9 |
| 10 | 26.8 | 26.2 | 26.9 | 26.2 | 21.4 | 26.9 |
| 11 | 22.9 | 23.6 | 25.9 | 21.1 | 21.6 | 22.7 |
| 12 | 21.5 | 21.1 | 22.1 | 20.5 | 17.0 | 21.5 |

a. Career academies identified in student data file (Florida Department of Education 2007a) but with no corresponding structure information in the Master School Identification file (Florida Department of Education 2007b).

b. Unless otherwise noted, Black includes African American, Hispanic includes Latino, Asian includes Native Hawaiian or Other Pacific Islander, and American Indian includes Alaska Native.

Source: For student characteristics and presence of career academies, authors' analysis of student data file (Florida Department of Education 2007a); for career academy structure, authors' analysis of data from Master School Identification file (Florida Department of Education 2007b).

free or reduced-price lunch). Of students in school-within-a-school career academies, 51 percent were White, 16 percent were Hispanic, 33 percent were eligible for free or reduced-price lunch; 2 percent were English language learners, and 13 percent received special education services. Of students in wall-to-wall career academies, 17 percent were White, 45 percent were Hispanic, 45 percent were eligible for free or reduced-price lunch, 2 percent were English language learners, and 25 percent received special education services.

Career academy cluster. The largest percentage of White students was in the agriculture, food, and

natural resources cluster (61 percent); the lowest, in human services (10 percent; table 8). Black students had the largest representation in the health science cluster (49 percent) and the lowest in agriculture, food, and natural resources (14 percent). Excluding academies with no selected career cluster, human services had the largest percentage of Hispanic students (40 percent), and health science had the smallest (12 percent). Appendix B describes career academy enrollment by cluster in greater detail.

Cluster participation varied by gender, eligibility for free or reduced-price lunch, English language

TABLE 8

Race/ethnicity of student enrollment by career academy cluster in 12 sample Florida school districts, 2006/07 (percent)

| Career academy cluster | Asian ^a | Black ^b | White | Hispanic ^c | More than one race ^d |
|---|--------------------|--------------------|-------|-----------------------|---------------------------------|
| Agriculture, food, and natural resources (<i>n</i> = 2,184) | 0.5 | 13.7 | 61.0 | 20.9 | 3.9 |
| Architecture and construction (<i>n</i> = 2,997) | 1.3 | 21.3 | 40.1 | 34.8 | 2.4 |
| Arts, audiovisual technology, and communication (<i>n</i> = 6,444) | 2.2 | 23.7 | 42.6 | 28.1 | 3.3 |
| Business, management, and administration (<i>n</i> = 961) | 2.4 | 31.8 | 33.0 | 29.3 | 3.4 |
| Education and training (<i>n</i> = 2,121) | 1.5 | 38.2 | 36.4 | 21.9 | 2.1 |
| Finance (<i>n</i> = 2,481) | 2.7 | 24.3 | 31.0 | 24.3 | 2.2 |
| Government and public administration (<i>n</i> = 2,674) | 3.0 | 25.5 | 42.6 | 26.4 | 2.4 |
| Health science (<i>n</i> = 6,361) | 4.0 | 49.4 | 32.3 | 11.6 | 2.8 |
| Hospitality and tourism (<i>n</i> = 4,668) | 1.4 | 29.4 | 41.3 | 24.7 | 3.3 |
| Human services (<i>n</i> = 2,068) | 1.7 | 46.7 | 9.7 | 40.1 | 1.8 |
| Information technology (<i>n</i> = 4,135) | 2.8 | 29.0 | 37.7 | 28.4 | 2.2 |
| Law, public safety, and security (<i>n</i> = 2,517) | 1.2 | 37.8 | 26.4 | 31.7 | 2.9 |
| Manufacturing (<i>n</i> = 81) | 6.2 | 23.5 | 46.9 | 18.5 | 4.9 |
| Marketing, sales, and service (<i>n</i> = 1,037) | 3.7 | 31.9 | 45.4 | 15.6 | 3.4 |
| Science, technology, engineering, and mathematics (<i>n</i> = 4,721) | 3.1 | 14.4 | 44.0 | 36.1 | 2.4 |
| Transportation, distribution, and logistics (<i>n</i> = 1,141) | 2.3 | 17.3 | 60.7 | 16.6 | 3.2 |
| No selected career cluster (<i>n</i> = 3,204) | 4.0 | 29.3 | 20.4 | 44.3 | 2.0 |
| Total student enrollment (<i>n</i> = 332,010) | 2.4 | 26.3 | 38.1 | 30.9 | 2.4 |
| Not in a career academy (<i>n</i> = 282,215) | 2.3 | 25.7 | 38.1 | 31.4 | 2.4 |
| In a career academy (<i>n</i> = 49,795) | 2.5 | 29.4 | 37.4 | 28.0 | 2.7 |

a. Includes Native Hawaiian or Other Pacific Islander.

b. Includes African American.

c. Includes Latino.

d. Includes American Indian and Alaska Native to protect student confidentiality. "More than one race" was provided in the student data file (Florida Department of Education 2007a) and cannot be disaggregated.

Source: Authors' analysis of the student data file (Florida Department of Education 2007a).

learner status, and special education status (see appendix B). The transportation, distribution, and logistics cluster had the smallest percentage of female students (8 percent), and education and training had the largest (84 percent). Participation rates for students eligible for free or reduced-price lunch ranged from 31 percent in the arts, audiovisual technology, and communication cluster to 51 percent in human services. English language learner students made up less than 10 percent of enrollment in all clusters. The manufacturing cluster had the largest percentage of English language learner students (9 percent), and agriculture, food, and natural resources, the smallest (1 percent). Students receiving special education services ranged from 10 percent in the business, management, and administration cluster to 38 percent in academies with no selected career cluster.

Florida Comprehensive Assessment Test scores and career academy structure

Additional analyses of average grade 8 Florida Comprehensive Assessment Test (FCAT) proficiency levels for reading and math, by career academy structure, were conducted for the subsample of students with valid test score data (81 percent; 269,127 students). Analyzing the demographics of these students revealed an underrepresentation of English language learner students compared with the full sample (see appendix C). Findings should be interpreted with caution.

STUDY LIMITATIONS AND NEED FOR ADDITIONAL RESEARCH

This study has two known limitations, associated with generalizability and conflicting data.

First, the results are based on the 12 sample Florida school districts identified by the Florida Department of Education as those that report career academy data most consistently. These districts do not constitute a random sample, so findings cannot be generalized to the whole state.

Second, data on career academy structure and cluster were drawn from two sources (student-level data file to identify career academy clusters and the Master School Identification file to identify the corresponding structures; Florida Department of Education 2007a, 2007b). But these data sources sometimes reported conflicting

information. Reports of career academies in the Master School Identification file did not completely align with reported academy student participation in the student data file. This study found two scenarios: Some students were identified in the student data file as enrolled in career academies at schools not identified in the Master School Identification file as having one. And some schools identified in the Master School Identification file as having career academies did not have students identified in the student data files as enrolled. In consultation with the Florida Department of Education, this study classified a school as having a career academy if the student data file identified three or more students in that school as enrolled, even if there was no structure information from the Master School Identification file. Therefore, several tables in this report include an additional column representing schools, academies, clusters, or students for which there is no information on corresponding career academy structure.

Overall, 100 of the 596 academies did not have career academy structure information available and are classified as “missing information on school structure.” And although this report is intended to help the Florida Department of Education develop career academies and design curricula, at the time of 2006/07 data reporting, the process of identifying career academies was new. As the process evolves, it may affect how career academies are reported from year to year.

More girls than boys enrolled in career academies; more students enrolled in school within a school career academies than in wall-to-wall career academies; and school within a school academies served a more advantaged group of students, on average

No research systematically compares the effectiveness or relative feasibility of implementing school-within-a-school and wall-to-wall career academies. Also, additional research is needed on the types and strength of partnerships between academies and industries and communities, other support for student engagement, and student achievement across career academy structures and clusters.

That different career clusters tend to dominate in career academies across districts points to a need

for further research on the relationship with labor market demands. Investigating the relationship between the prevalence of career clusters in some districts and the availability of partners and jobs in those areas could help guide state and local policy discussion on existing and potential links between education and economic development. This would be especially fruitful in light of the increased requirements of Florida's education policies on industry certifications for students and business partnerships with schools (Florida Department of Education 2009).

**APPENDIX A
METHODS**

This appendix describes the sample districts, data sources, selection of the analytic sample, and data analyses.

Sample districts

Based on 2006/07 data from the National Center for Education Statistics Common Core of Data, the 12 districts chosen by the Florida Department of Education for this study ranged from smaller rural fringe districts to larger city districts (table A1). These districts were chosen because they were the 12 that reported career academy data most consistently. Student enrollment (grades 9–12) ranged from fewer than 2,000 students in Okeechobee to more than 100,000 in Miami-Dade. These numbers include only traditional high schools; nontraditional schools were excluded. (For types of schools excluded, see the section on selection

of the analytic sample.) Because the districts were not randomly selected, the results cannot be interpreted to represent all districts in the state.

Data sources

Information on an array of student-, school-, and district-level data was drawn from three sources (table A2):

- *Student data file from Florida Department of Education’s PK–20 Education Data Warehouse*, on gender, race/ethnicity, eligibility for free or reduced-price lunch, English language learner status, and special education status (Florida Department of Education 2007a). Data were also available on which clusters (the field around which a career academy curriculum is organized) students enrolled in and were used to determine the number of career academies in a school and which clusters career academy schools offered. Although these data are student-level, this study used the career academy participation variable in the student data file to identify the schools offering the 16 career academy clusters, based on guidance from the Florida Department of Education. Data from the Master School Identification file and the student data file were merged through a unique district-school identifier.
- *The Florida Department of Education’s Master School Identification file*, which provided school-level data on whether career academies were structured as school-within-a-school, with a single career academy embedded within a larger high school, or as wall-to-wall, with entire schools divided into career academies (Florida Department of Education 2007b). This source is a comprehensive listing of all Florida public schools serving students in prekindergarten through high school. The 2006/07 school year was the first that it collected information on career academies.
- *The National Center for Education Statistics Common Core of Data*, which provided

TABLE A1
High schools and student enrollment by 12 sample Florida school districts, 2006/07

| School district | Number of high schools | Enrollment | Locale type |
|-----------------|------------------------|----------------|-----------------|
| Alachua | 7 | 9,340 | City: midsize |
| Charlotte | 3 | 5,954 | Suburb: midsize |
| Citrus | 4 | 4,817 | Rural: fringe |
| Duval | 22 | 36,790 | City: large |
| Escambia | 10 | 12,922 | Suburb: large |
| Hillsborough | 25 | 54,066 | Suburb: large |
| Marion | 8 | 13,034 | Rural: fringe |
| Miami-Dade | 56 | 108,596 | Suburb: large |
| Okeechobee | 2 | 1,907 | Town: distant |
| Palm Beach | 30 | 52,173 | Suburb: large |
| St. Lucie | 6 | 11,471 | City: midsize |
| Volusia | 10 | 20,940 | City: small |
| Total | 183 | 332,010 | — |

Note: Excludes nontraditional schools.
Source: Enrollment and number of high schools, authors’ analysis of the student data file (Florida Department of Education 2007a); locale type, authors’ review of National Center for Education Statistics Common Core of Data (U.S. Department of Education 2007).

school-level information on school size, percentage of students eligible for free or reduced-price lunch, and racial/ethnic composition (U.S. Department of Education 2007). It also provided district-level data on locale. The data obtained from this source were linked to the student data file and Master School Identification file using a unique district-school identifier.

Selection of the analytic sample

The student data received from the Florida Department of Education's PK–20 Education Data Warehouse included separate files for enrollment, transcripts, and demographic information. The enrollment file included some students who were eventually dropped from the analytic sample. The analytic sample excluded students who registered for the fall but did not show up on the first day of school (such as migrant students and students who moved out of state) and students in nontraditional schools.

Identifying one school per student during the 2006/07 school year. The student data files provided information on all schools a student attended in 2006/07. Therefore, the raw data files from the Florida Department of Education include multiple observations for students attending more than one school. To account for in-state student mobility, this study assigned students to the school in which they were enrolled at the end of 2006/07 in order to retain one school record per student. The school record from the last school attended would have been reported during the end-of-year survey (survey 5). However, the Florida Department of Education staff confirmed that there is no variable designating a student observation as being from survey 5. Instead, student records with valid withdrawal dates and reasons were used to identify an end-of-year (survey 5) record. Student observations determined to have come from survey 5, and thus the last school attended, were identified and kept in the analysis.

TABLE A2

Data sources and variables

| Data element | Unit of analysis | Data source | Data description/variable |
|---|------------------|-----------------------------------|---|
| Career academy structure ^a | School | Master School Identification file | <ul style="list-style-type: none"> Type of career academy model at the school: <ul style="list-style-type: none"> School-within-a-school Wall-to-wall Not applicable (no career academies at the school). |
| Career academy cluster | School/academy | Student data file | <ul style="list-style-type: none"> Categorical variable at the student level identifying: <ul style="list-style-type: none"> Number of career academies (career academy level). Schools offering particular career clusters (school level). |
| Student enrollment in a career academy ^b | Student | Student data file | <ul style="list-style-type: none"> Categorical variable indicating the career cluster of the career academy in which the student participated during the school year. |
| Student characteristics | Student | Student data file | <ul style="list-style-type: none"> Gender. Race/ethnicity. Eligibility for free or reduced-price lunch. English language learner status. Special education status. |
| School characteristics | School | Common Core of Data | <ul style="list-style-type: none"> School size. Percent of students eligible for free or reduced-price lunch. Racial/ethnic composition. |

a. Called "Career academy type" in Master School Identification file (Florida Department of Education 2007b).

b. Called "Career academy participant" in student data file (Florida Department of Education 2007a).

Source: Authors' review of data sources.

Excluding students in nontraditional schools. Students attending nontraditional high schools in the 12 school districts were identified using information from the Master School Identification file and the Common Core of Data. These 227 schools, and the students who attended them, were excluded from the analysis to create an analytic sample of “typical” public high schools and students. The types of schools considered nontraditional were:

- Adult.
- Alternative to expulsion.
- Area vocational/technical centers.
- Department of juvenile justice.
- Hospital/homebound.
- Jails.
- Private/voucher.
- Schools for neglected/delinquent students.
- Special education schools.
- Superintendent’s office.
- University labs.
- Virtual schools.

Arriving at the analytic sample. Following data cleaning, the final sample across the 12 districts included 183 schools, 145 of them with a total of 596 career academies.

Data analyses

Descriptive statistics, including tabulations and frequency distributions, were used to analyze career academy participation and the characteristics of enrollees. Using a combination of unique district and school identifiers, data were merged across the sources.

The presence of a career academy was determined using *career academy participation*, a categorical variable from the student data file (Florida Department of Education 2007a) indicating the career academy cluster in which a student participated. The student-level data were aggregated to the school level to calculate the number of schools in each district that housed career academies. Any career academy with three or more students was included in the analyses.

The presence of particular career clusters was also determined using the *career academy participation* variable. This variable includes 16 career cluster codes (table A3; Florida Department of Education 2006b). An additional category identifies students with no selected career cluster. Next, to determine whether certain clusters were more prevalent in school-within-a-school structures or wall-to-wall structures, the distribution of career academies by cluster and structure were calculated for each district.

School-level analyses were conducted to describe schools offering at least one career academy and, for comparison, schools offering no career academies. Selected school characteristics were calculated, including mean student enrollment, percentage eligible for free or reduced-price lunch, and racial/ethnic composition.

TABLE A3
Career academy clusters and codes for the career academy participant data element

| Code | Career academy cluster |
|------|--|
| A | Agriculture, food, and natural resources |
| B | Architecture and construction |
| C | Arts, audiovisual technology, and communications |
| D | Business, management, and administration |
| E | Education and training |
| F | Finance |
| G | Government and public administration |
| H | Health science |
| I | Hospitality and tourism |
| J | Human services |
| K | Information technology |
| L | Law, public safety, and security |
| M | Manufacturing |
| N | None ^a |
| O | Marketing, sales, and service |
| P | Science, technology, engineering, and mathematics |
| Q | Transportation, distribution, and logistics |
| Z | Career academy student without a selected career cluster |

a. Student did not participate in a career academy during the reporting year.
Source: Florida Department of Education 2006b.

To determine career academy structure, the Master School Identification file (Florida Department of Education 2007b) was linked to the student data file (Florida Department of Education 2007a). Thirty career academies were missing school structure information in the Master School Identification file. These career academies were included in the analyses as a separate category and are noted in the applicable tables.

Protection of confidentiality

To avoid identifying students, the student records were assigned random IDs linked to administrative records. In accordance with

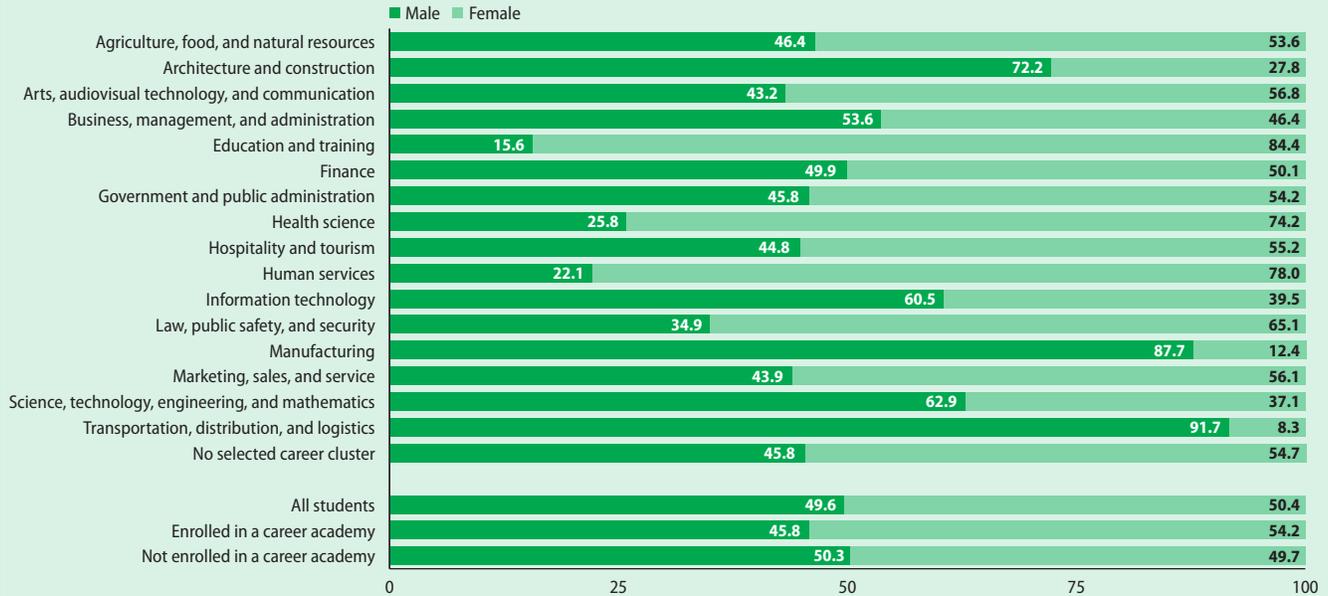
National Center for Education Statistics guidelines, cell sizes of fewer than three cases were not reported (Seastrom 2003). Moreover, strict data precautions were taken, as required by the Florida Department of Education. This included submitting confidentiality agreements signed by the researchers. This data protection approach was approved by the University of North Carolina–Greensboro’s Institutional Review Board.

Limitations

See main report for study limitations.

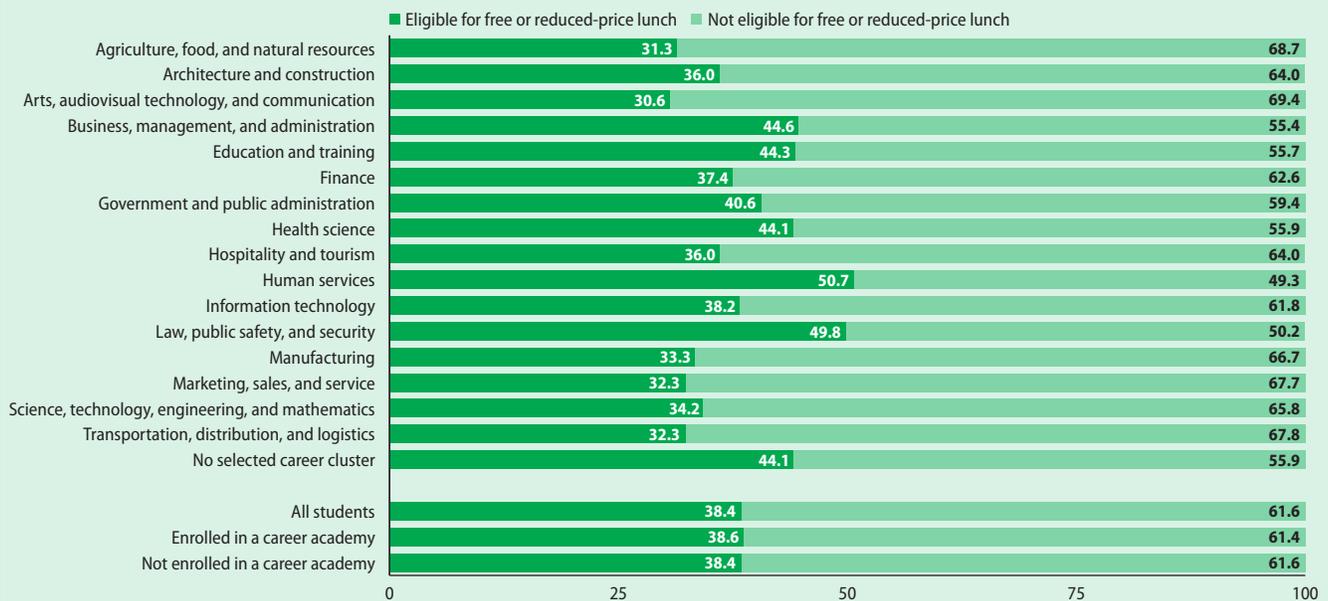
APPENDIX B
STUDENT CAREER ACADEMY ENROLLMENT BY
STUDENT AND SCHOOL CHARACTERISTICS

FIGURE B1
Student career academy enrollment in 12 sample Florida school districts, by gender and career academy cluster, 2006/07 (percent)



Source: Authors' analysis based on student data file (Florida Department of Education 2007a).

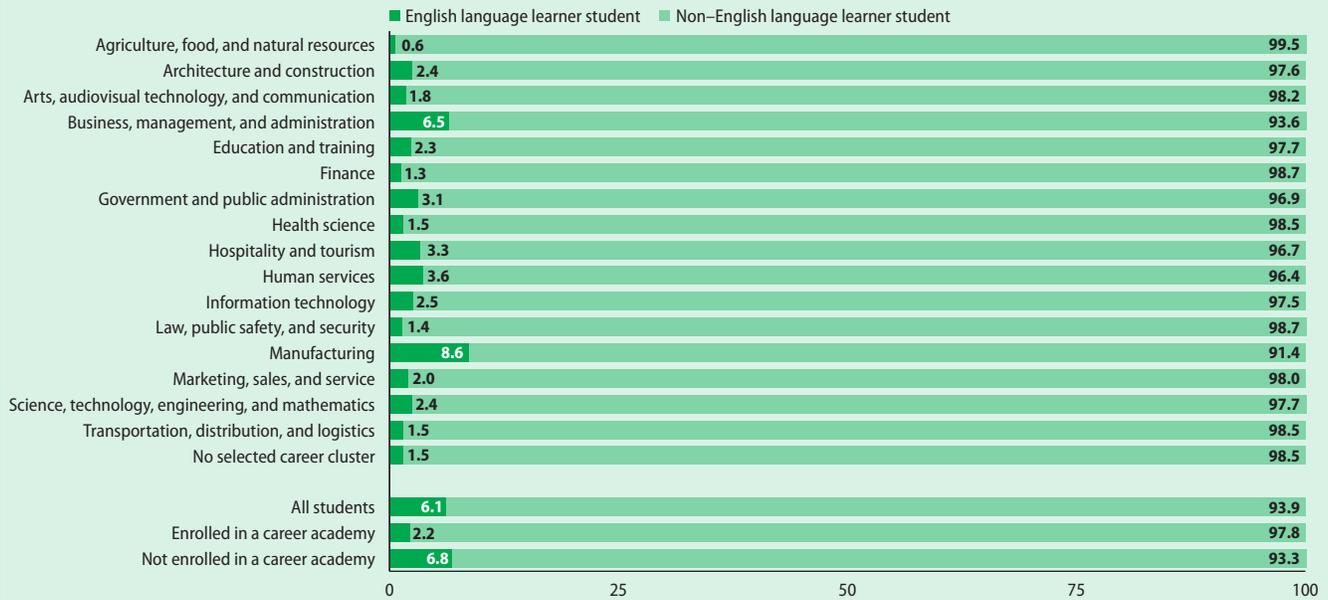
FIGURE B2
Student career academy enrollment in 12 sample Florida school districts, by free or reduced-price lunch eligibility and career academy cluster, 2006/07 (percent)



Source: Authors' analysis based on student data file (Florida Department of Education 2007a).

FIGURE B3

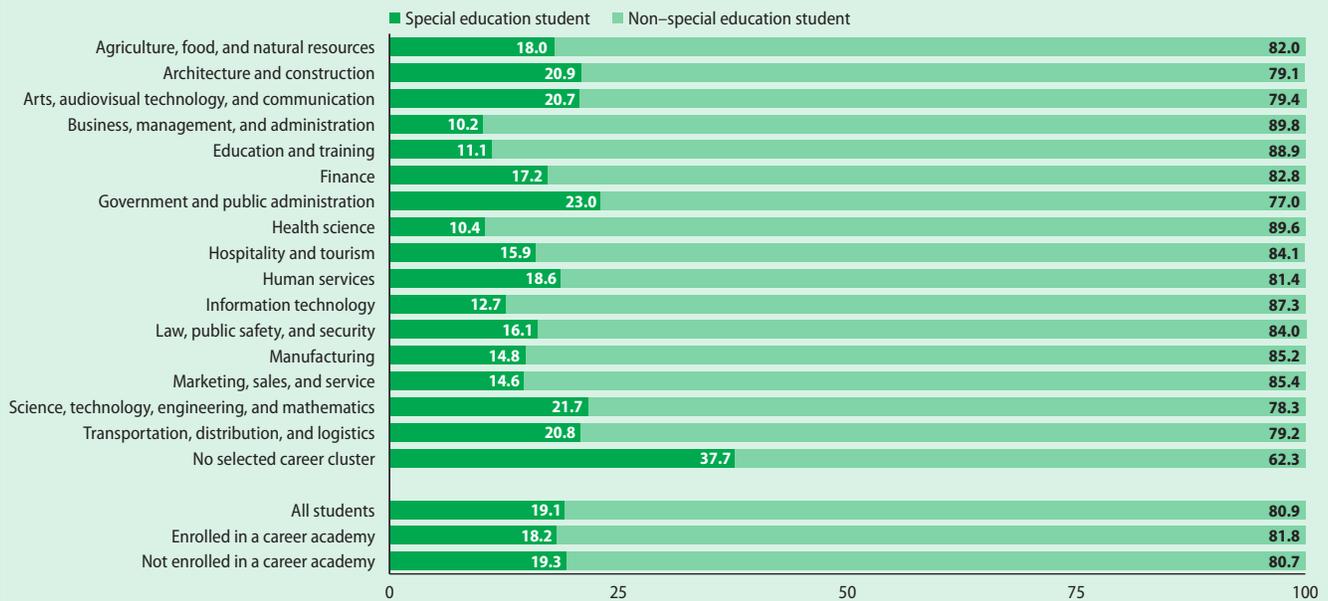
Student career academy enrollment in 12 sample Florida school districts, by English language learner status and career academy cluster, 2006/07 (percent)



Source: Authors' analysis based on student data file (Florida Department of Education 2007a).

FIGURE B4

Student career academy enrollment in 12 sample Florida school districts, by special education status and career academy cluster, 2006/07 (percent)



Source: Authors' analysis based on student data file (Florida Department of Education 2007a).

**APPENDIX C
ANALYZING GRADE 8 FLORIDA
COMPREHENSIVE ASSESSMENT TEST DATA**

This appendix presents grade 8 Florida Comprehensive Assessment Test (FCAT) proficiency levels by career academy structure for the sub-sample of students with valid FCAT scores. The results in the main report were based on 332,010 students. But this appendix reports on 269,127 students—the 81 percent with valid reading and math FCAT scores.⁷ The sample of students with valid FCAT scores differed from the sample of students missing FCAT scores, primarily in the prevalence of English language learner students. Specifically, 3 percent of students with valid FCAT scores were English language learners, compared with 20 percent of students missing valid FCAT scores.

Florida policies provide guidelines on FCAT exemptions for English language learner students and students with disabilities (Florida Department of Education 2005). According to the guidelines, students enrolled in a limited English proficiency

program for one year or less may be exempt from the FCAT. And students who completed grade 8 outside Florida would not have taken FCATs and thus would be missing in the FCAT data file.

Differences in analytic samples warrant caution in interpreting the association between FCAT scores and academy structure. Miami-Dade, with the most English language learner students in the sample, comprises almost 90 percent of wall-to-wall career academies in the study. Because of the policies exempting English language learner students from taking the FCAT, average scores among students in wall-to-wall career academies undercount this population.

But for the sample of students with valid scores, a higher percentage of career academy students was proficient in math and reading compared with their nonacademy counterparts (table C1). Specifically, 68 percent of career academy students were proficient in math (compared with 57 percent of nonacademy students), and 56 percent of students were proficient in reading (compared with 44 percent of nonacademy students).

TABLE C1

Math and reading proficiency rate in 12 sample Florida school districts, by career academy structure, 2006/07

| Enrollment/proficiency rate | Students enrolled in a career academy | | | | | Students not enrolled in a career academy |
|-------------------------------|---------------------------------------|--------|------------------------|-----------------------------|---|---|
| | All students | All | School within a-school | Wall to wall career academy | Missing school structure information ^a | |
| Number of students | 269,127 | 44,154 | 22,040 | 19,123 | 2,991 | 224,973 |
| Percent proficient in math | 59.0 | 68.3 | 67.9 | 68.8 | 68.6 | 57.2 |
| Percent proficient in reading | 46.0 | 55.7 | 53.7 | 58.2 | 54.8 | 44.1 |

Note: Students scoring levels 3, 4, or 5 (on a five-point scale) were considered proficient (achieving at or above grade level; Florida Department of Education 2005).

a. Presence of career academy identified in student data file (Florida Department of Education 2007a) with no corresponding structure information available in Master State Identification data file (Florida Department of Education 2007b).

Source: Authors' analysis based on student data file (Florida Department of Education 2007a).

NOTES

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1. Several federal legislative initiatives are designed to bolster the academic rigor of career and technical education, including the Carl D. Perkins Vocational and Applied Technology Education Act, reauthorized in 1998 and in 2006 (Carl D. Perkins Vocational and Applied Technology Education Amendments of 1998; Carl D. Perkins Career and Technical Education Improvement Act of 2006). The Perkins legislation requires that career and technical education programs receiving federal funding incorporate academics into their curricula. The legislation describes career academies as one of several possible methods for meeting this directive but does not mandate their use or prescribe a focus or structure.
2. At least one school from each sample district received funding through this program.
3. The Florida Department of Education provides many resources to districts in support of this requirement (see http://www.fldoe.org/workforce/careeracademies/ca_home.asp).
4. Nontraditional schools were adult, alternative to expulsion, area vocational/technical centers, department of juvenile justice, hospital/homebound, jails, private/voucher, schools for neglected/delinquent students, special education schools, superintendent's office, university labs, and virtual schools.
5. The school structure variable was missing for 30 of the sample schools with career academies. In six districts, at least one school reported in the student data file was missing data on career academy school structure in the Master School Identification file. In Charlotte and Marion, all schools were missing information on school structure.
6. Locale/urbanicity was initially considered for inclusion as well. But it was ultimately excluded because such an analysis would be driven largely by Miami-Dade, home to almost 90 percent of the sample wall-to-wall academies. Other school characteristics, such as number of staff and accelerated course offerings, were excluded due to lack of data availability or lack of alignment with the research focus. Participation in accelerated course-taking mechanisms in Florida will be addressed in a forthcoming Issues & Answers report.
7. Students were required to have valid data on both math and reading FCAT exams. Sensitivity analyses reveal that this requirement does not change the results.

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