THE IMPACT OF COLLEGE READINESS PROGRAMS ON COLLEGE

CONTINUATION IN GEORGIA: A LOGISTIC AND GLS REGRESSION ANALYSIS

by

MUNDIA JAMES KAHIGA

(Under the Direction of Scott L. Thomas)

ABSTRACT

The purpose of this study was to analyze and explain the variance in patterns of college

continuation rates for Georgia public high schools between the 1999 and 2005 academic years. I

assessed the impact of college readiness programs on high school to college continuation rates in

Georgia public high schools during the study period. I analyzed the variances as they relate to

high schools' participation or non-participation in one or more of seven popular college

readiness programs. College continuation, as used in this study, refers to enrollment of a student

in one of the 33 two-year or four-year institutions of the University System of Georgia (USG)[1]

by the fall semester of the year of high school graduation.

Variances in patterns of college continuation for participating Georgia high schools may

demonstrate, net of all other factors, the extent to which different programs are successful in

their goal of assisting at-risk students' transition to college. Transitioning to college is the first

step towards the ultimate goal of helping participating students attain a college degree.

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[1] Currently there are 35 USG institutions. The Medical College of Georgia does not admit students directly from high school, hence it was excluded. The 35th college, Georgia Gwinnett College, admitted the first students in the Fall 2005; therefore, it is not included in this study.

There were four primary sources of data for this study: Georgia Department of Education data on high schools, USG High School Feedback Reports, National Center of Education Statistics (NCES) Common Core Data reports (CCD) on characteristics of high schools, and the respective administrative sources of college readiness programs.

The study yielded empirical data showing an association between participation in certain college readiness programs and college continuation rates in Georgia, net of all other explanatory factors such as school SES and geographic location. Furthermore, participation yielded different continuation rates for predominantly Black and White high schools, to different categories of University System of Georgia colleges and universities. Recommendations are made based on the findings and implications of the findings to policy and future research.

INDEX WORDS: college readiness programs, college preparation programs, early
                 intervention programs, college continuation.

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DEDICATION

I dedicate this dissertation to my late parents Edith and Justus Kahiga, all my eight

siblings; my children Wacera, Wanja, James Jr., Muya, and Justus; and my wife Agnes

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OVERVIEW

Introduction

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The study yielded empirical data showing an association between participation in certain college readiness programs and college continuation rates in Georgia, net of all other explanatory factors such as school SES and geographic location. Furthermore, participation yielded different continuation rates for Black and White high schools, into the different categories of USG institutions. Based on the findings, specific programs were recommended as models for adoption in predominantly Black high schools.

Background and significance of the problem

The foundation of the 21st century economy is fast transforming into a global, knowledge-based economy from the industrial economy of the previous two centuries (Carnevale & Desrochers, 2003). The United States' competitiveness depends, in part, on its ability to equip citizens with college degrees and experiences that provide the tools necessary to compete in a knowledge-based economy (Callan, Finney, Kirst, Usdan, & Venezia, 2006). However, a segment of the national population, comprised of predominantly ethnic/racial minorities and low-income households, is lagging in the educational attainment necessary to participate in this economy (Perna, 2006, p. 7). Consequently, the educational level of the overall young workforce (ages 24 to 34) in the United States is declining (Organization for Economic Co-Operation and Development (OECD), 2004).

The United States currently ranks fifth among industrialized nations in the educational attainment of the 24 to 34 year-old workforce (OECD). Specifically, although 39 percent of the American population age 25 to 34 attained tertiary education, which includes

associates degrees, this achievement was much higher in Canada (51 percent) and Japan (50 percent). The United States was much closer to a group of countries that include South Korea (41 percent), New Zealand (40 percent), and Norway (40 percent) (Bowen, Kurzwell, & Tobin, 2005). In addition, although the ratio of bachelors degrees awarded to the United States college-age cohort was nearly 34 percent in 2000, "nine other countries also provided a college education to at least one-third of their college-age population" (National Science Board, 2004). Furthermore, between 1972 and 2002 the "absolute number of doctorates awarded to U.S. citizens in all fields declined by more than 5 percent" (Bowen, Kurzwell, & Tobin, 2005). Moreover, the rate of increase in educational attainment for those 25-29 years of age has slowed down from the mid-1970s through the early 1990s (Bowen, Kurzwell, & Tobin, 2005, p. 42).

The State of Georgia ranks poorly among the states in many benchmarks of educational attainment. In "Measuring Up 2006", a comprehensive assessment of higher education in each state by National Center for Public Policy and Higher Education, Georgia scored a "D+" in postsecondary education participation and a "C" in preparation for postsecondary education (National Center for Public Policy and Higher Education, 2006). Educational levels in Georgia lag behind the rest of the nation. While in 2004, 83.9 percent of the U.S. population age 25 years and older had attained at least a high school diploma, only 81 percent in Georgia had. Similarly, only 25.6 percent of Georgians have a bachelor's degree or higher, compared to the national figure of 27 percent (United States Census Bureau, 2005).

Furthermore, Georgia's college participation rate is below the national average. Based on the 2000 census data, Georgia's participation rate for the 18-24-year old population is

27.9 percent (Martinez, 2004, p. 17). This is below the national average participation rate of 34 percent. Rhode Island had the highest participation rate (47.7 percent).

In addition, in 2002, a 9th grader's chance of going to college by age 19 was 31.6 percent. This compares poorly to the national average of 38 percent (National Center for Higher Education Management Systems (NCHEMS), 2007). Further, Georgia's percentage of the total population of 18-64 year olds enrolled in college was 7.7 percent. This contrasts with a U.S. average of 9.4 percent (NCHEMS, 2007).

Georgia also lags behind the national average of 4.5 percent college participation rate for people 25 years old and older. The state's rate was only 3.9 percent (p.104). Based on estimates by Martinez (2004), if the state "continues to provide enough resources to maintain its existing level of higher education services and does nothing else to decrease or increase its participation rate for 18-to 24-year-olds", the consequence would be a "participation gap" of 185,957 by 2015 (p. 22).

Georgia also is among the poorest performing states based on other indicators, including the percentage of young adults earning a high school diploma or General Education Development (GED) certificate. The state ranks 48th in the nation for high school graduation and has one of the lowest performance rates in overall K-12 student achievement. Thus, it is not surprising that Georgia has one of the lowest college participation rates: in 2004, the chance for college enrollment by age 19 was only 32 percent compared with 52 percent in some states (National Center for Public Policy and Higher Education, 2004, p. 7)[2].

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[2] It should be noted, however, that in 2003 Georgia led the nation in degree and certificate completion. However, the United States ranks in the bottom half-16th among 27 countries- in the Organization of Economic Co-operation and Development (OECD). Degree completion represents the percentage of adults with an associate's degree or higher in 2003 (Total Number of Degrees/Certificates Completed per 100 Students Enrolled). Although Georgia leads the nation, the state trails Japan, Portugal, the United Kingdom, Australia, Switzerland, and Denmark (National Center for Public Policy and Higher Education, 2006).

The state's large share of low-income households, as well as ethnic and racial minorities, contributes to the low educational attainment in the state. Ethnic and racial minorities are more likely to be poor than the rest of the population (National Center for Children in Poverty, 2006). Georgia's non-White population is 37.4 percent of the state population. Blacks represent Georgia's largest minority population at 28.7 percent (U. S. Census Bureau, 2003). In fact, based on projections of the U.S. Census Bureau, by 2010 Hispanics will increase from 12.6 percent of the population in 2000 to 15.5 percent in 2010. Blacks are projected to increase from 12.7 percent to 13.1 percent of the U.S. population (U.S. Census Bureau, 2004c).

In Georgia, 40 percent of children live in low-income households (National Center for Children in Poverty, 2006). Generally speaking, their families are also poorly educated. In fact 88 percent (267,615) of children whose parents do not have a high school diploma live in low-income families, and only 24 percent (347,457) of children whose parents have some college or more live in low-income families (National Center for Children in Poverty, 2008). When compared with their peers in other states, Georgia's low-income 8th graders perform very poorly on national assessments in mathematics, which strongly indicates a lack of college readiness (National Center for Public Policy and Higher Education, 2004, p. 5). Significantly, while only 27 percent of Georgia's White children live in low-income households, 59 percent of Black children and 71 percent of Hispanic children live in low-income households (National Center for Children in Poverty, 2008). The low educational attainment for ethnic and racial minorities is reflected particularly in low high school graduation rates.

The 2002 high school graduation rate for African Americans and Hispanics in Georgia was 47.4 per cent and 42.4 per cent respectively. In contrast, the rates for Asians and Whites were 76.6 percent and 63.7 per cent, respectively (Swanson, 2005). Low high school graduation rates are particularly severe among African American males. Of this group enrolled in ninth grade in 1990, only 37 percent graduated from high school in four years (Board of Regents of the University System of Georgia, 2005(BOR)). Notably, only 42 percent of these students had taken the courses necessary for college preparation (BOR).

The disparities in high school graduation rates are increasingly significant as the minority share of high school graduation is projected to increase considerably. The national 2010 graduating class of public high schools is projected to be 40 percent racial/ethnic minorities, an increase from 32 percent in 2002. However, the Georgia 2010 class is projected to be 50 percent racial/ethnic minority. The minority populations are also more likely to be low-income (Swanson, 2004; Western Interstate Commission for Higher Education (WICHE), 2003). If current trends continue, disparities in high school graduation and college continuation can be expected to increase over time.

In such a challenging environment, there is a need for effective college readiness programs in Georgia. "College readiness programs" (also known as early intervention programs) are "programs designed to keep at-risk students in school and to increase the college enrollment rates of educationally and economically disadvantaged students by providing a variety of services"(Cunningham, Redmond, & Merisotis, 2003, p. 6).

Research shows that college readiness programs are designed to address one or more of the following intervention services: counseling/awareness, academic enrichment/support, parent involvement, personal enrichment/social integration, mentoring, and scholarships

(Cunningham, Redmond, & Merisotis, 2003; Gandara & Bial, 2001). Many college readiness programs address the lack of continuation from high school to college by attempting to influence specific factors including financial aid, academic preparation, student and parent aspirations, and access to information about college and the financial aid application process (Alkerhiem, 1998; Cowan, 2002; Kezar, 2001).

The most effective programs provide guidance, high quality instruction, make long-term investments in students, pay attention to the cultural background of students, provide peer support to students, and provide financial assistance and incentives (Thomas, Farrow, & Martinez, 1998). Furthermore, a review of evaluation studies suggests that well designed college readiness programs can double college continuation rates of participants (Gandara & Bial, 2001).

More than 82 percent of all college readiness programs that target low-income students are government funded (56.8 percent federal and 25.8 percent state-funded). Therefore, for the most part college readiness programs are a reflection of public policy efforts to improve high school graduation and college continuation (Swail & Perna, 2000).

This section has so far presented the background and significance of the problem of poor college continuation rates in Georgia and has, therefore, attempted to establish the need for the study. I have synthesized the literature showing that the state ranks below the national average in several benchmarks including, preparation for college, high school graduation, and college participation. Furthermore, the state has a high population of low-income and minority populations. These populations are associated with poor college continuation rates. (A further discussion of these populations is included in Chapter 2). This research was designed to assess the impact of college readiness programs on high school to college

continuation rates in Georgia public high schools during the research period. In the next section, I explain the research questions used to guide the study.

Research questions

Three primary research questions guide this study

1. Net of all other factors, is there a significant difference in continuation rates between Georgia public high schools that participate in specific classes of college readiness programs and Georgia public high schools that do not participate in such programs?

2. With all else equal, are there different patterns of effects in predominantly Black public high schools and predominantly White[3] public high schools?

3. Based on the findings on college continuation rates, are there programs with discernible, specific patterns of success based on target population, design, and operation that can be recommended to develop a model college readiness program for predominantly Black high schools?

High school to college continuation rates for each year, 1999-2000 to 2004-2005, is the dependent (outcome) variable. The key independent variables are participation in a specific group of college readiness programs. Control variables include high school demographic characteristics and geographic location. Demographic characteristics include racial composition and socioeconomic status (SES) of the area served by the high school.

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[3] For purposes of this study, a predominantly black high school was comprised of at least 60 percent Black, non-Hispanic students. Similarly, a predominantly White high school was comprised of at least 60 percent White, non-Hispanic students.

Hypotheses

I based the hypotheses on the research questions in the order given.

H-1: Net of all other factors, there is a significant difference in continuation rates between Georgia public high schools that participate in specific classes of college readiness programs and Georgia public high schools that do not participate in such programs.

H-2: With all else equal, there are different patterns of effects in predominantly Black public high schools and predominantly White public high schools.

H-3: Based on the findings on college continuation rates, there are programs with discernible, specific patterns of success based on target population, design, and operation that can be recommended to develop a model college readiness program for predominantly Black high schools.

Definition of Key Terms

The following terms are used throughout this study.

- College continuation: Enrollment in one of the 33 Georgia state two-year or four-year colleges or universities by the fall semester of the year of high school graduation. (For this purpose, the Medical College of Georgia is excluded since that institution does not admit undergraduate students. Also excluded is Georgia Gwinnett College since it was not yet operational during the period under study.)

- Low-Income Student: For 2004, a low-income family of four had an income of less than $28,275 in all 48 contiguous states, and $35,355 and $32,520 in Alaska and Hawaii, respectively. That income level is defined by the

Department of Health and Human Services as not exceeding 150 percent of

the family income levels established by the Census Bureau for determining

poverty status. The poverty guidelines were published by the U.S. Department

of Health and Human Services in the Federal Register, Vol. 69, No. 30,

February 13, 2004, pp. 7336-7338 (U.S. Department of Education).

- Participation in free and reduced-price lunch program: U. S. Department of

  Agriculture's guideline for participation in the free lunch program requires an

  income equal to the Federal income poverty guideline multiplied by 1.30. For

  reduced-lunch program, it is multiplied by 1.85. In 2004, those income levels

  were $24,505 and $34,873 respectively in the contiguous states; and $43,605

  and $40,106 for Alaska and Hawaii, respectively (U.S. Department of

  Agriculture, 2007).

- Participation (in a high school college readiness programs): Continuous

  enrollment and participation in the activities of a specific classes of college

  readiness program for a minimum of one year, between 1999 and 2005. The

  classes include federal (TRIO), state, or a community-sponsored college

  readiness program (U.S. Department of Agriculture, 2007).

- College Readiness Programs (also known as Early Intervention Programs):

  Programs designed to keep at risk students in school and to increase the

  college enrollment rates of educationally and economically disadvantaged

  students by providing a variety of services designed to develop the skills,

  knowledge, confidence, aspirations, and overall preparedness for college early

  enough in their schooling so as to influence their ultimate educational

attainment levels (Cunningham, Redmond, & Merisotis, 2003; Fenske, Geranios, Keller, & Moore, 1997; Perna, Fenske, & Swail, 2000; Perna & Swail, 2002). This research is based on seven college readiness programs found in Georgia: Governor's Honors Program, Governor's Scholarship Program, High Schools That Work, Joint Enrollment, Talent Search, Upward Bound, and PROBE fairs.

- Governor's Honors Program: Hosted at Valdosta State University, the Governor's Honors Program is a six-week summer instruction program. The program is "designed to provide intellectually gifted and artistically talented high school students challenging and enriching educational opportunities not usually available during the regular school year. Activities are designed to provide each participant with opportunities to acquire the skills, knowledge and attitudes to become independent, life-long learners" (Georgia Department of Education, 2007b).

- The Governor's Scholarship Program: a merit-based scholarship designed "to recognize Georgia's high school Valedictorians and STAR Students and encourage them to attend a public or private college or university in Georgia by providing scholarship funds"(Georgia Student Finance Commission (GSFC), 2007b).

- High Schools That Work (HSTW): Sponsored by the Southern Regional Education Board (SREB), High Schools That Work (HSTW) is a school improvement initiative for high school and middle school leaders and

teachers, using the framework of HSTW Goals and Key Practices to raise student achievement (Southern Regional Education Board, 2007, p. 2) .

- Joint Enrollment (JE): The Joint Enrollment (JE) program allows students to earn dual credit towards high school and college. JE is financed through the ACCEL program with state lottery funds (Georgia Student Finance Commission (GSFC), 2007a).

- Upward Bound (UB): One of the original TRIO programs, Upward Bound provides fundamental support to participants in their preparation for college entrance. The program provides opportunities for participants to succeed in pre-college performance and ultimately in higher education pursuits. Upward Bound serves high school students from low-income families, high school students from families in which neither parent holds a bachelor's degree, and low-income, first-generation military veterans who are preparing to enter postsecondary education (U.S. Department of Education, 2005).

- Talent Search (TS)**:** is a federal TRIO program identifies and assists individuals from disadvantaged backgrounds who have the potential to succeed in higher education. The program provides academic, career, and financial counseling to its participants and encourages them to graduate from high school and continue on to the postsecondary school of their choice. Talent Search also serves high school dropouts by encouraging them to re-enter the educational system and complete their education. To participate in Talent Search (or in any of the TRIO programs), a student must be a

prospective first-generation college student and come from a low-income household (U.S. Department of Education, 2005).

- PROBE High School Fairs: The Georgia Education Articulation Committee, Inc (GEAC) sponsors PROBE fairs. The purpose of GEAC is to disseminate information and stimulate interest in post-secondary education for the students in Georgia. To be eligible for participation in PROBE, participants must be approved by GEAC. Participation is restricted to Georgia-based, non-profit, accredited, post-secondary institutions, colleges, universities, and technical institutions. Accredited non-profit postsecondary institutions located out of state are also eligible to participate in PROBE (Georgia Education Articulation Committee Inc., 2007).

Limitations of the study

This study is limited in that it is designed to draw conclusions about the impact of the college readiness programs without collecting specific continuation data on individual student participants. The school is the unit of analysis and continuation is, therefore, measured at the school level. The study will infer that participation in the programs has an impact on the overall continuation rates within respective public high schools. The study does not provide an analysis of how the programs affect individual students. However, there exists a large body of work on that topic.

In addition, this study is limited to continuation rates into Georgia public institutions. Because the data on private institutions are not readily available, and because over 80 percent of college students in Georgia attend public institutions, data on students who attend private

institutions were not pursued (National Center for Public Policy and Higher Education, 2006). However, in as much as the overwhelming majority (80 percent) of Georgia's higher education is public, an analysis of continuation rates based on public institutions is deemed adequate to gauge the impact of college readiness programs in the state, especially for lower-income students.

Furthermore, as mentioned earlier, this is a study of only seven college readiness programs. However, these are some of the major programs operating in Georgia. There are dozens more programs operating within the state. However, data were not readily available, and in some cases individual programs did not collect any useful data. College readiness programs are sponsored by the state government, federal government, K-12 schools, community, and universities. However, with the exception of university-sponsored programs, at least one program from each type of sponsor was included in this research. Hence, this study focuses on a sample of programs representing almost all types of sponsors.

Organization of the study

This chapter has presented an overview of the study that includes the significance of the problem of college continuation in the nation and in Georgia and the justification for the study. It also has explained the purpose of the study, pertinent research questions and the formation of the hypotheses.

Chapter 2 presents a review of the literature on college continuation in the context of racial/ethnic minority populations including low-income students and possible first-generation graduates. Chapter 3 will outline the procedures and methodology of the study, followed by a discussion of the findings in Chapter 4. Chapter 5 will present a summary,

conclusions and recommendations based on the findings. I now turn to chapter 2: Review of

the literature.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

A vast body of research demonstrates that race/ethnicity, family income, and parental education are strong correlates of college continuation (Alderman, 2002; Ellwood & Kane, 2000; Kane, 2001; Perna, 2000; Thomas & Perna, 2004). Table 2-1 illustrates the disparities in college enrollment by 1992 high school graduates who planned to attend a postsecondary institution after high school. Overall, 97 percent of all high school graduates, and "more than 94 percent of students from all racial/ethnic groups, all family income levels, and all parental education levels said that they planned to attend postsecondary education at some time" (Berkner & Chavez, 1998). Although there are virtually no disparities between the three underrepresented groups (low-income, first-generation college students, and racial-ethnic minorities) and the rest of the population on postsecondary aspirations, there are large disparities in actual college continuation (Freeman, K., 1997; Mickelson, 1990; St. John & Noell, 1991).

Race/ethnicity, family income, and parental education levels, were strong correlates of students' plans to attend college immediately and their actual enrollment immediately or within two years of high school graduation (Alderman, 2002; Berkner & Chavez, 1998; Perna, 2000).These factors demonstrate the apparent disconnect between students' aspirations, expectations, and actual enrollment in college. College readiness programs

provide intervention services that are aimed at increasing college enrollment for

underrepresented groups (Horn, L. 1997).

Table 2-1

Percentage of 1992 high school graduates who planned to attend postsecondary education after high school, percentage that enrolled in postsecondary education by October 1992 and by 1994 and the percentage enrolled by 1994 of those who planned to attend immediately after high school, by background characteristics (Berkner & Chavez, 1998, p. 17)

	PLANNED EVER TO ATTEND PSE*	PLANNED TO ATTEND PSE* IMMEDIATELY AFTER HIGH SCHOOL	TOTAL ENROLLED IN PSE* IN OCTOBER 1992	TOTAL ENROLLED IN PSE* BY 1994	PLANNED TO ATTEND PSE* IMMEDIATELY AFTER HIGH SCHOOL: ENROLLED BY 1994
Total	96.8	79.4	65.3	75.2	88.6
Race/ethnicity					
Asian	98.1	84.1	78.1	86.2	93.8
Hispanic	97.2	76.4	57.6	70.6	84.3
African American	96.4	78.1	59.5	71.3	83.6
White	96.7	79.7	66.5	75.9	89.6
Family Income					
Low(less than $25,000)	94.3	70.4	53.0	63.5	83.0
Middle ($25,000-$74,999)	97.4	81.8	69.3	79.3	89.8
High($75,000 or more)	99.3	92.4	86.9	93.1	96.2
Parents Education					
High School or less	94.1	67.7	47.2	59.0	78.1
Some college	96.4	78.4	64.3	74.7	88.1
College graduate	99.3	90.6	85.3	92.5	95.9

*Postsecondary education.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS: 88), Data Analysis System.

Disparities in college continuation among underrepresented groups have persisted even as progress in this area has been registered in the overall population. For example, in 1999, the percentage of students enrolling in college immediately after high school graduation was still lower for underrepresented student populations — 49 percent for low-income students, 59 percent for African–American students, and 42 percent for Hispanic students. In contrast, 76 percent of high-income students and 66 percent of White students continued on to college upon graduation (Cunningham, Redmond, & Merisotis, 2003, p. 5).

In fact, research shows that between 1960 and 1999, the gap in college continuation between the low- and high-income populations remained unchanged. In both 1960 and 1999, that gap remained at approximately 30 percentage points (Gladieux & Swail, 1999). This continued disparity is occurring at a time when the benefits of higher education are becoming increasingly important to the individual and society.

Benefits of higher education

In order to compete in today's global economy, it is necessary for individuals to acquire a college education. Moreover, a college-educated labor force is necessary if the nation is to remain competitive in the global marketplace. In fact, the need for skills to compete in the workforce and to succeed in a technologically advanced economy is ever increasing. At the same time, jobs that a generation ago required only a high school diploma now often require a college degree (Baum & Payea, 2004; Jackobson, Olsen, Rice, Sweetland, & Ralph, 2001).

As the economy becomes more technologically integrated, jobs require advanced skills. For example, six out of every ten jobs in America's fastest growing economic sectors depend on training that requires at least an Associates or a Bachelor's degree (Carnevale & Desrochers, 2003; U.S. Department of Labor, 2004). This training requires a strong foundation in primary and secondary education.

According to Hecker (2001), the economy has shifted from the industrial economy to a knowledge economy. For example, six out of every ten jobs in our economy's fastest growing sectors depend on training that requires at least an Associates or a Bachelor's degree. It is expected that the employment shifts experienced during the latter half of the 20th century will continue to increase throughout the decade. Indeed, "at all education levels, turnover in existing jobs will continue to create many job openings, but new job growth will favor those with the most education. Jobs that require an associate degree are expected to grow the fastest, increasing by 32 percent through 2010, followed by jobs that require a bachelor's degree, growing by 24 percent. All totaled, four out of ten newly created jobs (9.3 million) will require at least some postsecondary education, up from less than three in ten in 2000" (Hecker, 2001). Hence attaining a college degree today has become a necessity.

In this fast-changing environment, it is important to examine the benefits of higher education. Economists classify the benefits of higher education into two categories: individual (private) benefits and social (societal) benefits.

Individual (Private) benefits

Individual benefits are both monetary and non-monetary (Mortenson, 2003). Indeed, overall, the positive consequences of higher education to the individual include cognitive

learning, emotional and moral development, as well as practical competence for family life, in consumer behavior, in leisure, and in health (Bowen, Kurzwell, & Tobin, 2005, pp. 61-218).

McMahon (1974) estimated that when both monetary and non-monetary benefits are combined, the expected rate of return to students on their educational investment is 22 percent (McMahon, 1974 in Bowen, 1996, p 441). The expected benefits include enhanced income, job satisfaction, service to society, and service to the next generation through more competent rearing of children. McMahon estimated the expected monetary rate of return alone for men and women at 14.5 and 7.5 percent, respectively (p. 441).

To the individual, the monetary benefits are clearly evident. As observed by Murphy & Welch (1989), "the evidence for a positive association between schooling and earnings is so strong that it is impossible to ignore the role of education in systematic studies of individual earnings"(Murphy & Welch, 1989, p. 17). For example, in 2003, the average earnings of a full-time worker with a college degree were 62 percent higher than those of a high school graduate (Baum & Payea, 2004, pp. 10-11). With the exception of a brief period in the 1970's when the returns on a college degree as indicated by the earnings appeared to drop (Freeman, R. B., 1976), this trend has persisted. In fact as noted by Murphy & Welch (1989), "the erosion in the economic incentives for a college degree ... (was) a predictable consequence of a phenomenal increase in numbers of college graduates that coincided with the entry of the baby boomers into the job market … and was a temporary break in a general pattern of increasing returns" (p.18).

Otherwise, there is evidence that this "earnings premium" has been rising over the years (Bound & Johnson, 1992; Mishel, Bernstein, & Schmidt, 1997; Murphy & Welch,

1989). According to the College Board (1999) the premium has grown from 1979, when college graduates earned 55 percent more than high school graduates to 60 percent in 1980, 69 percent in 1985, 75 percent in 1990, and 77 percent in 1997 (College Board, 1999).

Furthermore, it is estimated that a typical bachelor's degree recipient can expect to earn about 73 percent more over a 40-year working life than the typical high school graduate earns over the same time period (Baum & Payea, 2004, p.3). Table 2-2 shows the 2005 average annual earnings by education level. The table displays strong evidence of the individual monetary benefits accruing from higher education. For example, adults with bachelor's degrees earned an average of 79 percent more than those with only high school-level credentials.

Table 2-2
Average annual earnings of adults: United States, 2005

EDUCATION LEVEL	EARNINGS	PERCENT BY WHICH EARNINGS EXCEED HIGH SCHOOL OR GED EARNINGS
Professional degree	$ 119,300	276
Doctoral degree	$ 93,600	195
Master's degree	$ 68,300	115
Bachelor's degree	$ 56,700	79
Associate's degree	$ 39,700	25
Some college, no degree	$ 37,100	17
High school diploma or GED credential	$ 31,700	

Source: U.S. Census Bureau (Adapted from SREB, 2007).

Economists have estimated private rates of return to investments in higher education (Becker, 1975; Cohn & Geske, 1990; Johnes, 1993; Perlman, 1973). One method for determining private rates is the internal rate of return (IRR). IRR is the rate determined after correcting costs of education to current dollars through compounding, thereby calculating the

interest or discount rate that would set the earnings value equal to the cost value (Leslie & Brinkman, 1988, p. 45). A common benchmark for the IRR comparison is the returns on the stock market of 10 percent (p.46). From the 1950 census data, Becker (1975) estimated a private rate of return from the baccalaureate degree at 13 percent, a return he attributed directly to human capital improvement resulting from college attendance (Becker, 1975).

Leslie and Brinkman (1988) performed a meta-analysis of yields of IRR for higher education from numerous studies. They found that the IRR on education ranges from 11.8 to 13.4 percent (p 45-48) and concluded that the rates "justify additional investment in education for almost everyone" (p.68). In fact, more recent meta-analysis put the IRR at 9.5 to 14.5 (Paulsen, 1998).

Another method estimates the dollar amount or percent of increase in earnings as a result of an additional unit of college education, such as one year (Mincer, 1974, 1993). The method, known as the Mincerian earnings functions, is used to estimate returns on higher education (Arai, 1998; Carnoy, 1995; Johnes, 1993). Using this method, Kane & Rouse (1995) found that one year academic credits at a four-year institution increases annual earnings by 6 to 9 percent (Kane & Rouse, 1995). For graduates of a community college who never attended a four-year institution, Kane & Rouse (1999) estimate that they earn 9 to 13 percent more than high school graduates with similar characteristics (Kane & Rouse, 1995, 1999). On average, one-year of credit at a community college increased earnings by 5 to 8 percent (Grubb, 1995; Kane & Rouse, 1995). Indeed a study of 298 identical twins by Ashenfelter & Krueger (1994) estimated that a year of education increases earnings by 12 to 16 percent (Ashenfelter & Krueger, 1994).

It should be noted that the correlation between higher levels of education and higher earnings applies to all racial/ethnic groups and to both men and women. The income gap between high school graduates and college graduates is high enough for graduates to recover both the cost of full tuition and fees and earnings forgone during the college years in a relatively short period of time (Baum & Payea, 2004). It is evident "any college experience produces a measurable benefit when compared with none" (p. 7).

However, an individual's perception of potential benefits from higher education is influenced by his or her experiences. Some experiences and background may lead to an individual perception of lower benefits and therefore lead to a reluctance or inability to invest in higher education. Paulsen (2001), observed that:

> "... an individual's academic ability, socioeconomic and family background, the quality of pre-college and college-level schooling, and discriminatory experiences are examples of features of a student's background, experiences and environment that can result in individual differences and inequalities in the marginal benefits of an investment in college. Because differences in these and other aspects of each individual's unique decision-making context result in individual differences in the marginal benefits of college investment, these differences manifest themselves in the form of different demand curves in the market for human capital"(Paulsen & Smart, 2001, p. 74).

Viewed from an economic analysis standpoint, these characteristics would shift the demand curve for human capital to the left[4]. Hence, "in order to shift the demand curve for human capital to the right for low-income and first-generation college students, increased funding of … mentoring and early intervention programs would be necessary" (p. 83).

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[4] The demand curve is a "graphical representation of the demand schedule; a negatively sloped line showing the inverse relationship between the price and quantity demanded. (other things being equal) (Miller, 2008). The demand curve can shift to the right (increase) or to the left (decrease) as a result of non-price determinants of demand, such as income, tastes and preferences, price of related goods, population, and expectations.(p. 57-61). In the case of demand for human capital an individual's academic ability, socioeconomic and family background, the quality of pre-college and college-level schooling, and discriminatory experiences are examples of features of a student's background, experiences and environment that can result in a shift of an individual's demand curve. Negative characteristics would shift the curve to the left thereby reducing the individual's overall demand.

In a synthesis of literature on human capital, Paulsen notes that the marginal benefits (rates of return on higher education) "and therefore student demand for human capital, might be greater for some students if they received detailed advice and accurate information regarding the trends in salary differentials between graduates of different colleges, the most financially profitable fields in which they might major, and the important role and influence of academic achievement …" (p.85).

Research shows that financial aid is not enough to stimulate college continuation, especially for the underrepresented population groups which include ethnic minorities, low-income and first-generation students. In fact, Gladieux and Swail (1999) noted that "enrollment and success in higher education are clearly influenced by many factors including prior schooling and academic achievement, the rigor and pattern of courses taken in secondary school, family and cultural attitudes, motivation, and awareness of opportunities…"(Gladieux & Swail, 1999). Hence, there is a need for college readiness programs that can influence college-going aspirations (Fenske, Geranios, Keller, & Moore, 1997; Gladieux & Swail, 1999; Levine & Nidiffer, 1996).

Social (societal) benefits

Societal (social) benefits of higher levels of education include lower levels of unemployment and poverty, which lead to a lower probability of dependence on government assistance. In addition, college graduates have lower smoking rates, more positive perceptions of personal health, lower incarceration rates, higher levels of civic participation (volunteer work, voting, and blood donation), and higher tax payments (Baum & Payea, 2004, pp. 16-25).

In fact, Martinez's (2004) analysis of the United States 2000 state-by-state decennial census data shows that states that "successfully enroll a large percentage of 18-to 24-year olds in postsecondary education also tend to have high levels of educational attainment in the adult population, high degree completion, high percentage of people voting, and low rates of poverty"(Martinez, 2004, p. 11). Those states that enroll a large percentage of students 25 and older tend to have "high levels of educational attainment in the adult population, high median family income, and a low percentage of people with less than a high school credential" (p. 11).

Bowen (1996) documented several probable social changes as a result of these societal benefits. The changes include society's greater openness to change; participation and involvement of citizens in public affairs; the transmission of elements of academic ethos; efficiency and growth of the economy; increase in volunteer service; international understanding; and diffusion of the style of life, the tastes, and the behavior patterns of college-educated people into the wider society. Higher education also promotes research, public service, and progress towards human equality (Bowen, Kurzwell, & Tobin, 2005, pp. 271-287).

Leslie's and Brinkman's (1988) research on the social rate of return indicate that societal expenditure on higher education is justified. The social rate of return from higher education reflects "the private costs of and the benefits to those who participate in higher education plus the associated costs and benefits paid and received by others" (Leslie & Brinkman, 1988, p. 75). For example, from the 1950 census data, Becker (1975) estimated a public rate of return at 12.5 percent (Becker, 1975).

From a meta-analysis of research in the area of social rate of return, Leslie and Brinkman determined the rate to be 11.6 to 12.1 percent (pp.72-74). Again, the social rate of return is higher than a common benchmark of a 10 percent return on the stock market (p.46).

Another important social benefit is the role higher education plays in fostering economic growth by promoting human capital. Human capital consists of the "acquired energy, motivations, skills, and knowledge possessed by human beings, which can be harnessed over a period of time to the task of producing goods and services. This may include abilities acquired through…colleges and graduate professional schools"(Douglass, 1996, p. 362). Indeed, Becker (1993) posits that education and training are the most important investments in human capital (Becker, 1993, p. 17). Investment in human capital plays a role similar to investment in physical capital – "all manufactured resources, including buildings, equipment, machines, and improvements to land that is used for production"(Miller, 2008, p. 28) – in promoting economic development. For instance, it is estimated that increasing a country's average level of schooling by one year can increase economic growth by approximately 5 to 15 percent (Krueger & Lindahl, 1999 in Carvanale & Desrochers, 2003, p. 7).

Table 2-3 is a summary of the benefits of higher education to society and to individuals as discussed in this section.

Table 2-3
Benefits of higher education

BENEFITS		PRIVATE(INDIVIDUAL)	PUBLIC (SOCIETAL)
Economic	Personal Income	Higher salaries and benefits Higher savings levels	Increased tax revenues Increased consumption
	Employment	Lower chance of unemployment	Greater productivity, less unemployment
Social	Health	Improved health/life expectancy	Increased quality of civic life
	Volunteering	More hobbies, leisure activities	Increased charitable giving/ community service
	Voting	Increased civic involvement	Increased quality of civic life

Source: Adapted from Institute of Higher Education Policy, 1998, p. 20 (SREB, 2007) (Institute of Higher Education Policy, 1998).

Disparities in college continuation

Ironically, at a time when a college degree is increasingly vital to individual and societal well-being, it is significant that participation by the traditionally underrepresented population groups (i.e., low-income families, and potential first-generation college students, mostly minorities) continues to lag behind the majority population. The result is pronounced disparities in college participation between ethnic/racial minorities and the rest of the population.

Furthermore, minorities, mostly Hispanic and Black, are the fastest growing segments of the U.S. population.[5] In addition, the minority share of high school graduates is projected to increase significantly, thus potentially exacerbating this state of affairs. In Georgia, 50 percent of the 2010 graduating high school class is projected to be comprised of minorities, and reaching to approximately 55 percent by 2013-14. Hispanics, the fastest growing

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[5] Based on projections of the U.S. Census Bureau, by 2010 Hispanics are expected to increase from 12.6 percent of the population in 2000 to 15.5 percent in 21010.   Blacks are projected to increase from 12.7 percent to 13.1 percent of the U.S. population (U.S. Census Bureau, 2004c).

segment, is projected to grow from 3.1 percent of the high school graduates in 2002, to 17 percent in 2014. (Black graduates are projected to remain at 33 percent through 2014) (Western Interstate Commission for Higher Education (WICHE), 2003).

The disparities are well illustrated, particularly when the college population is compared with the overall national population. For example, in 2000, 14 percent of the national 18 to 24-year-old population was Black and 15 percent was Hispanic. In contrast, among students enrolled in four-year colleges, only 10 percent were Black and only 10 percent were Hispanic (Choy, 2002, p. 9). As illustrated in Table 2-1, disparities in college participation can be traced to low continuation rates for high school graduates.

Researchers cite several reasons for the poor continuation rates for racial/ethnic minorities and low-income populations. They include poor high school graduation rates for ethnic/racial minorities (Swanson, 2004), potential first generation college students; inequalities in social and cultural capital; a lack of aspirations; incongruities between students' aspirations and actual college enrollment; and other social factors such as, the "burden of acting white" as perceived by some Black students. These areas are discussed in the sections that follow.

Poor High School Graduation Rates for Underrepresented Population Groups: First-generation, low-income, and ethnic/racial minorities

Poor college continuation is associated with poor high school graduation rates for ethnic-racial minorities. The overall graduation rate for Georgia's high school class of 2002 was a 57.6 percent, significantly lower than the national rate of 68 percent (Swanson, 2004, p. 38). Not surprisingly, Georgia's rates for Blacks, Hispanics and American Indians were

lower at 47.4 percent, 42.4 percent, and 32.7 percent, respectively (p.3). In contrast, the graduation rates for Asians and Whites were 76.6 and 63.7 percent, (p.3). As mentioned, Georgia's high school graduation class of 2014 is projected to be 55 percent minority (Swanson, 2004; WICHE, 2003). Because many minority students also come from a low-income family background in which neither parent attended college, if current trends continue, future disparities in high school graduation and college continuation can be expected to increase.

Studies on students' family background show that a key predictor on the decision to attend college is whether the parents attended college or not. Students whose parents did not attend college are clearly at a disadvantage (Blakemore & Low, 1983, October; Hossler, D., Schmit, & Vesper, 1999; Kodde & Ritzen, 1988; Manski & Wise, 1983; Savoca, 1990). College students and would-be college students whose parents did not attend college, also known as first-generation college students, represent 27 percent of all graduating high school students (Gibbons & Shoffner, 2004). The federal government defines a first generation college student as "an individual neither of whose natural or adoptive parents received a baccalaureate degree; or a student who, prior to the age of 18, regularly resided with and received support from only one natural or adoptive parent and whose supporting parent did not receive a baccalaureate degree" (U.S. Department of Education, 2005). They are more likely to be Black or Hispanic and to come from low-income families than their peers whose parents were college graduates (Chen & Carroll, 2005).

These students are generally less prepared academically because, on average, they take fewer higher-level mathematics courses in high school, have "lower senior achievement test scores, and lower college entrance examination scores (Chen & Carroll, 2005). They also

are likely to delay postsecondary entry, begin at a two-year institution, and attend part-time and discontinuously" (Chen & Carroll, 2005). First-generation students are less likely than their peers to participate in academic activities that lead to college enrollment (Horn L., Nunez, & Bobbitt, 2000). During their first year in college, first-generation students are characterized by high attrition rates that are 71 percent higher than that of students with two college-educated parents (Ishintani, 2003). Furthermore, because of the disadvantages faced by first-generation students, many college readiness programs target this group.

It should be noted, however, that some research indicates that if first-generation students attain bachelor's or associate's degrees, they earn comparable salaries and are employed in similar occupations as their non-first-generation peers (U. S. Department of Education, 1998). As a result of acquiring a college degree, these students can increase their earning potential and eventually rise above the poverty environment in which they may have been raised.

First-generation students, mostly minorities, are also disproportionately represented among the low-income populations. For example, in 2003 the median income for white families with children under 18 years old was $61,970; for black families it was just $30,547, and for Hispanic families it was $32,073 (U.S. Census Bureau, 2004a in Bowen (2005) p. 76). At the same time, while in 2003 only 8.9 percent of white families with children under 18 years old and 10.9 percent of Asian American families with children under 18 were below the poverty threshold; 28.6 percent of black families and 25.2 percent of Hispanic families lived in poverty (U.S. Census Bureau, 2004b in Bowen (2005) p. 76). This is important because data show that poor students are likely to attend poorly-funded schools; schools that are under-funded relative to their more affluent counterparts, and are more

likely to be located in inner cities, with a predominantly minority student population

(National Center for Education Statistics, 2004 in Bowen et al.(2005), p78-79).

     According to the U.S. Census Bureau, 12 percent of Georgia families were classified

as living in poverty in 2004 (a three-year average) (U. S. Census Bureau, 2005). In 2004, a

low-income family of four earned $28,275 in all 48 contiguous states, including Georgia. The

National Center for Children in Poverty shows that 40 percent of children in Georgia live in

low-income households (National Center for Children in Poverty, 2006). Often, these

families also are poorly educated. Data show that 83 percent of the poor children have

parents who do not have a high school diploma or GED; and only 24 percent of the poor

children have parents with any postsecondary education (National Center for Children in

Poverty, 2006).

     As noted, children from poor families are also likely to attend schools in which a

large percentage of students are also poor. For example, research by Bowen, et al. (2005)

found that in 1988 eighth graders with family incomes below $20,000 who lived in urban

areas attended schools where 47 percent of students received free or reduced-price lunches

(Bowen, Kurzwell, & Tobin, 2005, p. 77). Indeed, the findings of this research show that in

Georgia, the average mean participation rates in free or reduced-price lunches is 58 percent

for predominantly Black high schools; while it is only 24.9 percent in predominantly White

schools Tables 4-10 and 4-12). The average for all schools is 37.1 percent (see Table 4-5).

     Yet, research by Berkner (1997) shows that when high school graduates from low-

income families and low educational levels meet minimum admission qualifications they are

admitted at the same rate as students from middle-income families. More than 83 percent of

such students attend four-year institutions. However, colleges expect applicants to take a

college entrance examination, and to submit an application for admission. It is estimated that moderate- to high-risk students who participate in college outreach programs can increase their rate of enrolling in a 4-year college nearly two-fold (Berkner & Chavez, 1998; Horn, L., 1998). Examples of services provided by the programs include counseling, academic enrichment and support, encouraging parental involvement in students' education, personal enrichment, mentoring, and scholarships. As noted, there is an overlap among first-generation, low-income, and ethnic/racial minorities in these statistics.

Georgia's non-White population is 37.4 percent of the entire population. Blacks represent the largest minority population at 28.7 percent (U.S. Census Bureau, 2004b). Ethnic minorities are more likely to be poor than the rest of the population. According to the National Center for Children in Poverty, 27 percent of Georgia's White children live in low-income households. In contrast, 55 percent of Black children and 74 percent of Hispanic children live in low-income households (National Center for Children in Poverty, 2006).

In 2004, Georgia ranked 24th among states with a median household income of $43,037 compared to a national median of $44,684 (U. S. Census Bureau, 2005). In addition, while the 1999 median family income in the U.S was $50,046, it was only $33,255 for Black families (McKinnon, D., & Bennett, 2005).

These factors contribute to the fact that educational attainment for Georgia lags behind that of the United States. While the 2004 U.S. population age 25-years-old and older with at least a high school diploma is 83.9 percent, it is only 81 percent in Georgia. Similarly, only 25.6 percent of Georgians have a bachelor's degree or higher, compared to the U.S. figure of 27 percent (U. S. Census Bureau, 2003).

Social and cultural capital

Researchers associate low college continuation with inequalities in social and cultural capital. Bourdeau (2007) described social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationship of mutual acquaintance and recognition –or in other words, to membership in a group-which provides each member with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit…" (Bourdieu, 2007, p. 88).

According to Coleman (1988), social capital may take the form of information-sharing channels and networks, as well as social norms, values, and expected behaviors (Coleman, 1988, pp. 101-105). Social capital is related to relations among persons (Freeman, K., 1997). In fact, social capital is attributed to parental involvement with their children's education between 8th and 12th grade. This involvement is related positively to college enrollment (Kim, 2005; Perna & Titus, 2005).

The problem of poor college continuation is also related to the absence of "high level" cultural capital, defined as "a system of factors derived from one's parents that defines one's class status" (Bourdieu & Passeron, 1977). Researchers note that society's members of the dominant class possess the most economically and symbolically valued kinds of cultural capital (Bourdieu & Passeron, 1977 in Perna, 2003, p. 607; McDonough, 1997). DiMaggio and Mohr (1985) found that "interest in and experience with prestigious cultural resources (cultural capital) in high school has a significant impact on many aspects of the educational…attainment" (DiMaggio & Mohr, 1985, p. 1233).

According to Bourdieu (2007), cultural capital can exist in three forms:

> "in the *embodied* state*,* in the form of long-standing dispositions of the mind and body; in the *objectified* state, in the form of cultural goods (pictures,

books, dictionaries, instruments, machines, etc.), which are the trace of realization of theories or critiques of these theories, problematic, etc.; and in the *institutionalized* state, a form of objectification which must be set apart because, … it confers entirely original properties on the cultural capital which it is presumed to guarantee" (p.84).

Cultural capital has a strong positive influence on additional educational attainment and college attendance, and especially more so for children of moderately educated fathers (DiMaggio & Mohr, 1985, pp. 1239-1249). Research indicates that individuals with low-level cultural capital may (a) lower their educational aspirations or self-select out of particular situations, (e.g., not enroll in higher education) because they do not know the particular cultural norms; (b) over-perform to compensate for their less valued cultural resources; or (c) receive fewer rewards for their educational investment (Bourdieu & Passeron, 1977; Lamont & Lareau, 1988). In fact, Bourdeau (2007) posits that the understanding of cultural capital can complement economists' understanding of educational investment. Economic studies of "relationship between academic ability and academic investment show they are unaware that ability or talent is itself the product of an investment of time and cultural capital" (p. 85).

Indeed, social and cultural capital are similar to human and physical capital resources because they can be invested to increase profitability (Bourdieu & Passeron, 1977). They can also be used to increase productivity (Coleman, 1988) and help increase upward mobility (DiMaggio & Mohr, 1985; Lamont & Lareau, 1988). However, the amount of social and cultural capital and the ability to convert the capital into educational attainment depends on social class and race/ethnicity (Arnold, 1993; Lareau, 1987; Orfield, 1988; Perna, 2000; Wells & Crain, 1994).

Habitus

Karen (2003) attributed low continuation rates of minority students to a lack of aspirations due to what Bourdieu (1973) termed "habitus", defined as "a system of lasting, transposable dispositions which, integrating past experiences and actions, functions at every moment as a matrix of perceptions, appreciations, and actions" (p 83). The task of educators is to reorient students' habitus. One objective is to reorient the students of low socio-economic status (SES) background from "automatic assumptions about their exclusion from postsecondary education" (p. 6). Karen (2003) concluded that "having high-aspiring friends and parents seems to produce increased access for at-risk students, especially in so far as it increases the likelihood of applying to college . . . , (which) suggests that a reorientation of a student's habitus, i.e. the social context of her/his ambition, rather than simply changing an isolated, seemingly independently varying attitude is a key factor" (Karen, 2003).

College readiness programs can be designed to offer mentoring programs aimed at exposing at-risk students to role models with high achievements. In this study, Talent Search and Upward Bound programs provide some mentoring services (U.S. Department of Education, 2005).

Black students: the "burden of acting white".

Ogbu (2007) posited that Black students' poor educational performance can be attributed to oppositional culture (or the resistance model). He used the concept of oppositional culture to explain the racial disparities in school performance. Oppositional culture has its roots from the era of slavery when Blacks crafted a "collective identity" to deal with status problems of involuntary incorporation into society, instrumental

discrimination, social subordination, and expressive mistreatment. These attitudes originated

with status problems similar to problems experienced during slavery (Ogbu, 2007, pp. 355-

373). Consequently, contemporary Blacks "respond collectively … in ways that reinforce

their separate existence and collective identity" (p. 357). They develop an "oppositional

identity" as opposed to the collective identity of the dominant group[6].

   Ogbu (2007) drew a parallel of the current oppositional attitudes of Black students

and their response status problems to that of the pre-emancipation period, after emancipation,

post-civil rights era, and up to the present time. Blacks are ambivalent in that they feel the

pressure to conform to the dominant White culture, which is different from the collective

Black culture, in order to succeed in their careers. At the same time, Blacks feel the pressure

to conform to their collective identity, hence the "burden of acting White". Blacks cope with

the "burden of acting White" through assimilation or emulation of Whites, accommodation

without assimilation, resistance or opposition, or through encapsulation (p.368-370).

   At school, Blacks experience similar pressure to conform to White culture while

maintaining "oppositional collective identity and frames of reference characteristics, as

members of their community" (p. 373). In fact Fordham & Ogbu (1986) observed that "one

major reason Black students do poorly in school is that they experience inordinate

ambivalence and affective dissonance in regard to academic effort and success"(Fordham &

Ogbu, 1986, p. 117). According to Ogbu & Simmons (1998), while Black students are not

opposed to good grades, "what they reject that hurts their academic performance are 'White'

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[6] It should be noted that oppositional identity is not predominant in immigrant minorities. Ainsworth-Darnell & Downey (1998) observed that immigrant minorities "tend to compare their condition to that of relatives in their homelands, and because this comparison is usually favorable, they develop optimistic attitudes regarding both their chances for success in the new country and the payoff for efforts aimed at promoting achievements. In comparison, involuntary minorities are in psychologically vulnerable position; their members did not migrate with an expectation to improve their condition, but were incorporated into society against their will" (Ainsworth-Darnell & Downey, 1998, p. 536).

attitudes and behaviors conducive to making good grades". Examples include speaking in standard English, enrollment in Honors and AP classes, being smart during lessons, and having too many White friends. Alternatively, students may feel the peer pressure to engage in other legal and illegal activities. For example, research by Ogbu & Simmons (1998) found student coping activities such as working too many hours, selling drugs, smoking weed, cutting classes "to hang out with friends and to believe that school does not matter"(Ogbu & Simmons, 1998 in Ogbu (2007) p. 373).[7]

College readiness programs can be an effective method for helping students focus on academic activities and help them cope with the burden of "acting White". For example, one high school (Shaker Heights) formed a "Minority Achievement Committee Scholar" (MAC Scholars) to help students resist peer pressure in order to excel academically (Ogbu, p. 373).

Aspirations and actual college enrollment

Low college continuation rates can be attributed to the incongruity between students' aspirations and actual college enrollment. Many students with early college aspirations do not enroll upon graduation. Some research demonstrates that these decisions are made by the ninth grade (Hossler, D., & Stage, F., 1992). However, about 25 percent of those with college aspirations in middle school and high school do not realize them (McDonough, 2004, p. 1).

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[7] However, research by Bergin & Cooks show that the need for racial solidarity depends on the racial make-up of a high school. Racial minorities "in predominantly White schools are less likely to be accused of acting White at school"… while high achieving students of color in racially balanced schools appear most likely to be accused of acting white because their enrollment in advanced classes puts them in constant contact with white students.."(Bergin & Cooks, 2002, p. 131).

At the same time, aspirations vary directly with socioeconomic status (SES) (Hossler, 1999). Research by Cabrera and LaNasa (2000b) found that to enroll in college a student must complete three critical tasks: "acquiring the necessary academic qualifications for college work, securing a high school diploma, and applying and enrolling in a four-year institution of higher education" (p.23). In addition, taking math courses correlates with turning college aspirations into enrollment (Useem, 1992; Zulli, Frierson, & Clayton, 1998). Significantly, for students from low SES backgrounds who accomplished the three tasks, "their chances of enrolling in a four-year institution improved dramatically to the point of closely resembling the national average and the rate for the highest-SES students" (Cabrera & La Nasa, 2000b, p. 25) College readiness programs that emphasize these tasks are likely to increase continuation for low SES students (Cabrera & La Nasa, 2000a, p. 42), thereby helping close the gap between aspirations and actual enrollment.

College readiness programs

College readiness programs (also known as early intervention programs) are designed to keep at risk students in school and to increase the college enrollment rates of educationally and economically disadvantaged students. They provide a variety of services designed to develop the skills, knowledge, confidence, aspirations, and overall preparedness for college early enough in their schooling so as to influence their ultimate educational attainment levels (Cunningham, Redmond, & Merisotis, 2003; Fenske, Geranios, Keller, & Moore, 1997; Perna, Fenske, & Swail, 2000).

The origins of college readiness programs can be traced to the federally-funded TRIO programs which were established during the "War on Poverty" begun during the

administration of President Lyndon B. Johnson. The programs were aimed at helping

disadvantaged students prepare to enter higher education institutions. Two-thirds of

participants in TRIO programs are required to come from low-income families. Upward

Bound (UB), the first of the TRIO programs and one of six currently available TRIO

programs, was established in 1964. UB provides after school, Saturday, and summer

academic instruction to prepare students for entry into higher education institutions (U.S.

Department of Education, 2003, 2005). Talent Search, another TRIO program, was created in

1965 to provide participants and their families with information regarding college admissions

requirements, scholarships, and financial aid (U.S. Department of Education, 2005). Upward

Bound and Talent Search are included in this study.

A College Board survey (Swail & Perna, 2000) found that the most common

intervention service offered by programs is college awareness. Many high schools offer

related activities such as campus visits and summer programs. Academic enrichment and

support activities are also common. In addition, more than two-thirds of all programs offer a

parental component. In general, fewer programs offer other types of services, such as

mentoring and financial incentives.

An overwhelming majority of the programs (91 percent) target students in middle

school or beyond. Most target students from low-income backgrounds, minorities, and

students from families in which neither parent attended college (first-generation). For almost

half of the programs, the primary location of services is a college or university campus

(Swail & Perna, 2000). The programs may be sponsored by different types of entities,

including federal and state agencies, not-for-profit organizations, and individual colleges and

universities (Swail & Perna, 2000).

For the most part, college readiness programs are a reflection of public policy efforts to improve high school graduation and college continuation. This is evidenced by the fact that more than 82 percent of all programs that target low-income students are government funded (56.8 percent federal and 25.8 percent state-funded) (Swail & Perna, 2000). In addition, there are numerous non-profit college readiness programs, including those sponsored through community organizations, K-12, and higher education institutions.

In this research, I include seven programs: Talent Search and Upward Bound (federal); Governor's Honors Program and Governor's Scholarship Program (state); and High Schools That Work (sponsored by Southern Regional Education Board, a regional agency). I also include the Joint Enrollment program, which allows students to take courses jointly with colleges and universities. PROBE fairs is an example of programs sponsored by community non-profit organizations. Sponsored by the Georgia Education Articulation Committee, Inc (GEAC), PROBE fairs disseminate information and stimulate interest in post-secondary education for the students in Georgia. The fairs are held in high schools and community locations throughout the state. I present a description of all seven programs in Chapter 3.

For this research, I did not find comprehensive evaluations of individual programs to determine the extent to which they were successful. However, I found documented evidence of individual program success based on specific criteria. For example, Myers & Schirm (1999) found that participants in Upward Bound had higher educational attainment expectations, earned more credits in mathematics and social studies in high school, earned more non-remedial credits at four-year colleges, earned fewer remedial credits at two-year colleges, and were more involved with various college activities (Myers, 1999, pp. 39-93). In

the same report Myers & Schrim (1999) found that many participants remained in Upward Bound for only a short time, and that the program had limited impacts on students during high school (p. xix).

In addition, research by Horn (1997) showed that participating in any type of outreach program during high school nearly doubled the odds of enrolling in a four-year college or university among at-risk[8] 1992 high school graduates after controlling for other college preparation activities, parental involvement, and peer association.

Gandara and Bial (2001) created a typology that includes five sources of program funding (private nonprofit, university-based, government-sponsored, community-based, and K-12) and nine barriers to college enrollment (pp. 16-17). The barriers include inequalities of neighborhood resources, lack of peer support, racism, inequalities in K-12 schools, segregation, ineffective counseling, financial aid, inequalities in familial cultural and social capital, and low expectations and aspirations (pp. 32-34). From this list, Gandara and Bial (2001) developed a summary of seven features to address the barriers to college and analyze program effectiveness.

In this study I utilize Gandara and Bial's (2001) classification of program features to analyze the college readiness programs into specific classes (see Table 3-4). The features (and hence classes) of programs include counseling, academic enrichment, parental involvement, personal and social enrichment, mentoring, scholarships and target audience (p.31). Cunningham (2006) summarized the program features as follows:

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[8] Students at risk were defined as 1992 high school graduates who had risk characteristics that increased their chances of dropping out of high school. These included being from a single parent household, having an older sibling who dropped out of high school, changing schools two or more times other than the normal progression (e.g., from elementary to middle school), having C's or lower grades between sixth and eighth grades, being from a low socioeconomic status (SES) family, or repeating an earlier grade (Horn, 1997).

- Counseling/awareness: The goal of counseling efforts, including college advising, career advising, assistance with financial aid and personal counseling is to provide students with access to information, whether through individual consultation with students or presentations to groups of students. According to a College Board survey of early intervention programs across the United States (Swail & Perna, 2000), college awareness is the most common intervention service offered by all programs.

- Academic enrichment/support: Academic components such as summer programs, tutoring, assessment, test preparation and college-level courses taken while in high school attempt to strengthen students' college eligibility and prepare them for the demands of college-level courses.

- Parent involvement: As parents' involvement in their children's education is a critical factor in achievement, many programs try to ensure that parents support their children's participation in early intervention programs through such activities as orientation programs, volunteering and awareness programs.

- Personal enrichment/social integration: Many programs try to build self-confidence and a feeling of educational empowerment by providing activities geared toward social integration, including leadership seminars, field trips, speakers, involvement of peers and cultural activities.

- Mentoring: Although the effects of mentoring activities on achievement and behavior are difficult to measure, many programs involve a mentoring

component in the belief that it is important to a student's success in the
program. Mentors may be peers, staff/faculty, volunteers or even college
students.

- Scholarships: Financial assistance may be used as an incentive to attend
college, or may be solely for the purpose of defraying the costs associated
with attendance. Often, assistance takes the form of "last-dollar"
scholarships (in which aid received from other sources is taken into
account) or merit awards. When financial assistance is a core component
of an early intervention program, it often is with the intention of
encouraging students to apply to specific colleges or academic programs
(Cunningham, Redmond, & Merisotis, 2003, p. 6).

Additional research by Cabrera and La Nasa (2000b) shows that a student benefits
from completing three tasks in order to assure continuation: acquiring the necessary
academic qualifications for college work, securing a high school diploma, and applying and
enrolling in a four-year institution of higher education (p.23). The features of the programs
defined above complement the three requirements.

Of the three requirements, acquiring the necessary academic qualifications for college
work is the most crucial. Cabrera and LaNasa (2000b) noted that, as might be expected,
students with low SES background are the most disadvantaged in this regard because
"becoming college qualified, in turn, presupposes high parental involvement in school
activities as well as early planning for college"(Henderson & Berla, 1994). However, "barely
23 percent of lowest-SES parents have been exposed to higher education … whereas 99.3
percent of upper-SES are college-educated"(Cabrera & La Nasa, 2000a, p. 40). College

readiness programs encompassing activities that lead to addressing the three requirements can be deemed to be successful.

This research is designed to assess the impact of seven college readiness programs on high school to college continuation rates in Georgia public high schools between 1999 and 2005. Although it is a study of only seven of the dozens of programs operating in the state, the study includes four of the five classes of program sponsors (federal, state, K-12 schools, community, and universities). With the exception of university-sponsored programs[9], at least one program from each sponsor class is included in this research. Therefore, this study draws conclusions about college readiness programs from a sample of programs representing almost all types of sponsors.

Summary

Poor college continuation in Georgia provides strong evidence of the need for college readiness programs in the state's high schools. The overall graduation rate for Georgia's class of 2002 was 57 percent, a figure that is significantly lower than the national average of 68 percent. For the underrepresented population groups, the graduation rate is even lower. Georgia's 2002 rate for Blacks, Hispanics, and American Indians was 47.4 percent, 42.4 percent, and 32.7 percent, respectively compared to 76.6 percent for Asians and 63.7 percent for Whites (Swanson, 2004).

Because Georgia's high school graduating class of 2014 is projected to be 55 percent minority (Western Interstate Commission for Higher Education (WICHE), 2003) future

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[9] It should be noted that Governor's Honors program is operated at Valdosta State University. Also, some USG institutions operate Talent Search and Upward Bound programs. But the programs are funded by the State and federal governments respectively.

graduation rates for the state are likely to decline unless programs designed to improve the rate for minorities are implemented.

This literature review underscores the importance of increasing college enrollment for the underrepresented population groups – prospective first-generation college students, low-income, and ethnic/racial minorities. It also demonstrates the need for closing the gap between aspirations and actual college enrollment.

The literature review also implies that underrepresented population groups can benefit considerably from well-designed college readiness programs that target these disadvantaged students. Low-SES students can increase their odds of enrolling in a four-year college nearly two-fold by participating in college outreach programs (Berkner & Chavez, 1998) and can improve their chances of enrollment to a point resembling the national average of enrollment for high-SES students (Cabrera & La Nasa, 2000). Upon graduation from college, these students can earn salaries comparable to those of the non-disadvantaged students (U. S. Department of Education, 1998).

The benefits of higher education to the individual and society far exceed the cost of investing in effective programs to increase enrollment for all population groups (Institute of Higher Education Policy, 2005). They can be made available to the disadvantaged populations through well-designed college readiness programs.

In the following chapters, I examine how seven college readiness programs affect continuation rates in Georgia. I also examine demographic and geographic factors and how they are associated with college continuation in the state. In Chapter 3, I will outline the procedures and methodology of the study, followed by a discussion of the findings in Chapter 4. In chapter 5, I will discuss the meaning and implications of the study. I will also

make recommendations based on the findings and implications of the findings to policy and

future research.

CHAPTER 3

RESEARCH DESIGN

Introduction

The purpose of this study is to assess the impact of college readiness programs on

high school to college continuation rates in Georgia public high schools between 1999 and

2005. Continuation rates are calculated as the proportion of a public high school's graduating

class enrolling at one of the University System of Georgia's campuses within by the fall

semester of the year of high school graduation. This chapter details the methods and data

used in the analyses, provides a rationale for the choice of the outcome measure, draws on

the content of chapter 2 to develop a defensible model for explaining variation in the

outcome measure, and offers several limitations that may limit the generalizability of the

study's findings. The findings from these analyses will be presented in Chapter 4.

Using data compiled from a variety of sources (detailed subsequently), the analyses

developed in this chapter are both descriptive and predictive and are organized to:

1)   Provide a comprehensive descriptive overview of college continuation rates in

public high schools and participation in college readiness programs

between 1999 and 2005. This overview focuses on continuation rates into

several sectors of the University System of Georgia.

2)   Estimate the probability of a high school not sending any of its students to

certain sectors of the University System of Georgia during this time period.

3)   For those high schools sending students to the University of Georgia system

schools, estimate high school- to- college continuation rates during this

period. Following the literature presented in chapter 2, these models will

include sets of geographic, demographic, and college readiness program

participation variables that will enable an assessment of the impact of

program participation, net of student composition and location.

Data Sources

The unit of analysis in this study is the high school. The data used here represent

annual high schools of over 300 Georgia public high schools between academic years 1999

and 2004. When pooled across the time period there are 1961 high schools. Table 3-1

contains year by year counts of schools in the sample. There were four primary sources of

data: Georgia Department of Education, University System of Georgia (USG), National

Center for Education Statistics (NCES) Common Core Data (CCD) reports, and the

respective administrative sources of college readiness programs.

Table 3-1
High schools in the study, 1999-2000 to 2004-2005

YEAR	FREQUENCY	PERCENT OF ALL HIGH SCHOOLS	CUMULATIVE
1999-2000	307	15.7	15.7
2000-2001	320	16.3	32.0
2001-2002	329	16.8	48.8
2002-2003	331	16.9	65.6
2003-2004	335	17.1	82.7
2004-2005	339	17.3	100.0

High schools' rate of college continuation for each year, 1999-2000 to 2004-2005, is the dependent (outcome) variable. The focal independent variables are high school participation in a range of college readiness programs. Control variables include high school geographic location and the demographic composition (including race and socioeconomic status (SES) of the area served by the high school.

Table 3-3 shows the variables and their sources with a description of each variable. A discussion of the programs and data collection method used for each program follows. Finally, there is a discussion of how the data were merged into one dataset for analysis and a description of the statistical models used.

Georgia Department of Education High School Feedback Reports

High School Feedback Reports consist of data on the destination of each graduating class as provided by each of Georgia's 385 public high schools to the Board of Regents (BOR) of the System of Georgia (USG). The data are confined to the specific USG institution attended by members of the high school's graduating class.

Although there were 34 USG institutions during the years covered in this study, one institution, the Medical College of Georgia, does not admit students directly after high school graduation; therefore, this study is confined to 33 institutions. During the period under study, the USG classification of institutions listed 4 research universities, 2 regional universities, 13 state universities, 3 state colleges, and 12 two-year colleges. For purposes of data analyses, I combined the 3 state colleges and 13 state universities into one category: state universities and colleges.

 Currently (March 2008), there are 35 USG institutions. The 35th college, Georgia Gwinnett College, classified as a state college, admitted the first students in the fall 2005

semester; therefore, it is not included in this study. USG has since re-classified three two-year colleges into state colleges. Consequently there are 9 two-year colleges and 7 state colleges.

Table 3-2 shows the USG institutional classification in May 2006 when I received the high school feedback reports from the Board of Regents of the University System of Georgia, and the current (March 2008) classification.

Table 3-2
University System of Georgia institutional classifications, May 2006 and March 2008

MAY 2006	MARCH 2008
Research Universities	
Georgia Institute of Technology	Georgia Institute of Technology
Georgia State University	Georgia State University
Medical College of Georgia	Medical College of Georgia
University of Georgia	University of Georgia
Regional Universities	
Georgia Southern University	Georgia Southern University
Valdosta State University	Valdosta State University
State Universities	
Albany State University	Albany State University
Armstrong Atlantic State University	Armstrong Atlantic State University
Augusta State University	Augusta State University
Clayton State University	Clayton State University
Columbus State University	Columbus State University
Fort Valley State University	Fort Valley State University
Georgia College & State University	Georgia College & State University
Georgia Southwestern State University	Georgia Southwestern State University
Kennesaw State University	Kennesaw State University
North Georgia College & State University	North Georgia College & State University
Savannah State University	Savannah State University
Southern Polytechnic State University	Southern Polytechnic State University
University of West Georgia	University of West Georgia
State Colleges	
Dalton State College	Dalton State College
Gainesville State College	Gainesville State College
Macon State College	Macon State College
Georgia Gwinnett College	Abraham Baldwin Agricultural College
	Gordon College
	Middle Georgia College
	Georgia Gwinnett College

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Table 3-2 (Continued)
University System of Georgia institutional classifications, May 2006 and March 2008

May 2006	March 2008
Two-Year Colleges	
Abraham Baldwin Agricultural College	Atlanta Metropolitan College
Atlanta Metropolitan College	Bainbridge College
Bainbridge College	Coastal Georgia Community College
Coastal Georgia Community College	Darton College
Darton College	East Georgia College
East Georgia College	Georgia Highlands College
Georgia Highlands College	Georgia Perimeter College
Georgia Perimeter College	South Georgia College
Gordon College	Waycross College
Middle Georgia College	
South Georgia College	
Waycross College	

Source: Board of Regents of the University System of Georgia: http://www.usg.edu

Moreover, I did not perform separate analyses for two-year colleges. However, I included two-year colleges in the USG totals presented in this study. Thus, there are four models in this research: 1) USG total, 2) research universities, 3) regional universities, and 3) state universities and colleges. The reason for not performing separate analyses on two-year colleges is that admission into those institutions is virtually open to all graduating high school students. In fact, effective fall semester 2005, USG began a two-year pilot program to eliminate the use of SAT and ACT scores and the University System's "Freshman Index" in determining admission. The purpose of the pilot program was to increase the number of Georgians who earn college degrees because two-year colleges "serve as an increasingly important access point to higher education" (Board of Regents of University System of Georgia (BOR), 2005, April 20). According to a USG system news release outlining the new policy,

> "… the pilot admissions program will require a high-school diploma or GED of all students, with no exceptions. It also will require a 2.0 minimum grade point average for students who graduate from a high school college prep curriculum, and a 2.2 minimum grade point average

for those graduating from a technical curriculum"(Board of Regents of University System of Georgia (BOR), 2005, April 20).

For this reason, I did not perform separate analyses on two-year colleges.[10] Indeed, my primary research interest was on the effect of college readiness programs on the more-selective four-year institutions.

This research also excludes another system of 33 two-year technical colleges. Technical colleges are run by the Georgia Department of Technical and Adult Education as "a unified system of technical education, custom business and industry training and adult education" (Georgia Department of Technical and Adult Education (DTAE), 2008). As was the case with two-year colleges, I excluded the technical colleges; in fact, while I included two-year colleges in the USG totals, I did not collect any data on technical colleges at all. Again, my primary research interest was on the effect of college readiness programs on the four-year academic University System of Georgia institutions. Two-year technical colleges are part of DTAE system, which is a separate agency from USG.

For this study, I requested high school feedback reports for the 10-year period of 1995 through 2005; however, data were available only for the period 1999 through 2005. Data received include: (a) University System Institutions attended; (b) a breakdown of the Gender and Race of each admitted student; (c) percent of freshmen who completed the USG College Preparatory Curriculum (CPC) in high school; and (d) percent of freshmen who did not Complete the USG College Preparatory Curriculum in high school (Board of Regents of University System of Georgia, 2005).

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[10] The pilot program is currently (March 2008) under review to determine whether or not to make it permanent (Board of Regents of University System of Georgia (BOR), 2005, April 20).

High School Data

Data on high school characteristics were extracted from the National Center for Education Statistics' (NCES) Common Core Data (National Center for Education Statistics, 2007). This data for each high school included: (a) total students enrolled, (b) twelfth grade students enrolled, (c) Black, non-Hispanic students enrolled, (d) percent of Black, non-Hispanic students enrolled, (e) Hispanic students enrolled, (f) percent of Hispanic students enrolled, (g) White non-Hispanic students enrolled, (h) percent of White, non-Hispanic students enrolled, (i) Black, non-Hispanic twelfth grade students enrolled, (j) Hispanic twelfth grade students enrolled, (k) White, non-Hispanic twelfth grade students enrolled, (l) total students participating in free-and-reduced-lunch program, (m) percent of students participating in free-and-reduced-lunch program. These data elements were used to capture the composition of each student body at high schools included in the analysis.

Creation of Data Set

For each year, 1999 to 2005, I merged relevant data from USG High School Feedback Reports with High School Data from the Georgia Department of Education to show the number of students from each high school who attended each USG institution in the fall semester of the year of graduation. To avoid duplication, I matched High School Data using Excel, with two unique identifying codes: an ETS code extracted from High School Feedback Reports and a key identifier from the Georgia Department of Education. This method was very useful in avoiding duplication and for separating high schools with identical (or almost identical) names.

I then created a total and percentage of total twelfth grade students from each high school attending each type of USG institution. For example, to calculate the percent of twelfth grade students from Academy of Richmond County High School who attended a research institution in the fall of the year of graduation (PCTREST)[11], I added the total number of students from Academy of Richmond County High School who attended a research institution (REST) and divided by the total number of twelfth grade students in Academy of Richmond County High School (TWELFTOT): PCTREST = REST / TWELFTOT x 100.

I also calculated the percent of all twelfth grade students from Academy of Richmond County High School who attended a USG institution (PCTUSGT) by adding the total number of students from Academy of Richmond County High School who attended a USG institution (USGT) and dividing the total by the total number of twelfth grade students (TWELFTOT): PCTUSGT = USGT / TWELFTHTOT x 100.

Next, I extracted High School Data from the National Center for Education Statistics (NCES) Common Core Data (CCD) reports. These data included the total high school population, high school racial composition, twelfth grade population, and race.

I created several variables in order to capture school geographic location. The first simply placed schools in one of four geographic quadrants of the state: northeast, northwest, southwest, and southeast. In subsequent data analysis the omitted variable, and therefore used as the basis for comparison, is the northeast. Additional variables were added to capture school locale. These were created from National Center for Education Statistics (NCES) Common Core Data (CCD) variables identifying school location in terms of its relation to major urban areas, suburban areas, and rural areas (Phan & Glander, 2007). In data analysis,

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[11] See Table 3-6 for variable names.

the omitted variable was "large towns" (see Table 3-3). It was used as the basis for comparing college continuation for the other locales. All of these geographic variables have been dummy-coded.

Then I created respective columns of the number and percent of students participating in the free-and-reduced school lunch program. I used this information as an indication of the socioeconomic status (SES) of the student body for each high school.

I created separate variables for each of the seven college readiness programs included in the study. The programs are the Governor's Honors Program (GHP), the Governor's Scholarship Program (GSP), High Schools That Work (HSTW), Joint Enrollment (JE), Talent Search (TS), Upward Bound (UB), and PROBE.[12]

This process yielded six data sets for each academic year, 1999-2000 to 2004-2005. Each data set contained rows of high schools and 78 columns that represent all the variables discussed.

Finally, I merged the six data sets into one and imported the merged data set into STATA for data analysis.

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[12] I calculated a percent of twelfth grade students who participated in GHP, GSP, JE, and included this calculation as a column. However, for HSTW, TS, UB, and PROBE, I created a conditional variable of 1 for a participating high school and a 0 for a non-participating high school. These conditional variables were necessary because participation in TS and UB programs was very low. In addition, student participation data in HSTW and PROBE were not available.

Table 3-3
Description of main elements used in the study

ELEMENT	ELEMENT TYPE	DATA SOURCE	DESCRIPTION
College Continuation	Dependent	USG: high school feedback reports	Number of high school graduates from each high school who enrolled as freshmen in a USG institution in the fall of the year of graduation, 1999-2005
Participation in college readiness programs	Independent	Program administration, high schools	High schools with students who continuously enrolled and participated in the activities of a college readiness program for a minimum of one year during the period 1999-2005
Institutional Type	Control	USG High School feedback reports	Classification of institution (two-year, state college, state university, regional university, and research university)
Race – 12th Grade	Control	Georgia Department of Education; NCES Common Core Data reports http://nces.ed.gov/ccd/	Racial make-up of the 12th graders from each high school
Race-High School	Control	Georgia Department of Education; NCES Common Core Data reports http://nces.ed.gov/ccd/	Racial make-up of each high school. Predominantly Black: high schools comprised of at least 60 percent Black students Predominantly White: high schools comprised of at least 60 percent White students.
Socioeconomic status (SES)	Control	NCES Common Core Data reports http://nces.ed.gov/ccd/	Percent of students from each high school that participated in school free-and-reduced lunch program for each year, 1999-2005.

Table 3-3 (Continued)
Description of Main Elements Used in the Study

ELEMENT	ELEMENT TYPE	DATA SOURCE	DESCRIPTION
URBAN	Control	(Phan & Glander, 2007)	Large City: A principal city of a Metropolitan Core Based Statistical Area (CBSA), with the city having a population greater than or equal to 250,000.
MIDSIZE	Control	(Phan & Glander, 2007)	Mid-size City: A principal city of a Metropolitan Core Based Statistical Area (CBSA), with the city having a population less than 250,000.
URBANFRINGE	Control	(Phan & Glander, 2007)	Urban Fringe of a Large City: Any incorporated place, Census designated place, or non-place territory within a Metropolitan CBSA of a Large City and defined as urban by the Census Bureau
MIDSIZE - FRINGE	Control	(Phan & Glander, 2007)	Urban Fringe of a Mid-size City: Any incorporated place, Census designated place, or non-place territory within a Metropolitan CBSA of a Mid-size City and defined as urban by the Census Bureau.
LARGE TOWN	Omitted for comparison	(Phan & Glander, 2007)	Large Town: An incorporated place or Census designated place with a population greater than or equal to 25,000 and located outside a Metropolitan CBSA or inside a Micropolitan CBSA.

Table 3-3 (Continued)
Description of Main Elements Used in the Study

ELEMENT	ELEMENT TYPE	DATA SOURCE	DESCRIPTION
TOWN	Control	(Phan & Glander, 2007)	Small Town: An incorporated place or Census designated place with a population less than 25,000 and greater than or equal to 2,500 and located outside a Metropolitan CBSA or inside a Micropolitan CBSA
RURAL	Control	(Phan & Glander, 2007)	Rural, outside Core Based Statistical Area (CBSA): Any incorporated place, Census designated place, or non-place territory not within a Metropolitan CBSA or within a Micropolitan CBSA and defined as rural by the Census Bureau; Rural, inside CBSA: Any incorporated place, Census designated place, or non place territory within a Metropolitan CBSA and defined as rural by the Census Bureau.

College readiness programs

I utilized a number of methods, to collect data on college readiness programs. First, I compiled a list of federal and state programs. Second, I made a web-based search on college readiness programs in the University System of Georgia institutions. I used informal contacts to identify and locate community-based programs. From the list of the programs identified, I assembled a list of schools for which participation data was available. The programs for which data were collected and the methods for data collection follow.

Governor's Honors Program (GHP)

The Governor's Honors Program is a six-week summer instruction program. The program's web site describes GHP as "designed to provide intellectually gifted and

artistically talented high school students challenging and enriching educational opportunities not usually available during the regular school year. Activities are designed to provide each participant with opportunities to acquire the skills, knowledge and attitudes to become independent, life-long learners" (Georgia Department of Education, 2007).

GHP is a competitive program for rising juniors and seniors selected in a specified area in which their abilities, aptitudes and interest lie. Each school system is assigned a nomination quota after which students undergo statewide screening interviews and auditions.

Major instructional areas include agriscience/biotechnology, agriscience/environmental science, English (communications arts), foreign languages (French, German, Latin, Spanish), mathematics, science (Biology, Chemistry, Physics), social studies, visual art, theatre, music, dance, design, technology and executive management. Instruction is also provided in four support areas – computers, counseling, library/media and physical fitness.

Students also select a minor area outside their major area of study. These areas include all the major instructional areas as well as additional offerings that reflect the interests and abilities of the instructional staff. All performing groups are open to the entire student body. Orchestra, band, chorus and theatre productions include representatives from all major areas (Georgia Department of Education, 2007).

The Georgia Department of Education provided the data for all GHP finalists. The list included all the finalists for each year, 1999-2000 to 2004-2005. I tallied the number of times a high school appeared on the list to reflect the total number of participants.

Governor's Scholarship Program (GSP)

The Governor's Scholarship Program is a merit-based scholarship designed "to recognize Georgia's high school Valedictorians and STAR Students and encourage them to attend a public or private college or university in Georgia by providing scholarship funds" (Georgia Student Finance Commission (GSFC), 2007b). To be selected, a student is required to have been a Valedictorian or STAR[13] student and enroll in a Georgia public college or university within nine months of high school graduation. A grant of up to $900 is awarded each year if the student is enrolled and maintains a 3.0 grade point average. Two graduates from each eligible high school in Georgia may apply as entering college freshmen each academic year (Georgia Student Finance Commission (GSFC), 2007b).

The GSFC supplied GSP participation data. The list contained the total number of participants for each high school from 1999-2000 to 2005-2006.

High Schools That Work (HSTW)

Sponsored by the Southern Regional Education Board (SREB), High Schools That Work (HSTW) is a school improvement initiative for high school and middle school leaders and teachers. Although SREB covers a sixteen state area, the program has become popular nationwide with over 1,200 HSTW sites in 32 states using the framework of HSTW Goals and Key Practices to raise student achievement (Southern Regional Education Board, 2007, p. 2).

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[13] The STAR program is sponsored by the PAGE Foundation. Each year a top academic senior in each participating Georgia high school is named the STAR student for that high school. To obtain the STAR nomination, students must have the highest score in one sitting on the new three-part Scholastic Assessment Test (SAT) taken through the November test date of their senior year and be in the top 10 percent or top 10 students of their class based on grade point average. Each high school STAR student is asked to name his/her STAR teacher. High school STAR students compete for system titles; and system STAR students in turn compete for region-wide honors in the STAR Regions. Region winners and their STAR teachers are invited to Atlanta to compete for the state STAR awards. SOURCE: http:// www.pagefoundation.org.

The program's mission is to "create a culture of high expectations and continuous improvement in high school and middle grades" (p.3). The program has a rigorous recommended curriculum aimed at preparing high school students for further education and the workplace. For example, students are required to complete Algebra I by eighth grade and take four years of mathematics beyond Algebra I as well as four years of science (p.5).

The Georgia Department of Education furnished data on HSTW. The data showed the number of years each high school had participated in HSTW prior to each year. For example, Atkinson County High School participated in 2005 and in the six years prior to that year. Thus, the school had been a participant throughout the study period.

Joint Enrollment (JE)

The Joint Enrollment (JE) program allows students to earn dual credit towards high school and college. JE is financed through the ACCEL program with state lottery funds. Prior to 2004, JE was financed through the Postsecondary Options program. To participate, a student is required to be in the 11$^{\text{th}}$ or 12$^{\text{th}}$ grade. Eligible high school courses include only core-curriculum courses of English Language Arts, Mathematics, Social Studies, Science, and Foreign Language that can be used to satisfy the core-curriculum high school graduation requirements (Georgia Student Finance Commission (GSFC), 2007a).

I obtained participation data from a list compiled by USG's Office of Strategic Research and Analysis. The list showed the total number of students enrolled jointly at each USG institution from each participating high school for each year 1999-2000 to 2004-2005.

Talent Search (TS)

The Talent Search program (TS) identifies and assists individuals from disadvantaged

backgrounds who have the potential to succeed in higher education. The program provides

academic, career, and financial counseling to its participants and encourages them to

graduate from high school and continue on to the postsecondary school of their choice. The

program also serves high school dropouts by encouraging them to re-enter the educational

system and complete their education. The goal of TS is to increase the number of youth from

disadvantaged backgrounds who complete high school and enroll in the postsecondary

education institution of their choice. To participate in Talent Search (or in any of the TRIO

programs), a student must be a prospective first-generation college student and come from a

low-income household (U.S. Department of Education, 2005).

To collect data for this study, I compiled a list of participating postsecondary

institutions and community organizations and sent an e-mail to the program managers. When

data were not forthcoming I called the managers and obtained the data over the telephone. In

all cases, I documented the names of individuals who provided data.

Upward Bound (UB)

One of the original TRIO programs, Upward Bound provides fundamental support to

participants in their preparation for college entrance. The program provides opportunities for

participants to succeed in pre-college performance and ultimately in higher education

pursuits. UB serves high school students from low-income families, high school students

from families in which neither parent holds a bachelor's degree, and low-income, first-

generation military veterans who are preparing to enter postsecondary education. The goal of

UB is to increase the rates at which participants enroll in and graduate from institutions of

postsecondary education. All Upward Bound projects must provide instruction in math, laboratory science, composition, literature, and foreign language" (U.S. Department of Education, 2005).

To collect data for this study, I gathered a list of participating postsecondary institutions and community organizations and sent an e-mail the program managers. Whenever I did not receive the requested data, I called the managers and obtained data over the telephone. In all cases, I documented the name of the individual who provided the data.

PROBE High School Fairs (PROBE)

The Georgia Education Articulation Committee, Inc (GEAC) sponsors PROBE fairs. The purpose of GEAC is to disseminate information and stimulate interest in post-secondary education for the students in Georgia. To be eligible for participation in PROBE, participants must be approved by GEAC. Participation is restricted to Georgia-based, non-profit, accredited, post-secondary institutions, colleges, universities, and technical institutions. Accredited non-profit postsecondary institutions located out of state are also eligible to participate in PROBE (Georgia Education Articulation Committee Inc., 2007).

In 2006, PROBE conducted 63 fairs which put participating post-secondary institutions in touch with an estimated 45,530 high school students and their families during the eight-week Fall Tour. In addition, PROBE conducted eight high school counselor workshops for 518 high school counselors. Approximately 100 Georgia institutions and 190 institutions from outside the state attended PROBE 2006 (Georgia Education Articulation Committee Inc., 2007).The Georgia Education Articulation Committee provided participating data from a list of PROBE calendars for the fall of each year, 1999 to 2005.

Tables 3-4 and 3-5 provide a summary of the seven programs. The tables use most of the characteristics found in Cunningham's (2006) data matrix of characteristics of state early intervention programs.

Table 3-4
Characteristics of college readiness programs[14]

PROGRAM	YEAR ESTABLISHED	AGENCY	COMPETITIVE GRANTS	FUNDING SOURCE	GENERAL PROGRAM APPROACH
Governor's Honors Program	1964	Georgia Department of Education	No	State funds	Summer program for "rising" high school juniors and seniors. Challenging and enriching educational opportunities.
Governor's Scholarship Program	1985	Georgia Student Finance Commission	Yes	State funds	Scholarship
High Schools That Work	1987	Southern Regional Education Board/Georgia Department of Education	No	Federal grants	School Support services/ improvement
Joint Enrollment		Georgia Department of Education	No	ACCEL program with state funds	Dual credit towards high school graduation and college
Talent Search	1965	U.S. Department of Education	No	Competitive federal grants	Support services

[14] Based on Cunningham's (2003) Matrix of Characteristics of State Early Intervention Programs (Cunningham Redmond, & Merisotis, 2003)

Table 3-4 (Continued)
Characteristics of College Readiness Programs

PROGRAM	YEAR ESTABLISHED	AGENCY	COMPETITIVE GRANTS	FUNDING SOURCE	GENERAL PROGRAM APPROACH
Upward Bound	1964	U.S. Department of Education	No	Competitive federal grants	Support services
PROBE	1971	Georgia Education Articulation Committee Inc. (GEAC)	No	Participating postsecondary institutions	College fairs to expose high school students to postsecondary options

Table 3-4 (Continued)
Characteristics of College Readiness Programs

PROGRAM	ELIGIBILITY CRITERIA	GRADE LEVEL	SOURCE
Governor's Honors Program	Intellectually gifted/ artistically talented high school students.	11th and 12th grades	http://admin.doe.k12.ga.us/gadoe/blogs/ghpblog.nsf/d6plinks/CBYE-6AWNBU
Governor's Scholarship Program	All high schools wishing to join.	High school graduates	http://www.gacollege411.org/FinAid/ScholarshipsAndGrants/governors_scholarship.asp
High Schools That Work	Open to all high schools	High schools	http://www.sreb.org/programs/hstw/hstwindex.asp
Joint Enrollment	Open to all high schools	11th and 12th grades	http://public.doe.k12.ga.us/ci_services.aspx?PageReq=CIServAccel
Talent Search	Students from low income households and prospective first-generation college	6-12th grades	http://www.ed.gov/about/offices/list/ope/trio/index.html
Upward Bound	Students from low income households and prospective first-generation college	9th -12th grades	http://www.ed.gov/about/offices/list/ope/trio/index.html
PROBE	All accredited non-profit Georgia and out-of-state institutions	High schools	http://www.gaprobe.org/index.html

Table 3-5
Services Provided by College Readiness Programs

PROGRAM	SERVICES						
	Counseling	Academic/ Enrichment	Parental Involvement	Mentoring	Personal Enrichment/Social Integration	Scholarship	Summer Activities
Governor's Honors Program	No	Yes	Yes	No	Yes	Yes	Yes
Governor's Scholarship Program	No	No	No	No	No	Yes	No
High Schools That Work	Yes	Yes	Yes	N/A	No	No	N/A
Joint Enrollment	No	Yes	No	No	Yes	N/A	N/A
Talent Search	Yes	Yes	Yes	Yes	No	Yes	Yes
Upward Bound	Yes	Yes	Yes	Yes	Yes	No	Yes
PROBE	Yes	No	Yes	N/A	N/A	N/A	N/A

Statistical Methods

The main analytical strategy involved descriptive analyses and multiple linear regression models to focus on variance in high school continuation rates. I pooled data for all years into a single dataset, which allowed for an assessment of general patterns over all of the 6 years.

A complete set of the variables used in all sets of analyses, including their acronyms, are listed on Table 3-6. Those variables are an expansion those listed Table 3-3

Table 3-6
Variables used in descriptive, logistic, and GLS regression

ACRONYM[15]	VARIABLE
	Demographic Characteristics
TOTSCH	Size-All Schools
TOTBLK	Black Students per school
PCTBLK_SCH	Percent total Black students
HIBLACK	Predominantly Black
HIWHITE	Predominantly White
TOTWHT	White Students
PCTWHTSCH	Percent White Students
TWELFTOT	Twelfth Grade per school
TWELFBLK	Twelfth grade Black
TWELFWHT	Twelfth Grade White
LUNCHSCH	Free and reduced-price lunch
PCTLUNCH	Percent Lunch
	Locale
URBAN	Urban
URBANFRINGE	Urban-fringe
MIDSIZE	Midsize
MIDSIZEFRINGE	Midsize fringe
RURAL	Rural
	Region
SOUTHWEST	Southwest
SOUTHEAST	Southeast
NORTHWEST	Northwest
NORTHEAST	Northeast

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[15] The acronyms on this table are used throughout the rest of this report.

Table 3-6 (Continued)
Variables used in Descriptive, Logistic, and GLS Regression

ACRONYM	VARIABLE
	Programs[16]
PCTGSP	Governor's Scholarship Program (%)
PCTGHP	Governor's Honors Program (%)
HSTW	High Schools That Work
PCTJE	Joint Enrollment (%)
TS	Talent Search
UB	Upward Bound
PROBE	PROBE Fairs
	Matriculation (continuation) Rates
NOUSGT	Zero matriculation into USG institutions
USGT[17]	Total matriculation into USG institutions
NOREST	No matriculation into a research institution
REST	Total matriculation into a research institution
NOREGT	No matriculation into a regional institution
REGT	Total matriculation into a regional institution
NOSTATE	No matriculation into a state university/college
STATEUC	Total matriculation into a state university/college

Descriptive Analysis

I used simple descriptive statistics to examine college continuation into USG categories,

high school participation in the seven college readiness programs, school demographic

composition, and the geographic distribution of schools throughout Georgia. I analyzed these

data in the aggregate and by each year to assess the degree to which any of these school

characteristics may have changed over the time period being examined here.

First, I analyzed data for all high schools and on the basis of the racial composition:

predominantly Black and White schools. Then I examined mean continuation rates based on the

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[16] I calculated a percent of twelfth grade students who participated in GHP, GSP, JE, and included this calculation as a column. However, for HSTW, TS, UB, and PROBE, I created a conditional variable of 1 for a participating high school and a 0 for a non-participating high school. The reasons for using conditional variable varied by program: For TS and UB it was necessary because participation was very low; for HSTW and PROBE the actual figures of participating students were not available.

[17] This total includes matriculation into the two-year colleges.

independent and control variables in three main categories- compositional, geographic, and

college readiness programs. High school compositional variables include White, Black, and the

degree of participation in the free and reduced-price lunch program. Geographic location

includes locale and regions of the state. Locale variables are urban, urban-fringe, midsize,

midsize-fringe, and rural. Regional variables are the southwest, southeast, northwest, and

northeast. Finally, I included the seven college readiness programs in this study: Governor's

Honors Program (GHP), Governor's Scholarship Program (GSP), High Schools That Work

(HSTW), Joint Enrollment (JE), Talent Search (TS), Upward Bound (UB) and PROBE.

This was followed by an examination of the average matriculation rates for each of the

four USG sectors I am interested in: 1) USG research institutions, 2) USG state universities and

colleges[18], and 3) USG regional universities. The average matriculation rates for predominantly

Black and predominantly White high schools were then tabulated across the four USG sectors to

capture possible differences

Logistic Regression Models – zero continuation rates

The original plan for analysis was to move from the descriptive analysis to a predictive

model through which I would estimate actual high school continuation rates. This plan had to be

modified, however, because the descriptive analysis made it clear that not all schools sent

students to each different USG sector in each year. This compromised the plan to use GLS

regression models in the next stage (there where simply too many schools with zero values on

the outcomes to usefully model the continuation rates using GLS). These continuation patterns

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[18] For purposes of data analyses, I combined the 3 state colleges and 13 state universities into one category: state universities and colleges.

were detailed descriptively to show the characteristics of schools sending students to different types of colleges.

In order to address this problem, I used a series of logistic regression models to first predict the probability of a school not sending students to specific segments of the USG. While these logistic models serve as a useful predictive tool, more importantly, they allow for an estimate of the net marginal return (in terms of probabilities) of each of the predictors. This is useful because the estimates provide a gauge of the relative contribution of the various predictors to the probability of a high school not sending students to any segment of the USG. Models were estimated for continuation to 1) USG research institutions, 2) USG state universities and colleges, and 3) USG regional universities.

GLS Regression Models – non-zero continuation rates

Once the logistic models were specified, the analysis shifted to only those schools actually sending students to the different USG sectors. That is, since I attend to the question of the correlates of a zero continuation rate using the logistic models, I then dropped all schools with a continuation rate of zero. This allowed for a more direct focus on predictors of the actual positive continuation rates of the study schools.

An examination of the descriptive statistics shows that, even after removing the zero-continuation rate schools, the continuation-rate distributions are quite skewed. I attempt to address this problem by converting the raw continuation rates to their natural logarithms. This results in a more normally distributed outcome for each of the models. As with the logistic regression analysis, separate GLS models were estimated for continuation to 1) USG research

institutions, 2) USG state universities and colleges, and 3) USG regional universities. In addition, a fourth model was specified for continuation to any USG institution.

I developed regression models in accordance with the variable definitions in Table 3-6. Regression analysis "utilizes the relation between two or more quantitative variables so that a response or outcome variable can be predicted from the other or others" (Kutner, Nachtsheim, & Li, 2004, p. 2). Multiple regression allows for an assessment of all the independent variables working together to predict a dependent (outcome) measure (Astin, 1993, p. 105). I introduced variables in blocks to assess the potential gross and net contributions of the college readiness program variables that are the central interest in the study.

An array of post-estimation tests was run to identify instances of problematic levels of multicollinearity and heteroskedasticity[19]. Remedial measures were taken in cases where either of these conditions proved problematic. Additional tests were conducted to ensure that the residuals were not correlated with other high schools or time.

Data Analysis

I based the data analyses of the GLS regression on the three research questions.

Research Question 1: Net of other factors, is there a significant difference in continuation rates between Georgia public high schools that participate in specific classes of college readiness programs and Georgia public high schools that do not participate?

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[19] Perfect multicollinearity "occurs when any of the independent variables is perfectly correlated with another independent variable or linear combination of another independent variable … high multicollinearity creates … estimation problems because it produces large variances for the slope estimates and, consequently large standard errors."(Lewis-Beck, 1980, p. 58) Heteroskedasticity refers to a situation in which as the predicted value of Y increases, "the variation of the residuals increases … (which) implies a specification error in the form of an exclusion of a relevant variable (p. 42).

For this question, I used descriptive statistics and four regression models to determine, net of all factors, how much each of the control and independent variables contributed to variance explained in continuation to each of the following models: 1) USG research universities; 2) USG regional universities; 3) USG state universities and colleges; and 4) continuation into any USG institution.

For each of the four models, I regressed numerous independent and control variables in three categories (see Table3-5) compositional -demographics and socioeconomic, (White , Black, and participation in free-and-reduced-lunch program); geographic location- urban characteristics (urban, urban-fringe, midsize, midsize-fringe, and rural); geographic location within the state (southwest, southeast, northwest, and northeast); and participation in the seven college readiness programs (Governor's Honors Program, Governor's Scholarship Program, High Schools That Work, Joint Enrollment, Talent Search, Upward Bound, and PROBE).

Research Question 2: With all else equal, are there different patterns of effects in predominantly Black public high schools and predominantly White public high schools?

First I examined the characteristics of predominantly Black high schools and their White counterparts. Next, I ran GLS regression analyses for both predominantly Black and predominantly White high schools respectively. For each type of high schools (predominantly Black and predominantly White), I regressed numerous independent and control variables in three categories: compositional-demographics and socioeconomic, (White, Black, and participation in free-and-reduced-lunch program); geographic location: urban (urban, urban-fringe, midsize, midsize-fringe, and rural); geographic location within the state (southwest, southeast, northwest, and northeast); and participation in the seven college readiness programs

(Governor's Honors Program, Governor's Scholarship Program, High Schools That Work, Joint Enrollment, Talent Search, Upward Bound, and PROBE).

Research Question 3: Based on the findings on college continuation rates, are there programs with discernible, specific patterns of success based on target population, design, and operation that can be recommended to develop a model college readiness program for predominantly Black high schools?

To address this question, I performed an analysis of the results of GLS regression tests from Research Question 2. The results of the analysis would help explain whether or not there are programs with discernible, specific patterns of success based on target population, design, and operation that can be recommended to develop a model college readiness program for predominantly Black high schools.

Summary

In this chapter, I have presented the purpose of the study, data collection methods, and a brief discussion of the college readiness programs, their design and purpose. I have also discussed how the dataset was created and the statistical methods used in the data analysis. In Chapter 4, I will present the results of the data analysis.

CHAPTER 4

FINDINGS

Introduction

The purpose of this study was to assess the impact of college readiness programs on high

school to college continuation rates in Georgia public high schools between 1999 and 2005.

Continuation rates are calculated as the proportion of a public high school's graduating class

enrolling at one of the University System of Georgia's campuses within 12 months of receipt of a

high school diploma. The study is a descriptive and correlational analysis of college continuation

data based on all Georgia public high schools, which form the unit of analysis. Table 4 -1 shows

the breakdown of the total number of high schools in the study. As shown, the total number of

high schools for which the data were available for each of the six-years ranged from 307 to 339.

In this chapter, I present the findings from these analyses. I will present the conclusions and

implications of this research in Chapter 5.

This study was designed to answer the following research questions:

1) Net of other factors, is there a significant difference in continuation rates between

Georgia public high schools that participate in specific classes of college readiness programs and

Georgia public high schools that do not participate?

2) With all else equal, are there different patterns of effects in predominantly Black

public high schools and predominantly White public high schools?

3) Based on the findings on college continuation rates, are there programs with

discernible, specific patterns of success based on target population, design, and operation that

can be recommended to develop a model college readiness program for predominantly Black high schools?

For research questions one and two, I used descriptive statistics and regression analyses to document patterns of college continuation rates for each of the seven college readiness programs. For research question 3, an analysis of the results from question two was conducted in order to identify possible programs for recommendation as a model for predominantly Black schools. The findings focus on three groups: disadvantaged minorities, potential first generation college students, and low SES populations. Generally, there is a fair amount of overlap between these groups. For Research questions 2 and 3, I specifically targeted Black high schools because Blacks are the largest racial/ethnic minority population group in Georgia. The following section is a discussion of descriptive statistics.

Overview of all high schools

I analyzed the data on the basis of racial composition of the high schools: predominantly Black and White schools. Predominantly Black high schools are comprised of a minimum of 60 percent Black students. Similarly, schools with a minimum population of 60 percent Whites were considered as predominantly White in this study.

As shown on Table 4-1, enrollment in all high schools ranged from 307 in 1999-2000 to 339 in 2004-2005. There were a total of 1961 high schools for the study period. Hence, each school over a period of six academic years, 1999/2000 to 2004/2005, comprised of one observation (Observation = School x Time: 1999/2000-2004/2005). Of the total, 442 (22.5 percent) were defined as predominantly Black and 928 (47.3 percent) as predominantly White.[20]

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[20] The term "Predominantly Black" and "Predominantly White" high schools are used interchangeably with "Black" and "White", respectively, through the remainder of this chapter.

About 30 percent of the high schools did not fit either of the two categories; hence, they were better racially integrated. The study's focus was on college continuation for Black and White schools; therefore, Hispanics, Asians and other minorities were not explicitly modeled.

Table 4-1
High schools and their racial make-up

YEAR	ALL HIGH SCHOOLS	PREDOMINANTLY BLACK	PERCENT	PREDOMINANTLY WHITE	PERCENT
1999-2000	307	63	20.5	158	51.4
2000-2001	320	69	21,6	160	50.0
2001-2002	329	77	23.4	155	47.1
2002-2003	331	78	23.6	158	47.7
2003-2004	335	78	23.3	150	44.8
2004-2005	339	77	22.7	147	43.3
Total	1961	442	22.5	928	47.3

Table 4-5 shows descriptive statistics-means and standard deviations-for all the high schools and variables in this study. As shown, the mean size of all high schools is 1202 students while the mean for 12th grade students is 227. They are comprised of an average of 455 and 661.5 Black and White students per school, respectively. An average of 37 percent of the students participates in the free and reduced-price lunch program.

Geographic location

As shown in Table 4-5, thirty seven (37) percent of the high schools are located in rural areas, only 16 percent are urban and 28 percent are in urban fringe areas. An overwhelming majority (63 percent) are located in the northwest part of the state. This region includes the metropolitan Atlanta area.

High school matriculation

Table 4-2 shows the percentage of the graduating class that matriculated into USG institutions for each year during the study period. For example, in the 1999 academic year an average of 6.08 percent of the graduating seniors per high school continued on to a USG research university. This remained relatively stable through 2004. Also shown on the table is that the average high school matriculated nearly 33 percent of the 12th graders into a USG institution[21]. The relatively small percentages for regional universities reflect the fact that there were only two institutions in that category: Georgia Southern University and Valdosta State University.

Table 4-2
Percentage of students enrolling in USG institutions by year

	1999	2000	2001	2002	2003	2004
Research	6.08	6.44	6.26	6.17	6.19	6.15
Regional	4.56	4.61	4.40	4.39	4.36	4.35
State	11.74	12.78	11.67	13.51	13.88	13.50
USG Total	32.90	32.76	31.61	33.46	34.34	34.39

Table 4-3 shows the percentage rates for average matriculation rates into the USG institutions and the overall USG total. As shown, matriculation rate into research universities was about 30 percent higher for White schools than that for Black schools (1.3 percent versus 1.7 percent). This is an important finding because research universities are the most selective and best of all public institutions in Georgia. White schools are also better represented than Black schools in regional universities. However, matriculation into state universities is the same for both Black and White schools. This maybe due to the fact that, among other reasons, state

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[21] USG totals shown are higher than the sum of the research, regional, and state because two-year colleges are not included.

universities/colleges are much less selective and are located throughout the state and therefore are more accessible.

Table 4-3 shows that with the exception of one high school, all schools matriculated students to one or more USG institutions, at an average of 3.5 students per school. The average number of matriculating students depends on the type and selectivity of the institution. For example, the average matriculation to research institutions was 1.6, was 1.4 for regional, and 2.3 for state universities and colleges. In addition, those averages reflect selectivity, availability, and accessibility. For example, the study includes 16 state universities and colleges, which are the least selective and most accessible[22]. Conversely, the highest average for schools *not* matriculating students is in research universities (11.7 percent) while the lowest, as expected, is in the state universities/colleges category (4.9 percent) as indicated on Table 4-5.

Table 4-3
Average Matriculation (total), by USG institutional classifications for the study period 1999-2000 to 2004-2005.

HIGH SCHOOL	RESEARCH UNIVERSITIES	REGIONAL UNIVERSITIES	STATE UNIVERSITIES/COLLEGES	USG TOTAL[23]
Predominantly Black	1.3	1.2	2.4	3.2
Predominantly White N=928	1.7	1.4	2.4	3.5
All high schools N=1960	1.6	1.4	2.3	3.5

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[22] Actually, two-year colleges are the least selective and, therefore, the most accessible. Although two-year colleges are part of USG totals presented in this study, they are not part of the models for analysis (USG totals, Research, Regional, and State universities and colleges). The reason for excluding them is that admission into two-year colleges is virtually open to all graduating high school students.

[23] This total includes matriculation into the two-year colleges.

Participation in college readiness programs

Table 4-4 shows the average participation rates of the 12th graders per high school in each of the seven college readiness programs for each year. The table shows, for example, that an average of 4.15 percent of the 12th grade students participated in the Governor's Scholarship Program in 1999. Also, 25 percent of the high schools participated in HSTW program in 1999.

Table 4-4
Program participation rates by high school and academic year[24]

	1999	2000	2001	2002	2003	2004
PCTGSP	4.15	4.10	3.72	3.60	3.42	3.46
PCTGHP	0.27	0.71	0.70	0.69	0.63	0.64
PCTJE	5.64	5.29	5.89	6.12	6.10	5.37
HSTW	0.25	0.24	0.36	0.41	0.43	0.45
TS	0.23	0.22	0.25	0.26	0.24	0.24
UB	0.20	0.19	0.19	0.19	0.19	0.19
PROBE	0.48	0.45	0.52	0.52	0.51	0.46

As shown on Table 4-5, all schools participated in one or more of the seven college readiness programs in this research during the study period. PROBE was the most widely subscribed, with an average of nearly half of all schools participating. For example, in 2006, PROBE conducted 63 fairs which put participating post-secondary institutions in touch with an estimated 45,530 students and their families during the eight-week Fall Tour. In addition, PROBE conducted eight counselor workshops for 518 high school counselors. (Georgia Education Articulation Committee Inc., 2007).

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[24] I calculated a percent of twelfth grade students who participated in GHP, GSP, JE, and included this calculation as a column. However, for HSTW, TS, UB, and PROBE, I created a conditional variable of 1 for a participating high school and a 0 for a non-participating high school. The reasons for using conditional variable varied by program: For TS and UB it was necessary because participation was very low; for HSTW and PROBE the actual figures of participating students were not available.

Joint Enrollment (JE) was relatively popular with an average of almost 6 percent of 12th graders participating in the program. This was followed by High Schools That Work (HSTW) program which had an average rate of 36 percent. Only 0.61 percent of the 12th graders participated in the Governor's Honors Program (GHP). One reason is that GHP is a competitive program for rising juniors and seniors selected in a specified area in which their abilities, aptitudes and interests lie. Each school system is assigned a nomination quota after which students undergo statewide screening interviews and auditions. It is a six-week summer instruction program (Georgia Department of Education, 2007b).

Table 4-5
Descriptive Statistics: All high schools
N= 1960

VARIABLE NAME[25]	VARIABLE LABEL	MEAN-ALL HIGH SCHOOLS N=1960
Compositional Characteristics		
TOTSCH	Size-All Schools	1202.33 (603.61)
TOTBLK	Black Students per school	455.112 (417.9)
PCTBLK_SCH	Percent total Black students	38.472 (29.739)
HIBLACK	Predominantly Black	0.226 (0.418)
HIWHITE	Predominantly White	0.473 (0.499)
TOTWHT	White Students	661.460 (532.105)
PCTWHTSCH	Percent White Students	53.963 (29.612)
TWELFTOT	Twelfth Grade per school	227.859 (132.190)
TWELFBLK	Twelfth grade Black	79.843 (78.102)
TWELFWHT	Twelfth Grade White	133.957 (115.530)
LUNCHSCH	Free and reduced-price lunch	401.770 (248.512)
PCTLUNCH	Percent Lunch	37.056 (21.733)
Geographic Characteristics-Locale (%)		
URBAN	Urban	0.027 (0.162)
URBANFRINGE	Urban-fringe	0.281 (0.449)
MIDSIZE	Midsize	0.133 (0.339)
LARGETOWNS	Large towns	0.159 (0.365)
MIDSIZEFRI~E	Midsize fringe	0.054 (0.225)
RURAL	Rural	0.37 (0.476)

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[25] The variable names and labels on this table are used throughout the rest of this report.

Table 4-5 (Continued)
Descriptive statistics: All high schools
N= 1960

VARIABLE NAME	VARIABLE LABEL	MEAN-ALL HIGH SCHOOLS N=1960
	Geographic Characteristics-Locale	
SOUTHWEST	Southwest	0.352 (0.184)
SOUTHEAST	Southeast	0.059 (0.235)
NORTHEAST	Northeast	0.276 (0.447)
NORTHWEST	Northwest	0.630 (0.483)
	Program Participation[26]	
PCTGSP	Governor's Scholarship Program (%)	3.732 (4.033)
PCTGHP	Governor's Honors Program (%)	.610 (1.267)
HSTW	High Schools That Work	.360 (0.480)
PCTJE	Joint Enrollment (%)	5.738 (9.046)
TS	Talent Search	.240 (0.427)
UB	Upward Bound	0.191 (0.393)
PROBE	PROBE Fairs	.490 (0.500)
	Matriculation (continuation) Rates	
NOUSGT	Zero matriculation into USG institutions	0.001 (0.0226)
USGT[27]	Total matriculation into USG institutions	3.452 (0.438)
NOREST	No matriculation into a research institution	0.117 (0.322)
REST	Total matriculation into a research institution	1.589 (0.913)
NOREGT	No matriculation into a regional institution	0.123 (0.330)
REGT	Total matriculation into a regional institution	1.390 (0.805)
NOSTATE	No matriculation into a state university/college	0.049 (0.215)
STATEUC	Total matriculation into a state university/college	2.315 (0.898)

Data analysis methods

The original plan for analysis was to move from the descriptive analysis to a predictive

model through which I would estimate actual continuation rates. This plan had to be modified,

however, because the descriptive analysis made it clear that not all high schools matriculated

students to all USG models. This compromised the plan to use GLS regression models in the

next stage (there were simply too many schools with zero values on the outcomes to usefully

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[26] I calculated a percent of twelfth grade students who participated in GHP, GSP, JE, and included this calculation as a column. However, for HSTW, TS, UB, and PROBE, I created a conditional variable of 1 for a participating high school and a 0 for a non-participating high school. The reasons for using conditional variable varied by program: For TS and UB it was necessary because participation was very low; for HSTW and PROBE the actual figures of participating students were not available.

[27] This total includes matriculation into the two-year colleges.

model the continuation rates using GLS). These continuation patterns are detailed descriptively to show the characteristics of schools sending students to different types of colleges (see Table 4-5). In order to address this problem, I used a series of logistic regression models to first predict the probability of a school not sending students to specific segments of the USG.

While these logistic models serve as a useful predictive tool, more importantly, they allow for an estimate of the net marginal return (in terms of probabilities) of each of the predictors. This is useful because the estimates provide a gauge of the relative contribution of the various predictors to the probability of a school *not* sending students to any segment of the USG. Furthermore, the logistic models are useful to the extent that they complement the results of GLS regression analysis. Models were estimated for continuation to 1) USG research institutions, 2) USG state universities and colleges, and 3) USG regional universities.

Below are the results of descriptive statistics and logistic regression models for   high schools with zero continuation rates in to the research, regional state universities and colleges and the overall USG institutions.

High schools with zero continuation rates: Descriptive statistics

Table 4-6 shows the proportion of the schools that failed to matriculate students into a USG institutional model during the study period. It should be noted that of the 1961 high schools, only one failed to matriculate a single student into any USG institution. That high school was not included, leaving 1960 for further analysis. The table shows, for example, that on average 18 percent of all high schools failed to matriculate students into research universities in 1999 but this proportion fell and remained stable at 10 to 11 percent for the remainder of the study period. This pattern is also evident with respect to regional universities until 2002; however, the rate rose in 2003 and 2004.

Table 4-6
Proportion of students not attending any USG institution by year
N=230

	1999	2000	2001	2002	2003	2004
Research	0.18	0.10	0.11	0.10	0.11	0.11
Regional	0.17	0.10	0.11	0.10	0.14	0.13
State	0.10	0.03	0.05	0.03	0.04	0.05
USG Total	0.00	0.00	0.00	0.00	0.00	0.00

Next, I present the zero continuation rate analyses by three categories: Geographic effects, composition effects, and program effects. I use the three categories to discuss each of the three models[28]: research universities, regional universities, and state universities and colleges. First, I present separate descriptive data on high schools with zero continuation rates for research, regional and state universities/colleges.

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[28] For purposes of analyzing the zero continuation, I exclude the USG total because it is not relevant since only one high school met these criteria, and was therefore excluded.
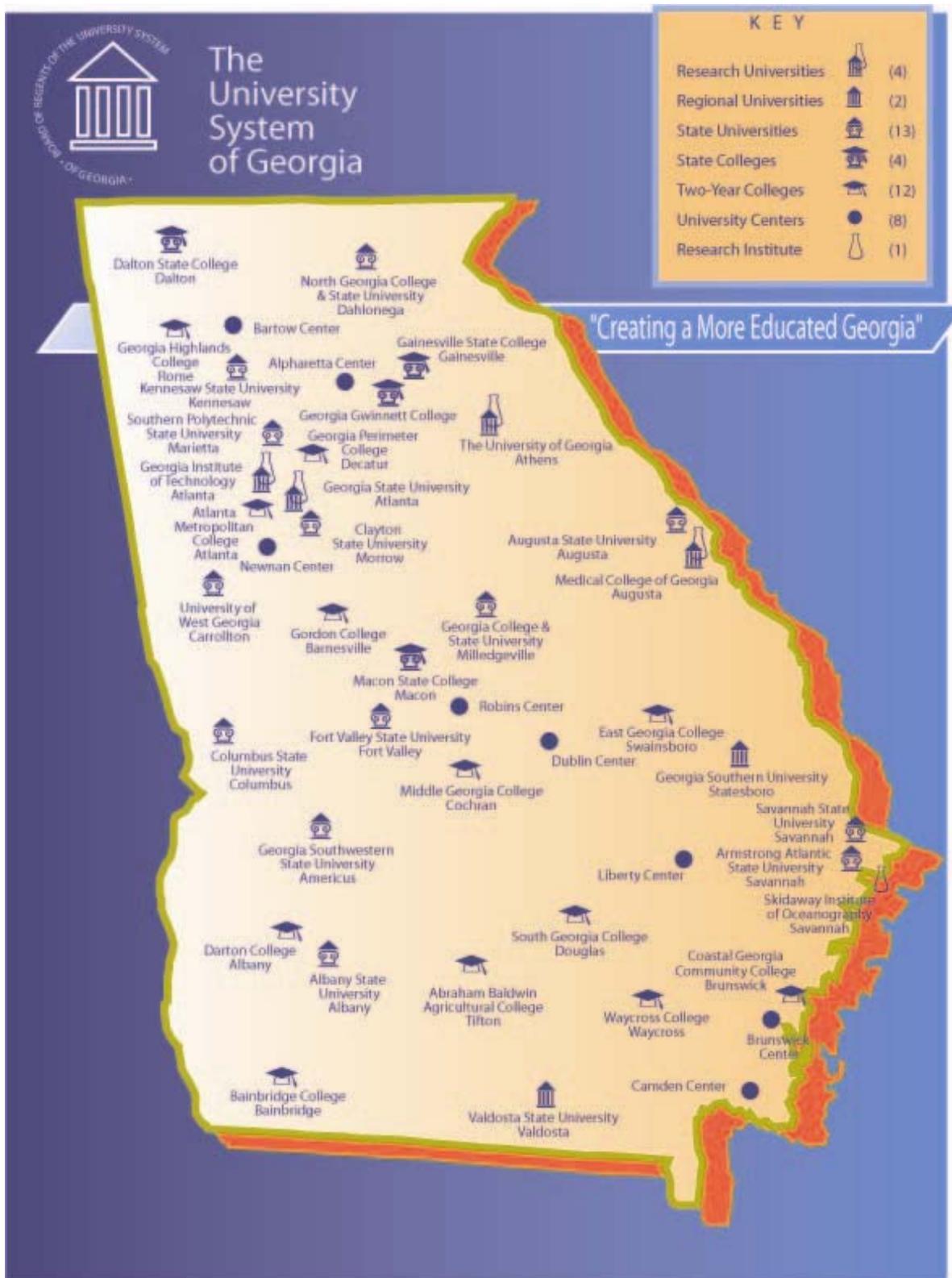
Figure 4-1
University System of Georgia (USG) Institutions
Source: http://www.usg.edu

Research universities

The study included three research institutions: Georgia Institute of Technology, Georgia State University, and University of Georgia[29]. All three are located in the northern half of the state.

Geographic effects

Figure 4-1 is a map showing the location of all University of Georgia institutions in May 2005. As shown on Table 4-7, a total of 230 (11.7 percent) of the 1960 schools, did not matriculate students into a research institution during the study period. A majority of those schools (59 percent) are located in the northwest part of the state (see Table 4-7) This is in contrast with the fact that 63 percent of all schools are in this part of the state (Table 4-5). Hence, this area is underrepresented in the category of zero continuation into research universities. In contrast, rural schools are overrepresented; although 37 percent of all schools are located in rural areas, 53 percent of schools with zero continuation to research universities are in rural areas (Table 4-7).

Composition effects

Predominantly White schools are underrepresented with 40 percent of the zero continuation in research universities being White while, on average, they represent 47 percent of all schools. However, Black schools are overrepresented at 31 percent since on average, they represent 22.6 percent of all schools. The average school size in this category (716) was 40 percent smaller than the average size of all schools of 1202.

As expected, SES background is an important factor in the zero continuation into research universities. The average participation rate in the free and reduced-price lunch program

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[29] For this purpose, the Medical College of Georgia, a research university, is excluded since that institution does not admit undergraduate students

for all schools is 37 percent. However, the average participation rate for schools with zero

continuation into research universities is 44 percent.

<u>Program effects</u>

Finally, all schools participated in the seven college readiness programs. PROBE was the

most widely subscribed program with 33.4 percent of all schools participating. This was

followed by TS and HSTW with 26.5 percent participating.

Table 4-7
Descriptive Statistics: high schools with zero continuation rates

VARIABLE	RESEARCH	REGIONAL	STATE
LOCALE			
URBAN	0.022 (0.146)	0.049 (0.217)	0.417 (0.200)
URBANFRINGE	0.143 (0.351)	0.214 (0.411)	0.219 (0.416)
MIDSIZE	0.148 (0.356)	0.103 (0.304)	0.104 (0.307)
MIDSIZEFRI~E	0.043 (0.204)	0.070 (0.256)	0.0104 (0.102)
RURAL	0.530 (0.500)	0.469 (0.500)	0.458 (0.500)
REGION			
SOUTHWEST	0.043 (0.204)	0.289 (0.168)	0.010 (0.102)
SOUTHEAST	0.087 (0.282)	0.123 (0.110)	0.240 (0.429)
NORTHWEST	0.591 (0.493)	0.778 (0.417)	0.427 (0.497)
COMPOSITION			
PCTLUNCH	44.390 (29.867)	36.868 (28.831)	34.977 (25.654)
PCTWHTSCH	43.712 (33.444)	49.447 (36.687)	48.062 (32.511)
PCTSPSCH	2.925 (4.859)	3.181 (6.45)	3.075 (5.339)
PCTBLK_SCH	41.711 (34.864)	36.030 (36.333)	29.057 (27.805)
HIBLACK	0.309 (0.463)	2.88 (0.454)	0.146 (0.355)
HIWHITE	0.404 (0.492)	0.502 (.501)	0.438 (0.499)
TOTSCH	716.721 (455.017)	751.054 (479.652)	799.396 (466.364)
PROGRAMS			
PCTGSP	4.533 (8.128)	4.036 (7.727)	5.07 (6.997)
PCTGHP	0.214 (0.885)	0.327 (1.23)	0.499 (1.894)
HSTW	0.265 (0.442)	0.333 (4.72)	0.229 (0.423)
PCTJE	3.790 (10.314)	3.780 (9.285)	6.508 (13.487)
TS	0.265 (0.442)	0.160 (0.368)	0.260 (0.441)
UB	0.170 (0.376	0.140 (0.348)	0.135 (0.344)
PROBE	0.334 (0.473)	0.374 (0.485)	0.396 (0.492)
N	230	243	96

SD are in parentheses

Regional universities

      Two institutions are classified as regional universities: Georgia Southern University, located in the city of Statesboro, with an estimated 2006 population of 26,534(City of Statesboro, 2007); and Valdosta State University, located in Valdosta, a midsize city of 44,500 residents (City of Valdosta, 2007). They are both located in the southeastern part of the state (See Figure1).

      <u>Geographic effects</u>

      Of the 1960 high schools, 243 (12.4 percent) did not matriculate students into any regional university. As shown on Table 4-7, an overwhelming majority of those   high schools (77.8 percent) are located in the northwest part of the state. As shown in Figure 1, the northwest location is furthest away from the two regional universities which are located in the southeast, which may partially explain this geographic pattern.

      <u>Composition effects</u>

      More than 50 percent of the high schools are predominantly White; 29 percent are Black. The average participation rate in the free and reduced-price lunch program is almost 37 percent.[30]

      <u>Program effects</u>

      HSTW and PROBE are the most subscribed programs in this category with 33.3 percent and 37.4 percent of the schools participating in the programs respectively.

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[30] Incidentally, the average participation rate in free and reduced lunch program was 37 percent, the same percentage as those schools that did not matriculate students into regional universities. Further research should be done to explore if the two variables bear any relationship.

State universities and colleges

Geographic effects

Column 4 of Table 4-7 shows descriptive statistics for high schools with zero continuation rates for state universities/colleges. A total of 96 schools did not send students to state universities or colleges. Of those, 46 percent are in rural locations and 42 percent in urban areas. The rural schools high zero continuation rates may be a result of the low SES population in the area; while the urban location may be a reflection of the fact that there are numerous other choices of higher education institutions, particularly in the Atlanta area, which include private, non-profit and for-profit colleges and universities. Nearly 43 percent are located in the northwest part of the state. This area is underrepresented in this category since 63 percent of all high schools are located there.

Composition effects

This category is slightly underrepresented in the low SES population segment. The average participation rate in free and reduced-price lunch program for all schools is 37 percent while the participation rate for schools in the zero continuation into state universities/colleges is 35 percent. This implies that the low SES schools matriculate students into this low-selectivity institutional sector at about the same rate as expected.

In this category, 44 percent of the high schools are predominantly White while only 15 percent are predominantly Black.

Program effects

Although, as expected, schools that participated in the Governor's Honors Program (GHP) are underrepresented in the zero continuation into state universities/colleges, the degree to which they are underrepresented is less than the degree to which they are underrepresented in

research and regional universities. Specifically, the mean participation rate into GHP for all schools was .610 percent (Table 4-5), while the mean participation rate for the zero continuation into state universities/colleges was 0.499 (Table 4-7). Since GHP is a merit-based competitive program, participating schools are bound to matriculate students into the relatively more selective research and regional universities. Hence, schools that participated in GHP are much more underrepresented in the zero-research (0.214) and zero-regional (0.327) models (Table 4-7) than they are in the state universities/colleges model. Stated differently, zero-state universities/colleges are underrepresented by 18 percent while, in contrast, zero-research and zero-regional universities are underrepresented by nearly 65 percent and 46 percent respectively.

High schools with zero continuation rates: Pooled time series cross-section logistic estimates

Table 4-8 contains a summary of the results of the pooled time series cross section logistic estimates. The absolute value of z statistics are shown in parenthesis. First, I tested the odds ratio of a school not sending any single student to a research university. As with the descriptive statistics, I use the categories of geographic effects, composition effects, and program effects in relation to research, regional and state universities/colleges.

Research universities

First I report the results from the research universities model. The research universities are Georgia Institute of Technology, Georgia State University, and University of Georgia.

Geographic effects

There are two areas with significant geographic effects on continuation to research universities. First, relative to high schools in large towns, the odds[31] of a school located in a midsize city to *not* matriculate a single student into a research university are 3.44 times greater (at p < .005) than they would be if the school is located in a large town.[32] Second, relative to schools in large towns, the odds are 2.44 times greater if a high school is in a rural locale. It should be noted that Georgia's public research universities are all located in urban areas thereby requiring prospective students to make a physical move to attend these institutions. This may be a significant impediment for students from lower-income backgrounds who tend to be overrepresented in urban and rural high schools in the state.

Composition effects

As shown on Table 4-8, on average and controlling for all other variables in the model , a 1 percent increase in a school's participation in free and reduced-price lunch decreases the odds of not matriculating any student to a research university by just over 1 percent (at p < .005). This is shown as a coefficient of -0.015. Moreover, relative to all Georgia high schools, predominantly White schools have roughly half the probability of not matriculating any students to one of Georgia's three research universities. This is important to note that White schools have a lower percentage of students from low SES background than Black schools as evident from

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[31] An odds ratio of 1.0 means that "the odds are equally likely and the predictor makes no difference … equivalent to a beta weight of 0.0. An odds ratio can go from 1.0 to infinity for situations where the odds are greater than 1.0 … and from 1.0 to just 0.0 where the odds are less than 1.0". (Acock, 2006, p. 256). The odds ratio are a transformation of the regression coefficients. For example, the coefficient for MIDSIZE on NOREST (column 1 in on Table 16) is 1.235 at a p < .005 level of significance. The odds ratio is defined as $\exp^{(b)}$, which for this example is $\exp^{(1.235)}$. This is expressed in terms of log odds, that is, the coefficient 1.235 implies that a one unit change in MIDSIZE location results in a 1.235 unit change in log of the odds. But one can "unlog" by exponentiating the coefficient. More simply, we raise the mathematical constant e to the b power, e^b or $e^{1.235}$ for the MIDSIZE variable(Acock, 2006). Using a calculator to "unlog" the result is an odds ratio of 3.44.

[32] I used a large town as the reference variable for locales. A large town is defined as "an incorporated place or Census designated place with a population greater than or equal to 25,000 and located outside a Metropolitan CBSA or inside a Micropolitan CBSA (Phan & Glander, 2007). ". For the Georgia regions, I used the Northeast as the reference variable.

participation in the free and reduced-price lunch program (25 percent versus 58 percent-see

Tables 4-10 and 4-12). This is a reminder that those populations with low continuation rates have

a lot in common in that low SES populations are also likely to be first-generation college goers

and are also likely to be from the underrepresented minority groups, mostly Black and Hispanics.

School size also appears to influence continuation rates to research institutions. As shown

on Table 4-8, for every 10 percent increase in school population, the odds of not matriculating

students into a research university decreases by 3 percent ($p < .001$).

Program effects

Two programs were associated with a reduction of the odds of zero matriculation to

research universities: Governor's Honors program (GHP) (.7543) and High Schools That Work

(HSTW) (.5315), both at $p < .005$ significance level. This is a positive outcome that implies, for

example, that a 1 percent increase in participation in GHP decreases the odds of a high school to

not matriculate any student to one of the three research institutions by nearly 25 percent. For

HSTW, the odds decrease by nearly 47 percent. GHP is a selective merit-based program while

HSTW is designed to "create a culture of high expectations and continuous improvement in high

school and middle grades … (with) a rigorous recommended curriculum aimed at preparing high

school students for further education and the workplace" (Southern Regional Education Board,

2007, p. 3). Participation in the two programs is very low (.24 to .45 for HSTW and 27-71 for

GHP as shown in Table 4-1). The magnitude of the decrease in zero matriculation associated

with just a 1 percent increase in participation in those programs implies that the programs are

very effective.

Otherwise, participation rates in the other five programs did not indicate an effect, with any statistical significance, on the probability of increasing or decreasing the odds of not matriculating students into research universities.

Regional universities

Next, I used logistic regression to test the odds of a high school not matriculating any single student to either of the two regional universities.

Geographic effects

The results indicate that the odds of a high school to not matriculate students into one of Georgia's two regional universities is about 5.3 times higher if the school is located in an urban area relative to a large town location (p < .005).

Furthermore, the odds are about 3.1 times higher (p < .001) for a high school in the northwest, relative to high schools in the northeast region. This can be attributed to the fact that the two regional universities are located in the southern part of the state; indeed, Valdosta State University is located only a few miles from the Florida boarder. None of the other locations have a statistically significant effect on zero-continuation to regional universities (See Figure 4-1).

Composition effects

Race has a statistically significant influence on the zero-continuation to the regional universities model. The odds of a predominantly Black high school to not matriculate students are 2.16 times higher (p < .005) than for a non Black high school. One possible reason for this result is that the majority of Georgia's Black population lives in large urban areas, while the regional universities are located in rural or midsize fringe urban centers of Valdosta and Statesboro.

There is also a statistically significant (p < .001) effect from participation in the lunch program. As shown on Table 4-8, each 10 percent increase in a school's participation in free and reduced-price lunch program decreases the probability of not matriculating any student to a regional university by 26 percent (at p < .001). Hence, SES has a small but statistically significant positive effect on matriculation into regional universities.

Program effects

Governor's Honors Program was the only one of the seven programs to yield a statistically significant effect on zero continuation to regional universities. As shown on Table 4-8, for every 1 percent increase in participation in GHP, the probability of a high school to *not* matriculate any student into a research university decreases by almost 27 percent.

State universities and colleges

Geographic effects

Results of logistic regression (Table 4-8) show that relative to high schools in large towns, the odds of a high school in an urban locale to not matriculate students into a state university or college are more than 25 times higher (p <.001). One reason for such huge odds is that many of the state universities and colleges are located in or near urban centers, where numerous other types of institutions, both public and private, are also located. Hence, prospective students have numerous other colleges and universities from which to choose. A large percentage of these institutions are predominantly Black. It is notable that while only 2.7 percent of all schools are in an urban locale (Table 4-5), none are predominantly White (Table 4-12), but 11.5 of all predominantly Black schools are Urban (Table 4-10).

Moreover, relative to high schools in the northeast, the odds are 10 times higher for a school located in the southeast to not matriculate any students in state universities/colleges (p < .001). The location and availability of these institutions might explain why the odds are so high. In the southeast there are only two institutions fitting this category and they are both located in Savannah: Savannah State University and Armstrong Atlantic State University.

Composition effects

White schools are more likely to matriculate students into state universities/colleges than their Black counterparts. The odds of White high schools to *not* matriculate any student into a state university/college are 64 percent lower (p < .001) than a non-White school.

Participation in free and reduced-price lunch, an indicator of low SES in this research, has a positive effect on zero matriculation into state universities/colleges. As shown on Table 4-8, for each 1 percent increase in a school's participation in the lunch program, the odds of not matriculating any student to a state university/college decreases by more than 3 percent (p < .001). This effect is similar to the effect on research and regional models.

Program effects

For each 1 percent increase in participation in the HSTW program, a high school's probability of not matriculating students to one of the state colleges/universities decreases by about 60 percent. This is a positive result from a program that, as noted earlier, is designed to preparing high school students for further education and the workplace.

On the other hand, the odds of zero-matriculation are 1.03 percent (p < .005) higher for schools participating in the Joint Enrollment program (JE). It is possible that students from schools that participate in JE eventually matriculate into the more selective research and regional universities.

The other programs showed no statistically significant effect on increasing or decreasing the odds of zero continuation into state universities and colleges.

USG Total: Continuation to any USG institution.

There was only one school that had zero continuation into any USG institution. As a result that high school was dropped from further analysis.

Table 4-8
Pooled time series cross section logistic estimates: all Georgia public schools 1999 - 2004
Outcome = no enrollment

	(1)	(2)	(3)
	NOREST	NOREGT	NOSTATE
LOCALE			
URBAN	0.899	1.664	3.233
	(0.92)	(2.05)* [5.28]	(2.90)** [25.35]
URBANFRINGE	0.366	0.255	1.191
	(0.68)	(0.52)	(1.78)
MIDSIZE	1.235 [3.44]	0.670	0.328
	(2.22)*	(1.23)	(0.46)
MIDSIZEFRINGE	0.011	0.699	-1.897
	(0.01)	(1.12)	(1.43)
RURAL	0.890	0.675	0.426
REGION	(2.22)* [2.44]	(1.69)	(0.87)
SOUTHWEST	0.470	0.346	-1.609
	(0.67)	(0.47)	(1.24)
SOUTHEAST	0.881	-1.136	2.310
	(1.57)	(1.44)	(4.08)**[10.07]
NORTHWEST	0.472	1.138	-0.906
	(1.37)	(3.50)**[3.12]	(1.90)
COMPOSITION			
PCTLUNCH	-0.015	-0.026	-0.033
	(2.02)* [.9851]	(3.69)**[.9743]	(3.61)**[.9675]
HIWHITE	-0.608	-0.187	-1.016
	(2.01)* [.5444]	(0.64)	(2.81)**[.3620]
HIBLACK	0.364	0.771	-0.517
	(0.89)	(2.00)* [2.16]	(0.93)
TOTSCH	-0.003	-0.003	-0.002
	(8.46)**[.9970]	(9.45)**[.9970]	(5.60)**[.9980]
PROGRAMS			
PCTGSP	0.000	-0.014	-0.003
	(0.01)	(0.67)	(0.11)
PCTGHP	-0.282	-0.313	-0.182
	(2.32)* [.7543]	(2.96)**[.7312]	(1.72)
HSTW	-0.632	-0.271	-0.925
	(2.35)* [.5315]	(1.14)	(2.49)*[.3965]

Absolute value of z statistics in parentheses
[ ] shows the odds ratio if significant
* significant at 5%; ** significant at 1%

Table 4-8 (Continued)
Pooled time series cross section logistic estimates: all Georgia public schools 1999 - 2004
Outcome = no enrollment

	(1)	(2)	(3)
	NOREST	NOREGT	NOSTATE
PCTJE	0.001	0.005	0.028
	(0.06)	(0.43)	(1.96)*[1.03]
TS	0.061	-0.117	0.018
	(0.18)	(0.33)	(0.04)
UB	-0.604	-0.575	-0.534
	(1.65)	(1.59)	(1.12)
PROBE	-0.215	-0.026	0.103
	(0.81)	(0.11)	(0.30)
Constant	0.308	0.422	0.031
	(0.50)	(0.71)	(0.04)
High schools	1960	1960	1960
Number of school id	355	355	355

Absolute value of z statistics in parentheses
[ ] shows the odds ratio if significant
* significant at 5%; ** significant at 1%

GLS Regression Models: non-zero continuation rates

Once the logistic models were specified, the analysis shifted to only those schools actually sending students to the different USG sectors. That is, since I attend to the question of the correlates of a zero continuation rate using the logistic models, I then dropped all schools with a continuation rate of zero. In this section, as with the logistic regression analysis, I report the results of four separate models estimated for continuation to 1) USG research institutions, 2) USG state universities and colleges, and 3) USG regional universities; and 4) and continuation to any USG institution. The purpose of the analyses was to establish if high schools can increase college-going rates by participating in certain types of college preparation programs. Below I have reported the results of the analyses based on each of the three research question and the hypotheses.

Research question 1

H₁: There is a significant difference in continuation rates between Georgia public high schools

that participate in specific classes of college readiness programs and Georgia public high schools

that do not participate in such programs.

Descriptive and regression analyses were performed to test the hypothesis. This section

centers on the hypothesis shown above from research question 1. In other words, this section

attempts to help determine the extent to which college readiness programs contribute to college

continuation, net of all other factors. In addition, it is important to determine if other factors, or a

combination of factors, might contribute towards college continuation. I report continuation rates

for high schools participating in the programs.

First, I report the results of a regression model encompassing all variables/predictors of

continuation into the overall USG system. Then I will report separate results for predominantly

Black and White high schools. For each of the four models, the results are grouped into

geographic effects, composition effects, and program effects. A summary for all models is shown

on Table 4-9.

Continuation to any USG institution

Geographic effects

As shown on Table 4-9, the only geographic variable making a statistically significant

contribution is the urban locale. Relative to high schools in large towns, continuation to any of

the 33 USG institutions in this study is more than 51 percent (p < .001) lower for an urban

school, net of all other variables in the model.

Composition effects

As shown on Table 4-9, a predominantly Black school is associated with a 20 percent decrease in overall continuation, at $p < .001$ level of significance, net of all other variables in the model. This negative coefficient is not at all surprising since when compared to their White peers, the Black population is also likely to come from a low SES background and from families in which neither parent attended college. Both factors are associated with low college continuation rates. Indeed, the findings of this research show that in Georgia the average mean participation rate in free or reduced price lunch is 58 percent for predominantly Black schools; while it is only 24.9 percent in predominantly White schools. The average for all high schools is 37.1 percent (see Table 4-5).

Program effects

Participation in three of the seven college readiness programs in the study has a positive, statistically significant ($p < .001$) contribution to variance explained in continuation. These are Governor's Scholarship Program (GSP): (0.014), Governor's Honors Program (GHP): (0.018), and Joint Enrollment (JE): (0.003), all at $< .001$ level of significance. This means, for example, that if a high school increases its twelfth grade participation in GSP by 10 percent, continuation into USG institutions increases by 14 percent on average, net of all other effects.

Participation in High Schools That Work (HSTW), Talent Search (TS), PROBE, and Upward Bound (UB) did not have any statistically significant effect on college continuation.

Research universities

Next, I used Generalized Least Square (GLS) regression analysis to determine the specific factors that influence continuation into each model. First, I report the results for the

research universities model. Research universities are the most selective and the most prestigious institutions in the USG system.

Geographic effects

The results show that two geographic locations have a statistically significant contribution to variance explained in continuation into research universities. First, relative to schools in large towns, continuation to research universities is 58 percent higher ($p < .001$) for a high school in an urban fringe location. This is a huge advantage for those schools located in the suburbs, mostly in the Atlanta metropolitan area, where Georgia Institute of Technology and Georgia State University are located. Indeed, the Atlanta suburbs are also within close proximity to University of Georgia as well. The schools in this area are better funded. In addition, their proximity to research institutions places them at an advantage relative to schools in other locations.

Second, relative to high schools in the northeast region of Georgia, and net of all other factors in this research, continuation rate to research universities is 28 percent lower for schools in the southeast region (-0.284 at $p < .001$). In this case, the fact that the three research institutions are located in the northeast region might explain the disadvantage that schools from the southeast face. Net of all other factors, the long distance that students would have to travel away from home can dissuade them from choosing to attend any of the three research universities. This may be a significant impediment for students from lower-income backgrounds.

Composition effects

As expected, participation in free and reduced-price lunch, the low SES factor, reduces continuation by .8 percent (-0.008 at $p < .001$) net of all other factors.

Program effects

As noted on the results of continuation to the overall USG, the programs with a statistically significant contribution are: GSP (0.029), GHP (0.031), and JE (0.005); all at p < .001 level of significance. Participation in HSTW, TS, PROBE, and UB did not have any significant effect on continuation.

Regional universities

Next, I report the results of the GLS regression model for continuation into regional universities. This model includes geographic, composition, and program effects.

Geographic effects

The model shows two statistically significant geographic influences: the southeast and northwest regions. Net of all other factors, a high school in the southeast location is associated with a 59 percent higher average continuation rate to regional universities, relative to high schools in the northeast region (p < .001). As shown on Figure 4-1, both regional universities are located in the southern part of the state; indeed, Valdosta State University is located only a few miles from the Florida boarder. Hence, the close proximity is a huge factor in explaining the significant effect that a southeast location exerts on continuation.

On the other hand, a northwest location has the opposite effect: net of all other factors, continuation is 44.5 percent lower relative to a northeast location (p < .001). Lack of proximity can be attributed to this negative effect.

Finally, relative to high schools in large towns, a rural school has an 18 percent (p < .005) lower continuation rate to regional universities, net of all other effects.

Composition effects

Net of all other variables in the model, participation in free and reduced-price lunch has a slight negative, but statistically significant contribution of 0.5 percent, (at p < .001) net of all other factors. Hence, low SES is not much of a direct factor in continuation to regional universities. None of the other variables, including racial composition, exhibited a statistically significant increase or decrease in continuation in this model.

Program effects

Three programs made positive contribution to continuation: Governor's Scholarship Program (GSP): 0.024, p <. 001; Talent Search (TS): 0.100, p < .005; and UB: 0.142, p < .005. However, one unexpected finding is that High Schools That Work (HSTW) resulted in a negative contribution of -0.067 at p < .005. This means that, net of all other variables in this research, a 1 percent increase in participation decreases continuation to a regional university by nearly 7 percent. Further research should be done to identify the cause of this unusual finding.

State universities and colleges

Next, I report the results of the regression model for continuation into state universities and colleges.

Geographic effects

The model displayed a large relatively statistically significant, but negative coefficient of -0.506 (p < .005) for urban locations. Thus, relative to high schools in large towns and net of all other factors in the model, a school in an urban location has a 51 percent lower continuation rate. This finding is consistent with the logistic model that showed that the odds of a school to not matriculate students to state universities/colleges was more than 25 percent higher for a school in an urban area relative to one in a large town (Table 4-8). One reason is that, as shown on Figure

4-1, the state universities and colleges are located in or near urban centers, where numerous other types of institutions, public and private, are also located. Hence, prospective students have many other choices. Furthermore a large percentage of urban schools are predominantly Black, since 11.5 percent of Black high schools are located in urban centers, and there no White schools in urban areas (see Table 4-10). Poor continuation rates in Black schools have already been documented.

Moreover, a midsize fringe and midsize locales exhibited strong positive influences on continuation rates in this model. Specifically, relative to high schools in large towns and net of all other factors, the continuation rate for a midsize fringe locale was 79.5 percent higher; and a midsize locale was 72 percent higher (at $p < .001$). One contributing factor to this finding is that state universities and colleges are most likely to be located in these size locales. Also, schools in rural or in the northwest region were associated with significant positive coefficients of 41 percent and 30.5 percent (both at $p < .001$ significance level), relative to high schools in large towns and northeast region respectively.

Two other location variables with a strong negative influence on continuation to state universities/colleges are the southwest region and the southeast region. Relative to high schools in the northeast, a high school in the southwest region has a 36.5 percent lower continuation ($p < .005$). For a school in the southeast, continuation is considerably lower (-1.10, $p < .005$). One explanation is that in the southeast there are only two institutions fitting this category: Savannah State University and Armstrong Atlantic State University; therefore, compared to other regions the colleges may not be as accessible. In the southwest, there are three institutions: Columbus State University, Southwestern State University, and Albany State University.

Composition effects

Net of all other factors, a predominantly White school is associated with a 13 percent increase in continuation to state universities/colleges. Since state universities/colleges are low-selective institutions, this increase may reflect the fact that White population is higher; therefore, White schools are bound to matriculate into state universities/colleges.

An interesting finding on this category is the small but statistically significant and positive role (0.004 at $p < .001$) that participation in free/reduced-price lunch, and hence low SES, appears to play in continuation to state universities/ colleges, unlike research and regional universities. Apparently, unlike the case in the other three models, SES has a positive effect on continuation to these institutions. This means that the negative effect of low SES is virtually nonexistent in this low-selectivity model.

Program effects

Participation in four -Governor's Scholarship program (GSP), Governor's Honors program (GHP), PROBE, and High Schools That Work (HSTW) - exhibited statistically significant effects on continuation to state universities/colleges. This implies that net of all other variables in the model, each 10 percent increase in student participation in GSP increases a high school's continuation to state universities/colleges by 9 percent (0.009 at $p < .001$). In addition, high schools that participated in PROBE increased continuation at a statistically significant coefficient average of nearly 10 percent (0.097, $p < .001$). Moreover, a 10 percent increase in students participation in GHP increased the high school's continuation by 28 percent ($p < .005$). Finally, high schools participating in HSTW increased continuation rate by an average of 6.3 percent ($p < .005$).

Table 4-9
Pooled time series cross section GLS estimates: all Georgia public schools 1999 - 2004 (log percentages)

	(1)	(2)	(3)	(4)
	USGSYSTEM	RESEARCH	REGIONAL	STATEUC
LOCALE				
URBAN	-0.513	0.253	-0.341	-0.506
	(3.99)**	(1.45)	(1.93)	(2.48)*
URBANFRINGE	0.080	0.580	0.105	0.283
	(1.14)	(6.20)**	(1.15)	(2.59)**
MIDSIZE	0.033	0.156	-0.025	0.720
	(0.46)	(1.62)	(0.27)	(6.44)**
MIDSIZEFRINGE	0.051	-0.030	-0.228	0.795
	(0.53)	(0.24)	(1.86)	(5.42)**
RURAL	-0.114	0.028	-0.181	0.410
	(1.96)	(0.37)	(2.47)*	(4.59)**
REGION				
SOUTHWEST	0.126	-0.261	0.114	-0.365
	(1.19)	(1.89)	(0.83)	(2.26)*
SOUTHEAST	0.111	-0.284	0.590	-1.105
	(1.33)	(2.59)**	(5.67)**	(8.51)**
NORTHWEST	0.020	-0.017	-0.445	0.305
	(0.41)	(0.25)	(6.99)**	(4.00)**
COMPOSITION				
PCTLUNCH	-0.001	-0.008	-0.005	0.004
	(1.07)	(6.94)**	(3.77)**	(2.95)**
HIWHITE	-0.008	-0.015	-0.047	0.129
	(0.30)	(0.38)	(1.09)	(3.03)**
HIBLACK	-0.200	-0.086	-0.085	0.053
	(4.92)**	(1.48)	(1.42)	(0.83)
TOTSCH	0.000	0.000	0.000	0.000
	(3.39)**	(6.01)**	(2.28)*	(0.96)

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

Table 4-9 (Continued)
Pooled time series cross section GLS estimates: all Georgia public schools 1999 - 2004 (log percentages)

	(1)	(2)	(3)	(4)
	USGSYSTEM	RESEARCH	REGIONAL	STATEUC
PROGRAMS				
PCTGSP	0.014	0.029	0.024	0.009
	(6.71)**	(6.49)**	(4.94)**	(2.79)**
PCTGHP	0.018	0.031	-0.014	0.028
	(2.73)**	(3.15)**	(1.27)	(2.52)*
HSTW	0.013	-0.014	-0.067	0.063
	(0.65)	(0.50)	(2.15)*	(2.03)*
PCTJE	0.003	0.005	0.003	0.002
	(3.48)**	(3.52)**	(1.81)	(1.10)
TS	-0.023	-0.012	0.100	-0.083
	(0.66)	(0.25)	(2.06)*	(1.57)
UB	0.065	0.031	0.142	-0.010
	(1.59)	(0.54)	(2.53)*	(0.16)
PROBE	0.036	-0.015	0.017	0.097
	(1.84)	(0.53)	(0.57)	(3.23)**
Constant	3.287	1.476	1.821	1.588
	(45.74)**	(13.69)**	(16.58)**	(13.74)**
High schools	1959	1730	1717	1857
Number of school ID	355	342	339	352

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

Summary of research question 1

Table 4-9 shows a summary of the GLS regression analysis for the four models for research question 1. The absolute value of the z statistics is shown in parenthesis. First, I present a summary of the impact of high school geographic location and other demographic characteristics. The urban locale was associated with a 51.3 lower continuation rate to the overall USG, relative to high schools in large towns. However, a high school located in an urban fringe locale resulted in a continuation rate to research universities that was 58 percent higher, relative to a school in a large town (p <.001). Moreover, schools in the southeast region experienced an

average continuation rate to research universities that was more than 28 percent higher than for those in the northeast region (p <.001).

As regards regional universities, rural high schools had an 18 percent lower continuation rate (p < .005) than schools in large towns; schools in the northwest region 44.5 lower than those in the northeast (p < .001); and southeast schools had a 59 percent higher continuation relative to those in the northeast region.

Also as shown on Table 4-9, the high school locale was a significant factor on continuation to state universities and colleges. Relative to schools in large towns, a high school in an urban locale has a 51 percent lower continuation to state universities/colleges. Since there are no predominantly White high schools in urban locales, the low continuation rate most likely falls disproportionately on Black schools. As noted previously, one reason for this outcome is that many of the state universities and colleges are located in or near urban centers, where numerous other private institutions of comparable level of selectivity to state colleges/universities, are located. Thus, in choosing a college, prospective students have numerous other choices of non-USG institutions. In fact, a large percentage of those high schools are predominantly Black. These two coefficients make this an important finding because 40 percent of all Black schools are within an urban or urban fringe location (Table 4-10).

In addition, continuation to state universities/colleges is significantly lower for a high school in the southeast region, relative to a northeast location. One contributing factor for this outcome is that there are only two institutions fitting this category in the southeast: Savannah State University and Armstrong Atlantic State University; therefore, compared to other regions the colleges may not be as accessible. In the southwest, there are three institutions: Columbus State University, Southwestern State University, and Albany State University. However, as noted

previously, there are bound to be additional factors other than location that contribute to the negative effect.

Participation in the free and reduced-price lunch program was associated with a statistically significant lower rate of continuation to research and regional universities, but a positive coefficient in the state universities/colleges model.

Finally, predominantly Black schools experienced 20 percent lower rates of continuation to the overall USG continuation, at $p < .001$ level of significance.

I now present a summary of the impact of college readiness programs on college continuation. Overall, Governor's Scholarship Program (GSP) can be considered the most successful of all seven programs. Net of all other factors, GSP made a positive contribution in continuation to all USG models, and at a statistically significant level of $p < .001$. It should be noted that the average high school participation rate in GHP ranged from 3.42 to 4.15 percent for the six year period of this research (see Table 4-12).

The success of GSP is associated with its intentions. GSP is a merit-based scholarship designed "to recognize Georgia's high school Valedictorians and STAR Students and encourage them to attend a public or private college or university in Georgia by providing scholarship funds" (Georgia Student Finance Commission (GSFC), 2007b). Participants are required to enroll in a Georgia public college or university within nine months of high school graduation. This requirement surely contributes to the success of the program as evidenced in this study. Although the average GSP participation rate within schools is less than 4 percent, the program made an important positive impact relative to other programs, in all four models (Georgia Department of Education, 2007b).

Net of all other factors, participation in Governor's Honors Program (GHP) was associated with an increase in continuation to the overall USG total and to research universities by 0.018 and 0.031 ($p < .001$) respectively. The program was also associated with an increase in continuation to state universities and colleges by 2.8 percent at a $p < .005$ level of significance.

The impact of GHP on continuation rate is particularly significant, given its size. The average program participation rate per school ranged from only 0.27 to 0.71 percent for the six year period (see Table 4-4). GHP is a competitive program for rising juniors and seniors, selected in a specified area in which their abilities, aptitudes and interest lie. It is designed to provide intellectually gifted and artistically talented high school students challenging and enriching educational opportunities.

Joint Enrollment (JE), which is associated with a moderate but statistically significant positive contribution to overall USG and research models, can also be considered a success. A 10 percent increase in participation increased continuation by 3 and 5 percent (both at $p < .001$ level of significance) in USG and research universities respectively. Joint Enrollment allows students to earn dual credit towards high school and college. The program is financed through the ACCEL program with state lottery funds.

Participation in Upward Bound program (UB) and Talent Search (TS) each made a significant (and statistically significant) contribution by increasing continuation to regional universities by an average of 10 percent and 14.2 percent respectively ($p < .005$). This finding is important because both programs were in the original set of TRIO programs. They serve students from low-income families; students from families in which neither parent holds a bachelor's degree; and low-income, first-generation military veterans who are preparing to enter postsecondary education. These are the groups that are most disadvantaged in terms of access to

higher education. For the most part, the contribution of UB and TS towards continuation into regional universities comes from the fact that Georgia Southern University, one of the two regional universities, participates in the programs, thereby increasing the probability that participants would enroll in that institution (U.S. Department of Education, 2005).

Additionally, participation in PROBE was associated with an increase in continuation into the least selective state colleges and universities model, with a coefficient of 0.097 at a $p < .001$ level of significance. It should be noted that nearly 50 percent of the high schools in this study participated in PROBE.

Participation in High Schools That Work (HSTW) increased continuation to state universities/colleges by an average of 6.3 percent. However, the program was also associated with a decrease in continuation to regional universities. This is a significant finding, albeit negative, because 36 percent of all the high schools in this research participated in the program.

In conclusion, based on the results of analyses of the GLS regression models, high schools that participate in four of the seven programs (GSP, GHP, JE, and PROBE) exhibited higher levels of matriculation in one or more USG model at $p < .001$ level of significance, net of all other factors. In fact three programs, GSP, GHP and JE, were associated with higher levels of matriculation to research universities (the most prestigious and selective model) and to the overall USG totals at a statistically significant level ($p < .001$). In addition, participation in TS and UB were associated with an increase in continuation to regional universities at a lower significance level ($p < .005$). Participation in PROBE increased continuation to state universities/colleges by nearly 10 percent at $p < .001$ level of significance. Furthermore, although HSTW was associated with a decrease in continuation to the regional universities model,

participation increased continuation to state universities/colleges. Therefore, all seven programs exhibited higher levels of matriculation in at least one of the four models.

These findings are consistent with Hypothesis H1: There is a significant difference in continuation rates between Georgia public high schools that participate in specific classes of college readiness programs and Georgia public high schools that do not participate in such programs. Indeed this finding is consistent with some research that indicate that well designed programs can double continuation rates (Gandara & Bial, 2001).

I now turn to Research Question 2.

Research question 2

H2: With all else equal, there are different patterns of effects in predominantly Black public high schools and predominantly White public high schools.

 H2 is derived from research question 2. The purpose of research question 2 was to attempt to determine if the programs exhibit different effects in Black and White high schools. In other words, are the programs as effective, or less effective, in the predominantly Black schools as they are in White schools, or vise versa? Is there evidence of patterns of success that is specific to each type of high school; and can such patterns of success be duplicated in the future to attempt to increase college continuation? In addition to college readiness programs, what other factors in this research contribute to the success or lack of success in continuation?

 As discussed in Chapter 2, Georgia's college participation rate is below that of the national average. For example, based on the 2000 census data, Georgia's participation rate for the 18-24-year old population was 27.9 percent (Martinez, 2004, p. 17), which is below the national average of 34 percent. If successful programs yield better results in schools populated by specific population groups, and specifically predominantly Black schools, then programs can be designed to target high schools serving those populations.

 First, I examine the descriptive statistics on predominantly Black schools and their White counterparts.

 <u>Predominantly Black high schools</u>

  Geographic location

 As shown on Table 4-10, about 40 percent of Black schools are located in urban or urban-fringe areas (11.5 percent and 28.5 percent), and 23 percent in rural areas. Nearly 68 percent are located in the northwest area of the state.

Composition

Table 4-10 shows that the average participation rate in the free and reduced-price lunch program per school in Black high schools is 58 percent, an indication of low SES. On average, 13 percent of students in predominantly Black schools are White.

Participation in programs

More than half of Black high schools participated in PROBE; 46 percent in High Schools That Work (HSTW), and more than 30 percent in Talent Search (TS) and Upward Bound (UB). The average participation rate in Governor's Scholarship Program (GSP) and Joint Enrollment (JE) within high schools was nearly 3 percent each. Only a half of one percent (0.51) participated in the Governor's Honors Program (GHP).

Table 4-10
Predominantly Black high schools: Selected descriptive statistics
N= 442

VARIABLE NAME	VARIABLE LABEL	MEAN	SD
TOTSCH	Total students: All Black schools	1139.4	493.9
PCTWHTSCH	Percent White Students	13.0	12.5
PCTLUNCH	Percent Lunch	58.026	18.461
	Locale (%)		
URBAN	Urban	0.115	0.320
URBANFRINGE	Urban-fringe	0.285	0.452
LARGE TOWN	Large town	0.109	0.311
MIDSIZE	Midsize	0.249	0.433
MIDSIZEFRI~E	Midsize fringe	0.014	0.116
RURAL	Rural	0.229	0.420
	Region (%)		
SOUTHWEST	Southwest	0.045	0.208
SOUTHEAST	Southeast	0.027	0.163
NORTHWEST	Northwest	0.676	0.468
NORTHEAST	Northeast	0.251	0.434
	Programs		
PCTGSP	Governor's Scholarship Program (%)	2.818	2.800
PCTGHP	Governor's Honors Program (%)	0.510	1.373
HSTW	High Schools That Work	0.459	0.499
PCTJE	Joint Enrollment (%)	2.581	5.000
TS	Talent Search	0.371	0.483
UB	Upward Bound	0.301	0.459
PROBE	Probe Fairs	0.536	0.499

Geographic effects

Next, I examined the results of the GLS estimates for patterns of success or otherwise in predominantly Black schools. The results show that geographic variables display significant patterns of effect on college continuation. As shown on Table 4-11, an urban or urban-fringe location has a strong influence on continuation to research and state universities/colleges. This is important because 40 percent of all Black high schools are located in an urban or urban-fringe locale (none of the predominantly White schools are located in an urban locale). As shown on Table 4-11, an urban locale has a positive coefficient of 0.554 ($p < .005$) for Black schools, net of all other factors. This means that net of all other effects and relative to schools in large towns, continuation to research universities for an urban high school was more than 55 percent higher. Even more powerful is the effect of an urban fringe high school, which is associated with a continuation rate to research universities that is nearly 90 percent higher(0.890 at $p < .001$), relative to schools in large towns. The research universities are located in urban areas (Georgia Institute of Technology, Georgia State University), or in an urban-fringe city (University of Georgia). This is a huge advantage for those high schools located in the suburbs, mostly in the Atlanta metropolitan area, where Georgia Institute of Technology and Georgia State University are located. Indeed, some Atlanta suburbs are within close proximity to the University of Georgia as well. Moreover, high schools in this area are well funded, thereby placing them at an advantageous position. For example, the Atlanta school district, which is 85 percent Black, had an FY 2006 FTE expenditure for instruction of $ 7816 (Georgia Department of Education, 2007a).

Furthermore, continuation to state universities or colleges are almost 70 percent (-0.692, $p< .001$) *lower* for urban Black schools, relative to high schools in large cities. This is consistent

with the finding that shows a negative coefficient for overall continuation to the state universities/colleges for all high schools (see Table 4-9). One reason for such huge odds is that many of the state universities and colleges are in or near urban locales, where numerous other private institutions of comparable level of selectivity are located. Thus, in making decisions on college choice, prospective students have many non-USG institutions from which to apply. In fact, a large percentage of those high schools are predominantly Black. These two coefficients make this an important finding because 40 percent of all Black schools are within an urban or urban fringe location (Table 4-10).

Another significant finding is that relative to high schools in the northeast region, location of a predominantly Black school in the southeast is associated with 102 percent (1.024 at $p < 0.001$) higher continuation to regional universities. This can possibly be attributed to the location of the two regional universities in the southeast. Net of other considerations, there is a tendency for proximity to an institution to increase continuation into that institution.

However, a southeast location is associated with a negative continuation rate to state universities/colleges by almost 90 percent (-0.893 at a <.001 level of significance). The most likely reason for this is that there are no state universities or colleges in this region. In any case the presence of the two regional universities, which are better endowed and are more prestigious, might prove more attractive to graduates of Black high schools in this region.

Composition effects

Participation in the free and reduced-price lunch program had a small negative but statistically significant effect on overall USG continuation (- 0.006 at $p < 001$), research universities (- 0.007 at $p < 001$), and regional universities (- 0.005 at $p < 005$).

In addition, the proportion of White students in a predominantly Black school had a significant positive effect of 0.013 (p < .001) in continuation to research universities. This implies, for example, that net of all other effects, a 10 percent increase in White students in a predominantly Black school increased continuation to research universities by 13 percent. This is an important and interesting finding that raises numerous questions. For example, is the increase in continuation associated with the increase in White students also proportionate to the increase in the school endowment? What proportion of the increase in continuation is Black? These are important issues that warrant further research.

Program effects

Of the seven programs, only Upward Bound (UB) was associated with a statistically significant positive impact in Black schools. Participation in Upward Bound increased continuation to research institutions by an average of 23.4 percent and to state universities/colleges by 19.3 percent (p < .005 level of significance). UB is sponsored by local universities or community organizations and includes a summer component held at the sponsoring institution. In fact, two of the three research universities; Georgia State University and University of Georgia sponsor UB programs. The increased contact prior to high school graduation is one reason for the positive impact the programs have on continuation. A similar inference can be made with respect to the 19.3 percent increase in continuation to state universities/colleges.

Participation in High Schools That Work (HSTW) is associated with a 21.4 percent (p < .001) decrease in continuation to regional universities, net of all other variables in the model. This is a significant finding, albeit negative, considering that 46 percent of all Black high schools participate in the program. In fact 36 percent of all high schools participate in HSTW.

Joint Enrollment (JE) also yields a negative coefficient (-0.010, p < .005) with respect to continuation to state universities/colleges. One possible explanation for this outcome is that, while high school students may enroll for joint courses at a nearby state university/college, JE participants may eventually choose to enroll into the more prestigious research or regional universities upon graduation.

There is a need for further research to understand the reason that JE and HSTW have a negative effect on continuation. Furthermore, additional research is necessary to determine why only one out of the seven programs has a positive impact on Black high schools. I now examine the results of predominantly White high schools.

Table 4-11
Pooled time series cross section GLS estimates: predominantly black Georgia public schools
1999 - 2004 (log percentages)

VARIABLE	(1) USGSYSTEM	(2) RESEARCH	(3) REGIONAL	(4) STATEUC
LOCALE				
URBAN	-0.449	0.554	-0.379	-0.692
	(1.66)	(2.02)*	(1.42)	(2.83)**
URBANFRINGE	-0.020	0.890	0.041	-0.102
	(0.08)	(3.61)**	(0.17)	(0.46)
MIDSIZE	0.051	0.036	-0.085	0.307
	(0.24)	(0.17)	(0.42)	(1.64)
MIDSIZEFRINGE	-0.491	-0.065	-0.310	-0.600
	(0.91)	(0.12)	(0.58)	(1.28)
RURAL	-0.284	-0.029	-0.131	-0.029
	(1.35)	(0.14)	(0.67)	(0.16)
REGION				
SOUTHWEST	-0.007	-0.310	0.147	-0.302
	(0.03)	(1.14)	(0.51)	(1.25)
SOUTHEAST	0.294	-0.101	1.024	-0.893
	(0.79)	(0.28)	(3.07)**	(2.73)**
NORTHWEST	0.036	-0.164	-0.095	-0.062
	(0.23)	(1.06)	(0.66)	(0.46)
PCTWHTSCH	-0.004	0.013	0.006	-0.004
	(1.03)	(2.69)**	(1.26)	(0.99)
COMPOSITION				
PCTLUNCH	-0.006	-0.007	-0.005	-0.000
	(3.39)**	(2.73)**	(1.98)*	(0.09)
TOTSCH	-0.000	-0.000	0.000	-0.000
	(2.11)*	(0.75)	(1.33)	(0.63)

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

Table 4-11 (Continued)
Pooled time series cross section GLS estimates: predominantly black Georgia public schools
1999 - 2004 (log percentages)

VARIABLE	(1) USGSYSTEM	(2) RESEARCH	(3) REGIONAL	(4) STATEUC
PROGRAMS				
PCTGSP	0.010	0.022	0.026	0.006
	(1.53)	(1.53)	(1.62)	(0.49)
PCTGHP	0.023	0.035	-0.030	0.015
	(1.84)	(1.87)	(1.37)	(0.83)
HSTW	-0.050	-0.070	-0.214	0.006
	(1.07)	(1.10)	(3.05)**	(0.11)
PCTJE	0.001	0.004	-0.004	-0.010
	(0.26)	(0.84)	(0.63)	(2.00)*
TS	0.019	-0.012	0.094	-0.072
	(0.30)	(0.13)	(1.00)	(0.90)
UB	0.168	0.238	0.128	0.193
	(1.79)	(2.11)*	(1.19)	(1.97)*
PROBE	0.025	-0.024	-0.013	-0.005
	(0.62)	(0.44)	(0.21)	(0.09)
Constant	3.793	1.502	1.522	2.678
	(13.51)**	(4.31)**	(4.31)**	(8.89)**
High schools	441	371	372	427
Number of school id	87	83	80	85

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

<u>Predominantly White high schools</u>

Table 4-12 shows the mean characteristics of White high schools. The following is a descriptive analysis of the schools.

Geographic Location

As shown, none of the predominantly White high schools is in an urban locale, while more than 46 percent are in rural areas. On average, nearly 68 percent of the high schools are located in the northwest part of the state.

Composition

The average size of a White school is 1250 students, of which 15 percent are Black. Nearly 25 percent participate in the free and reduced-price lunch program.

Participation in programs

Of the seven programs in the study, PROBE has the largest average participation rate (44.6 percent) followed by High Schools That Work (HSTW) (29.1 percent). An average of more than 6 percent of students in participating schools is enrolled in Joint Enrollment (JE); while more than 4 percent participate in the Governor's Scholarship Program (GSP).

Table 4-12
Predominantly White high schools: Selected descriptive statistics
N= 928

Variable Name	Variable Label	Mean	SD
	COMPOSITION		
TOTSCH	Total students: All White schools	1250.4	670.0
PCTBLK_SCH	Percent Black Students	15.3	11.4
PCTLUNCH	Percent Lunch	24.927	15.8
	LOCALE (%)		
URBAN	Urban	0	0
URBANFRINGE	Urban-fringe	0.276	0.447
LARGE TOWN	Large town	0.139	0.346
MIDSIZE	Midsize	0.420	0.201
MIDSIZEFRINGE	Midsize fringe	0.082	0.274
RURAL	Rural	0.461	0.499
	REGION (%)		
SOUTHWEST	Southwest	0.015	0.122
SOUTHEAST	Southeast	0.074	0.262
NORTHWEST	Northwest	0.679	0.467
NORTHEAST	Northeast	0.232	0.422
	PROGRAMS[33]		
PCTGSP	Governor's Scholarship Program (%)	4.233	5.028
PCTGHP	Governor's Honors Program (%)	0.594	0.870
HSTW	High Schools That Work	0.291	0.454
PCTJE	Joint Enrollment (%)	6.05	8.707
TS	Talent Search	0.137	0.344
UB	Upward Bound	0.083	0.276
PROBE	PROBE Fairs	0.446	0.497

Next, I examine the results of the GLS regression for predominantly White schools

shown on Table 4-13.

Geographic effects

For the predominantly White high schools, location was strongly associated with college

continuation rates. For example, relative to schools in large towns, schools in urban fringe locale

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[33] I calculated a percent of twelfth grade students who participated in GHP, GSP, JE, and included this calculation as a column. However, for HSTW, TS, UB, and PROBE, I created a conditional variable of 1 for a participating high school and a 0 for a non-participating high school. These conditional variables were necessary because participation in TS and UB programs was very low. In addition, student participation data in HSTW and PROBE were not available.

experienced 40.3 percent (p < .001) higher continuation to research universities, net of all other effects. A possible reason for this finding is that urban fringe schools cater to a population reflecting a higher SES background.

Another statistically significant finding is that, relative to schools in the northeast region, a high school in the southeast experienced 56.2 percent (p < .001) more continuation to regional universities, net of all other variables in the model. This is most possibly a consequence of the fact that both regional universities are located in the southeast.

Additionally, the following locales are strongly associated with a statistically significant (p < .001) increase in continuation to state universities/colleges, relative to high schools located in large towns: midsize (0.597), midsize fringe (0.706), and rural (0.377). This implies, for example, that net of all other effects, continuation to state universities/colleges for a high school in a midsize fringe locale is 70.6 percent higher than that of high schools in large towns. This finding is most likely related to the high schools' proximity to state universities/colleges (see Figure 4-1). It is also notable that almost all White schools are located in these non-urban locales. Therefore, many of their students are bound to attend colleges within close proximity.

However, for high schools in the southwest and southeast regions, continuation rates to research universities are 47 percent and 29.3 percent lower (p < .005) relative to those in the northeast region, net of all other effects.

Composition effects

Participation in free and reduced-price lunch program, which I use as a reflection of low SES, had a negative and statistically significant coefficient in research universities (-0.017) and regional universities (-0.010) both at a p < .001 level of significance. The negative effect on continuation is as expected. However, it is notable that low SES has a neutral effect on

continuation into state universities/colleges. This may reflect relative success in the efforts by predominantly White schools at matriculating low SES students in these less-selective institutions.

Program effects

As shown on Table 4-13, participation in five of the seven college readiness programs resulted in a statistically significant influence on college continuation rates for White schools. Governor's Scholarship Program (GSP) had a statistically significant effect ($p < .001$) on all four models, and therefore can be considered the most successful of all seven programs in this respect. In addition, Governor's Honors program (GHP) had a significant effect on overall USG system.

Talent Search (TS), High Schools That Work (HSTW), and PROBE resulted in a statistically significant effect ($p < .005$): TS on regional universities (0.170), HSTW on state universities/colleges (0.110), and PROBE (0.121) on state universities/colleges. Table 4-13 shows a detailed summary of the four models and all variables.

Table 4-13
Pooled time series cross section GLS estimates: predominantly white Georgia public schools
1999 - 2004 (log percentages)

	(1)	(2)	(3)	(4)
	USGSYSTEM	RESEARCH	REGIONAL	STATEUC
LOCALE				
URBAN	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
URBANFRINGE	0.045	0.403	0.201	0.230
	(0.48)	(3.43)**	(1.62)	(1.46)
MIDSIZE	-0.118	0.088	0.287	0.597
	(0.90)	(0.54)	(1.68)	(2.82)**
MIDSIZEFRINGE	0.109	0.059	0.104	0.706
	(0.94)	(0.42)	(0.69)	(3.74)**
RURAL	-0.113	0.057	0.011	0.377
	(1.45)	(0.61)	(0.11)	(2.98)**
REGION				
SOUTHWEST	0.017	-0.470	0.205	-0.717
	(0.09)	(2.10)*	(0.89)	(2.41)*
SOUTHEAST	0.070	-0.293	0.562	-1.103
	(0.68)	(2.32)*	(4.36)**	(6.47)**
NORTHWEST	-0.002	-0.056	-0.434	0.384
	(0.03)	(0.67)	(4.94)**	(3.46)**
COMPOSITION				
PCTWHTSCH	-0.004	-0.007	-0.016	0.003
	(2.13)*	(2.54)*	(5.40)**	(0.78)
PCTLUNCH	-0.000	-0.017	-0.010	0.000
	(0.24)	(7.62)**	(3.83)**	(0.14)
TOTSCH	0.000	0.000	0.000	0.000
	(6.12)**	(6.15)**	(2.36)*	(2.14)*
PROGRAMS				
PCTGSP	0.014	0.029	0.023	0.010
	(5.66)**	(5.42)**	(3.99)**	(2.67)**
PCTGHP	0.035	0.001	-0.017	0.039
	(2.64)**	(0.03)	(0.85)	(1.67)
HSTW	0.026	-0.001	-0.054	0.110
	(0.85)	(0.02)	(1.18)	(2.27)*
PCTJE	0.003	0.004	0.004	0.003
	(1.96)	(1.85)	(1.84)	(1.38)
TS	-0.059	0.005	0.170	-0.111
	(1.05)	(0.07)	(2.19)*	(1.25)
UB	0.006	0.035	0.075	0.069
	(0.09)	(0.38)	(0.77)	(0.60)
PROBE	0.009	0.013	0.014	0.121
	(0.29)	(0.31)	(0.31)	(2.53)*
Constant	3.506	2.194	2.898	1.483
	(17.58)**	(8.05)**	(9.78)**	(4.61)**
High school	928	835	806	881
Number of school id	202	191	188	201

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

Summary: Research Question 2

The purpose of research question 2 was to determine if the seven college readiness programs resulted in different effects in Black and White high schools.

From the results of the data analyses presented in this section, I make the following conclusions. First, participation in free and reduced-price lunch exhibited different effects on Black and White schools. Participation in the program by Black schools was more than double (58 percent of students) that of predominantly White schools (25 percent). Since participation in the program reflects low SES, Black schools are clearly at a disadvantaged position. In fact, net of all other factors, a 1 percent increase in participation in the lunch program in Black schools is associated with a decrease in continuation to research universities of -7 percent ($p < .001$), -5 percent ($p < .005$) to regional, and -6 percent ($p < .001$) to the overall USG system. In contrast, for White high schools a 1 percent increase in participation in the lunch program decreased continuation to research universities and regional universities by a much smaller percentage: 1.7 percent and 1 percent respectively ($p <. 001$). There was no overall decrease in the USG and state universities/colleges models.

Second, Black and White schools experienced markedly different geographic effects on continuation. For White schools, the most significant impact was on the urban-fringe location. Net of all other factors, and relative to high schools in large towns, a predominantly White high school experienced a 40.3 percent increase in continuation to research universities. This strong impact on urban fringe location is most likely because these schools serve higher SES populations. Nearly 28 percent of White high schools are in urban-fringe locations. The opposite of this suburban effect is observed on White schools in the southwest and southeast locations. In this case there are strong negative coefficients (- 0.470, and – 0.293; $p < .005$), relative to high

schools in the northeast region. One contributing factor to these results is that these schools serve low SES populations. However, because of closer proximity to regional universities, schools in the southeast have a clear advantage (0.562 at p < .001) while a northwest location (where 68 percent of predominantly White schools are located) is too far from the regional universities, and hence are at a clear disadvantage (-0.434, p < .001) as far as continuation to regional universities is concerned.

This explanation is also related to the reason for the significant negative coefficient (-1.03, p < .001), relative to a northeast location, on the state universities/colleges model for White schools in the southeast. Since the two regional universities are both in the southeast, and because attending a regional university is more prestigious relative to attending a state university/college, White schools in this location can be expected to feed more into regional universities at the expense of state universities/colleges. Moreover, there are only two state colleges in the southeast: Savannah State University and Armstrong State University. And it should be noted that the latter is an HBCU.

For Black high schools the most significant geographic effect is on the urban- fringe locale. Relative to schools in large towns, a high school in an urban-fringe locale increases continuation to research universities by a significant 89 percent (p < .001). As previously noted, the research universities are located in urban areas (Georgia Institute of Technology, Georgia State University), or in an urban-fringe city (University of Georgia). This is a huge advantage for those high schools located in the suburbs, mostly in the Atlanta metropolitan area, where Georgia Institute of Technology and Georgia State University are located. Indeed, some Atlanta suburbs are also within close proximity to the University of Georgia as well. The high schools in this area

are better funded. In addition, their close proximity to research institutions might place them at an advantage relative to schools in other locations.

Furthermore, many of the Black schools (40 percent) are located in urban and urban fringe locales. Relative to schools in large towns, a high school in an urban locale decreases continuation to the overall USG system by nearly 45 percent, net of all variables in the model. (Recall that none of the predominantly White schools are in urban locations). The poor continuation rates can be attributed to many factors, including poor funding for Black schools. Generally, expenditures per full time equivalent (FTE) in instruction within predominantly Black school districts are low relative to the overall state average expenditures. For example, in FY 2006 expenditures per FTE in instruction for Valdosta district, which is 74 percent Black, was $ 5008 while the state average was $5415. For Bibb, which is 72 percent Black, that expenditure was only $4704 (Georgia Department of Education, 2007a). In contrast, there are no predominantly White schools in an urban area.

However, relative to high schools in large towns, a Black school in an urban locale is associated with a 55.4 percent (p < .005) increase in matriculation into research universities. This positive outcome is most likely related to the proximity of the three research institutions to the urban locale, particularly for the schools within the metropolitan Atlanta area. Indeed, the Atlanta school district, which is 85 percent Black, had an FY 2006 FTE expenditure for instruction of $7816 (Georgia Department of Education, 2007a). This is more than 44 percent higher than the FY 2006 state average of $5415. Thus, school quality may be a contributing factor to this outcome. In contrast, an urban location, relative to a large town, is associated with a significant (69.2 percent) *decrease* to state universities/colleges. One reason for this is the many choices of higher education institutions, both public and private, including Historically Black

colleges and universities (HBCU's) available in urban centers, particularly Atlanta. In that case, a state university/college might seem relatively unattractive to many Black students.

Relative to the northeast region, a Black school in a southeast region is associated with a statistically significant (p <.001) increase in continuation rates to regional universities and an almost 90 percent decrease in state universities/colleges model. In contrast, White schools in the southeast region are associated with a significant increase (56.2 at p < .001) in continuation to regional universities, but a statistically significant decrease in research (-29.3 at p < .005) and state universities/colleges (-11.3 at p < .001). The increase in continuation to regional universities can partly be attributed to the presence of the more prestigious regional universities-Georgia Southern University and Valdosta State University, which are located in the southeast region.

Finally, college readiness programs exhibited different effects on Black and White schools. Of the seven programs, Upward Bound (UB) was the only program that made a positive contribution towards continuation in Black schools. Net of all other factors, participation in UB increased continuation to research universities by 23.8 percent (p <.005) and 19.3 percent (p < .005) to state universities/colleges. UB serves high school students from low-income families; high school students from families in which neither parent holds a bachelor's degree; and low-income, first-generation military veterans who are preparing to enter postsecondary education. These are the groups that are most disadvantaged in terms of access to higher education.

However, High Schools That Work (HSTW) and Joint Enrollment (JE) were associated with negative coefficients towards continuation to regional (-0.214, p < .001) and state universities/colleges (-0.010, p < .005) respectively.

In contrast, results of this research show that White schools benefited from participation in six of the seven programs. They are Governor's Scholarship Program (GSP), Governor's Honors Program (GHP), and to a lesser extent, Talent Search (TS), High Schools That Work (HSTW), and PROBE. Relative to all seven programs, GSP resulted in a statistically significant effect ($p < .001$) in all four models and, therefore, I consider it the most successful of all programs in this research (I made a similar observation with regard to Research question 1). In addition, GHP exhibited a significant effect on the overall USG system. TS, HSTW, and PROBE had less statistically significant effects on the regional and state universities/colleges.

Therefore, based on the findings of this research, and as demonstrated in this discussion, it is apparent that the patterns of effects, composition, geographic, and program, on predominantly Black schools are clearly different from those on predominantly White schools. These findings are consistent with the hypothesis 2 (H_2). I now turn to Research question 3.

Research Question 3

H_3: Based on the findings on college continuation rates, there are programs with discernible, specific patterns of success based on target population, design, and operation that can be recommended to develop a model college readiness program for predominantly Black schools.

H_3 is based on research question 3. The purpose of this research question is to attempt to identify programs that work well enough in Black schools such that they can make a significant impact on college continuation rates. Recall that one acknowledged method for increasing continuation in the state is to deliberately target the disadvantaged, and hence, the underserved population groups: Blacks, Hispanics, low-income and potential first-generation college students; and try to increase their college continuation rates. For research question 2 and 3, I

deliberately targeted Black schools based on my research interest and because Blacks represent Georgia's largest minority population at 28.7 percent of the population (U. S. Census Bureau, 2003)[34].

Therefore, if programs that seem to effectively serve the Black population are identified, a policy recommendation can be made to expand these programs. Also, other programs can be re-designed in order to include those features that appear to be instrumental at increasing college continuation for Black schools.

To test this hypothesis, I analyzed the impact of college readiness programs on the continuation rates for Black schools. To determine the successful programs, I analyzed not only the rate of overall continuation, but also the type of USG institution into which students matriculated. Clearly, the most successful programs would be those that transition students into research institutions, the most selective and prestigious of the three USG models. This would be followed, in that order, by regional universities, and state universities/colleges.

Based on these criteria, as shown on Table 4-11, the most successful, and the only successful program for Black schools is Upward Bound. Participation in UB increased continuation to research universities by 23.8 percent and 19.3 percent to state universities/colleges (p < .005). The rest of the programs made no statistically significant positive impact on Black high schools. In fact, two programs resulted in a *negative* impact on continuation. High Schools That Work had a negative impact on regional universities and Joint Enrollment had a negative impact on the state universities/colleges model. However, it is important to note that participants may choose to apply to research universities at the expense of regional or state universities/colleges. In that case, the programs can be deemed effective since

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[34] However, the Hispanic population is also growing. For example, Georgia's graduating high school class of 2013-14 is projected to be 17 percent Hispanic from just 3.1 percent in 2002. (WICHE, 2003). This research can, therefore, be duplicated to determine the patterns of continuation.

research universities are the most selective institutions. This possibility should be investigated further.

These findings are consistent with hypothesis 3 (H3), because UB was successful and can be recommended as a model college readiness program for predominantly Black   high schools.

Summary of overall findings

Table 4-14 is a summary of the GLS estimates for all models on the seven college readiness programs. The findings of this research show that all seven programs contributed significantly to the variance explained in college continuation when the results from all high schools are analyzed. For some programs the extent of the impact varied based on the predominant racial composition of the school.

Furthermore, the degree to which the programs were successful varied among predominantly Black and White schools. For Black high schools, participating in UB was relatively successful in two models: research universities and state universities/colleges. In fact, participation in HSTW and JE resulted in a *negative* impact. However, as noted earlier, this could be deemed a reasonably positive effect if it is found (through further research) that participants matriculated into the more selective research universities. The other programs did not make a positive or negative impact in Black schools.

However, for predominantly White high schools participation in five of the seven programs resulted in a positive impact in at least one model. Participation in Governor's Scholarship Program, which I consider the most successful in this research, increased continuation in all four models. This was followed by Governor's Honors Program, which made a positive contribution into the overall USG total. Talent Search contributed positively to

continuation into regional universities; and High Schools That Work and PROBE to state universities/colleges. Upward Bound and Joint Enrollment made no significant impact on the continuation rates in White schools.

Of special note is that participation in PROBE and High Schools That Work did not make any positive statistically significant contribution to continuation, to USG total, research, or regional models for either Black or White schools. Judged from this standpoint, the two can be considered to be very ineffective.

For all high schools (when race is not a factor), an urban location, relative to a large town, was negatively associated with continuation to USG and state universities/colleges. However, an urban fringe location was positively associated with continuation to research universities. Relative to the northeast region, a southeast location increased continuation to regional universities, but was negatively associated with continuation to research and state universities/colleges. Additionally, a southwest location was associated with a negative impact on continuation to state universities/colleges.

However, the impact of location was varied based on a high school's predominant racial designation. For White schools, relative to a large town, an urban-fringe location increased a school's continuation to research universities by 40.3 percent, while a southwest location *decreased* continuation to this model by 47 percent. Both effects can be attributed to the direct relationship between SES and continuation to research universities, the most selective model.

For Black schools, an urban fringe location increased continuation (relative to high schools in large towns) to research universities considerably (0.890, $p < .001$), while an urban location was associated with a 55.4 percent increase into the same model ($p < .005$). However, an urban location (relative to a large town locale) and a southeast location (relative to schools in the

northeast region) decreased continuation to state universities/colleges considerably. Furthermore, a southeast location increased continuation to regional universities, relative to high schools in the northeast region.

For all schools (both races combined) and for predominantly White schools, the participation rate in the free lunch program (low SES) had a negative impact on continuation in research and regional models. SES did not impact continuation to the overall USG total or to state universities/colleges. However, for Black schools, SES had a negative effect on all models except state universities/colleges.

Conclusion

In this chapter, I have presented findings of this research based on the results of the data analysis. In Chapter 5, I will discuss the meaning and implications of these findings within the context of existing literature and limitations of the study. I will make recommendations based on the findings and implications of the findings to policy and future research.

Table 4-14

College Readiness Programs: Summary of pooled time series cross section GLS estimates: All, Predominantly Black, and White Georgia public schools 1999 - 2004 (log percentages)

Variable Name	USGSYSTEM			RESEARCH			REGIONAL			STATEUC		
	All	Black	White	All	Black	White	All	Black	White	All	Black	White
PCTGSP	0.014 (6.71)**		0.014 (5.66)**	0.029 (6.49)**		0.029 (5.42)**	0.024 (4.94)**		0.023 (3.99)**	0.009 (2.79)**		0.010 (2.67)**
PCTGHP	0.018 (2.73)**		0.035 (2.64)**	0.031 (3.15)**						0.028 (2.52)*		
HSTW							-0.067 (2.15)*			0.063 (2.03)*		0.110 (2.27)*
PCTJE	0.013 (3.48)**			0.005 (3.52)**								
TS							0.100 (2.06)*		0.170 (2.19)*			
UB					0.238 (2.11)*		0.142 (2.53)*				0.193 (1.97)*	
PROBE										0.097 (3.23)**		0.121 (2.53)*
CONS	3.287 (45.74)**	3.793 (13.51)**	3.506 (17.58)**	1.46 (13.69)**	1.502 (4.31)**	2.194 (8.05)**	1.821 (16.58)**	1.522 (4.31)**		1.588 (13.74)**	2.678 (8.89)**	1.483 (4.61)**
N	1959	441	928	1730	371	835	1717	372	806	1857	427	881
Number of school ID	355	87	202	342	83	191	339	80	188	352	85	201

Absolute value of z statistics in parenthesis
* significant at 5 percent; ** significant at 1 percent

CHAPTER 5

DISCUSSION, IMPLICATIONS AND LIMITATIONS

Introduction

In the previous chapter I presented findings of this research resulting from the data

analysis. The results of descriptive, logistic, and GLS regression analyses are consistent with all

three hypotheses in my study. Specifically, I draw the following conclusions:

1. There is a significant difference in continuation rates between Georgia public

   high schools that participate in specific classes of college readiness programs and

   Georgia public high schools that do not participate in such programs.

2. With all else equal, there are different patterns of effects in predominantly Black

   public high schools and predominantly White public high schools.

3. Based on the findings on college continuation rates, there is a program with

   discernible, specific patterns of success based on target population, design, and

   operation that can be recommended to develop a model college readiness

   program for predominantly Black high schools.

In this chapter, I will discuss the meaning and implications of these findings within the

context of the existing literature and limitations of the study. I will make recommendations based

on the findings and implications of the findings for policy and future research. First, I discuss the

study's limitations, followed by a discussion of the meaning of the results on how college

readiness affects continuation, implications on policy and further research. Then I discuss how

geographic location and urban locale of a high school affects continuation, and the implication

on policy and further research. Finally, I present a summary of the findings and recommendations.

Limitations of the present research

This study has three primary limitations. First, it is designed to draw conclusions on the impact of the college readiness programs on high schools without collecting specific continuation data on individual student participants. The study infers that participation in the programs has an impact on the overall continuation rates within respective public high schools. However, it should be noted that this research places individual high schools as the unit of analysis and not the students. Therefore, it seeks to make inferences only on the impact of the programs on high schools. To that extent, the study is still relevant because it contributes to policymakers' and practitioners' understanding of more effective ways in which college readiness programs can be used to increase continuation.

Second, this study is limited to continuation rates into Georgia public universities and colleges. Because the data on private institutions are not readily available, and because over 80 percent of college students in Georgia attend public institutions (National Center for Public Policy and Higher Education, 2006), data on students who attend private institutions were not pursued. Hence, in as much as the overwhelming majority (80 percent) of Georgia's higher education is public, an analysis of continuation rates based on public institutions is deemed adequate to discern the impact of college readiness programs in the state. However, the study is still limited because it does not make any specific data analysis, conclusions, or recommendations regarding the impact of the programs on private high schools. This presents an opportunity for further research on the impact of the programs on continuation to private institutions.

Third, this is a study of only seven college readiness programs; there are dozens operating within the state. However, data were not readily available, and in some cases, individual programs did not collect any useful data. College readiness programs are sponsored by state agencies, federal agencies, K-12 schools, community, and universities. Although it is a study of only seven of the dozens of programs operating in the state, the study includes four of the five classes of program sponsors (federal, state, K-12 schools, community, and universities). With the exception of university-sponsored programs[35], at least one program from each type of sponsor is included in this research. Therefore, this research draws conclusions about college readiness programs from a sample of programs representing almost all types of sponsors. This somewhat ameliorates the limitation.

Discussion of the findings: College readiness programs

This section is a discussion of the meaning of the results of this research in the context of its implication on policy and research on college readiness programs and continuation. Cabrera & La Nasa (2000) noted that there are at least three critical tasks a student must complete before enrolling in a four-year college: acquiring the necessary academic qualifications; securing a high school diploma; and applying and enrolling. Each task is a prerequisite for the other; that is, one must acquire the necessary qualifications in order to secure a high school diploma, and must successfully apply before enrolling in college. These tasks must form the framework for any state policy geared towards increasing access to college, particularly for students from underrepresented populations. College readiness programs are generally geared towards helping students accomplish one or a combination of the three tasks.

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[35]It should be noted that Governor's Honors program is operated at Valdosta State University. Also, some USG institutions operate Talent Search and Upward Bound programs. But the programs are funded by the State and federal governments respectively.

College readiness programs address barriers to accomplishing the three tasks by addressing nine impediments to access. The impediments, as expounded by Gandara & Bial (2001), are inequalities in familial cultural and social capital, inequality in neighborhood resources, lack of peer support, racism, inequalities in K-12 schools, segregation, ineffective counseling, low expectations and aspirations, and financial aid (p.33-34). The programs in this research address one or more of these barriers. Gandara & Bial (2001) provided a link between the impediments and six common program features designed to address the impediments: counseling, academic enrichment, parental involvement, personal and social enrichments, mentoring, and scholarship. A similar link between each of the seven programs in this research and services provided can be made. This link provides a logical roadmap of the impact of each individual program on Georgia public high schools.

The findings of this research show that all seven programs contributed positively and significantly to college continuation when all high schools, and predominantly Black and White high schools, *and* all four models- total USG, research, regional and state university/colleges - are included. For some programs the impact depends on the predominant racial composition of the high school. This is an affirmation of the important role the programs play in increasing college continuation. Table 4-14 summarizes the results of the pooled time series cross section GLS estimates for All, Black, and White high schools.

In gauging success of the programs, the Governor's Scholarship Program (GSP) stands out as the only program that had statistically significant positive effects in all four models when *all* schools (and hence, when race is not a factor) are considered. In addition, GSP increased continuation for White schools in all models.

The success of this program is associated with its intentions. GSP is a merit-based scholarship program, designed "to recognize Georgia's high school Valedictorians and STAR Students and encourage them to attend a public or private institution in Georgia by providing scholarship funds" (Georgia Student Finance Commission (GSFC), 2007b). Participants are required to enroll in a Georgia public college or university within nine months of high school graduation. This requirement contributes to the success of the program as evidenced in this study. Although the average GSP participation rate within schools is less than 4 percent, the program made an important positive impact relative to other programs, in all four models.

However, GSP did not make any statistically significant impact on any of the four models in Black schools. This is a significant finding because, according to the program's requirements, two graduates from each eligible high school in Georgia are eligible to apply each academic year as entering college freshmen (Georgia Student Finance Commission (GSFC), 2007b). Further investigation should be made to determine the reason for the lack of significant impact. For example, is it possible that counselors in Black high schools do not actively recruit for the program? Or, is it that valedictorians or STAR students in Black high schools do not matriculate to public colleges or universities? These are important questions that require further research. In any case, if properly utilized, GSP can effectively increase continuation for Black high schools as well.

The Governor's Honors Program (GHP) was also very successful because it had a positive effect on continuation to the overall USG, research, and state universities/colleges models. GHP was also associated with a positive effect on continuation of White students to the overall USG model. As was the case with GSP, the success of GHP is associated with the program's intentions. GHP is a statewide competitive program for the intellectually gifted and

artistically talented high school students and provides enriching educational opportunities not normally offered in a high school year (Georgia Department of Education, 2007). The state meets the full cost of participation. In other words, this six-week summer program offers academic enrichment to students with superior academic capabilities. Although it does not target the underrepresented population groups, the program expands the horizons of participants. This is important because students are likely to aspire to more selective colleges and universities upon high school graduation.

Again, as was the case with Governor's Scholarship Program, Governor's Honors Program did not make a statistically significant impact on any of the four models for Black schools. More research is warranted in this area to determine the reason for that outcome. One possible reason is that Black high schools may matriculate many participants to private Historically Black Colleges and Universities (HBCU's). If that is indeed the case, then the programs can be judged as effective. More research should be done in this area.

Joint Enrollment (JE) exhibited a positive effect on overall USG total and research models, but none on regional and state universities/colleges model. Furthermore, the program did not have any significant effect on predominantly White or Black schools. One possible explanation for this outcome is that, while high school students may enroll for joint courses at a nearby state university/college, JE participants may eventually choose to enroll into the more prestigious research universities upon high school graduation. JE allows students to earn dual credit towards high school and college. Because it exposes students to college credit while in high school, students who earn dual credit have a good probability of continuing on to college upon graduation (Also, to the extent that JE students' can participate in Georgia's HOPE program, JE can also be considered a scholarship program). The results of this research suggest

that participants may not necessarily apply to attend the college from which they earned credit. In fact, if it turns out that many of JE participants actually do eventually enroll in a research university, then JE can be considered a very successful program (Of course there is also the possibility that it is the high achieving students who participate in the program). Further research should be done to further investigate this outcome.

Talent Search (TS) was effective on regional universities for all schools when race is not a factor. Talent Search was also mildly effective (0.100; p <.005) on regional universities for White high schools. The program is one of two federally funded TRIO programs in the study. The program strives to increase the number of youth from disadvantaged backgrounds who complete high school and enroll in postsecondary education. From the perspective of Gandara & Bial's (2001) typology, Talent Search addresses the impediment of inequalities in familial cultural and social capital. The program also serves high school dropouts. Talent Search provides academic counseling, academic enrichment, facilitates parental involvement, mentoring, scholarships, and summer activities. The program targets prospective first-generation college students as well as low income students. Although the outcome of this research would consider TS as mildly successful, the results did not indicate any statistically significant impact on continuation for Black high schools. Further research should be done to investigate the reason for this outcome.

One important outcome of this research is that when the predominant race of a high school is considered, White high schools yielded markedly different results from Black schools, and vice versa. For White high schools, five of the seven programs made a positive impact in at least one model. Participation in the Governor's Scholarship Program (GSP), considered the most effective program in this research, was associated with increased continuation in all four

models, with statistical significance. This was followed by the Governor's Honors Program (GHP), which made a positive contribution into the overall USG total. Talent Search (TS) contributed positively to continuation into regional universities; and High Schools That Work (HSTW) and PROBE to state universities/colleges. Upward Bound (UB) and Joint Enrollment (JE) were not associated with any significant impact on predominantly White schools.

Quite unexpectedly, only Upward Bound (UB) was associated with a statistically significant positive impact on predominantly Black schools. Net of all other variables in the model, participation in UB increased continuation to research institutions by 23.4 percent and to state universities/colleges by 19.3 percent (p < .005 level of significance). This finding contributes to previous research on the program. An older study found that Upward Bound's 12th graders were more likely to enroll in college than non participants (Burkheimer, 1976). Another earlier study found that Upward Bound students increased course taking in mathematics and social studies. Meyers & Schrim (1999) concluded that the longer a student stayed in the program the more was the likelihood of enrolling in college That study also found that "many" participants remained in Upward Bound for only a short time; and that the program had limited impacts on students during high school (p. xix).The findings of this research adds the effect of race as a factor in the success of UB.

But the fact that only UB was associated with a statistically significant positive impact in predominantly Black schools is an important finding because literature shows that there is a need to increase college matriculation among the underrepresented populations, including Blacks (Freeman, K., 1997; Mickelson, 1990; St. John & Noell, 1991). Additionally, research shows that well designed college readiness programs can potentially increase college enrollment two-fold (Gandara & Bial, 2001). In fact, the findings of this research demonstrate that White schools

benefited from participation in five of the seven programs (GSP, GHP; and to a lesser extent, TS, HSTW, and PROBE).

For the most part, sponsorship of college readiness programs is a reflection of public policy on increasing continuation rates. The reason is that more than 82 percent of all programs are government funded (56.8 percent federal and 25.8 percent state-funded) (Swail & Perna, 2000). In addition, there are numerous other non-profit college readiness programs, including those sponsored through community organizations, K-12, and higher education institutions. This study includes four of the five classes of program sponsors (federal, state, K-12 schools, community, and universities). With the exception of university-sponsored programs, at least one program from each sponsor class is included in this research. And because the seven programs represent all but one of the five classes of sponsors, this finding reflects the need for a review of public policy with the aim of reorienting programs towards all populations, and particularly Black schools. Future research should investigate the factors behind this finding of a lack of significant impact in Black schools. Is it the design of the programs that deem them less likely to succeed in a predominantly Black environment? Are there design options that can contribute towards improving the programs' performance in Black schools? Is it possible that the programs are less utilized in Black schools?

Another unexpected finding is that PROBE and High Schools That Work (HSTW) were both associated with a positive impact only in the less-selective state universities/colleges model. Net of all other effects, participation in PROBE increased continuation in all models when race is not a factor, but only in White schools when race is a factor. First, the PROBE fairs program is sponsored by the Georgia Education Articulation Committee (GEAC) to disseminate information and stimulate interest in postsecondary education for the students in Georgia. The program

promotes parental involvement. Of the seven programs in this research, PROBE is the most widely subscribed, with an average of nearly half of all schools participating. For example, in 2006, PROBE conducted 63 fairs which put participating post-secondary institutions in touch with an estimated 45,530 students and their families during the eight-week Fall Tour. In addition, PROBE conducted eight counselor workshops for 518 high school counselors. (Georgia Education Articulation Committee Inc., 2007). One possible reason for the observed outcome is that PROBE fairs can be considered an awareness campaign tool for colleges to attract students. Some of the students may already be destined for college when they attend the fairs. In that case, PROBE might make a difference only in the specific college choice. Further research should be conducted to determine the underlying reasons behind this outcome.

Second, further research should be conducted to examine the possible reasons that High Schools That Work program was associated with a positive impact only in the state universities/colleges model. The mission of HSTW is to "create a culture of high expectations and continuous improvements in high schools and middle grades" (SREB, 2007, p.2). The program is aimed at making the academic core "rigorous" and involves school leaders, teachers, parents and students. The program involves setting "Goals, Key Practices and Key Conditions" for accelerating learning and setting higher standards and recommends research-based practices for schools to improve academic and career/technical instruction and student achievement (SREB, 2007). Using Gandara & Bial's typology, the program addresses the apparent inequalities in K-12 as well as low expectations and aspirations. The program services include counseling, academic enrichment, and parental involvement (Gandara & Bial, 2001). However, participation in HSTW was not associated with any increase in continuation for participating high schools, save for the state universities/colleges model. Indeed, data analysis in this study

found that participation in HSTW was associated with a *negative* effect on regional universities, net of all other variables in the model.

Although, based on the results of this research, it is tempting to consider PROBE and HSTW as somewhat ineffective, it is probable that many participating high schools could have matriculated their students to private institutions. Consequently, a firm conclusion should be made only after verifying the specific institutions to which students from participating high schools matriculated. Therefore, further research on PROBE and HSTW is recommended.

Implications for policy and policy recommendations

Based on the findings of this research, I draw three conclusions. First, based on research question 1, high schools can increase the rate of college continuation by participating in college readiness programs. This finding applies to high schools with predominantly Black and White students. All seven programs contributed significantly to the variance explained in college continuation when the results of all high schools were analyzed. Moreover, the degree of impact by some programs depends on the racial make-up of the high school: whether the school is comprised of predominantly Black or White students. This implies that there may be some unique elements in specific programs that account for the different impacts depending on the predominant racial makeup of a high school. However, *all* programs had some positive impact on college continuation.

This important finding is consistent with contemporary literature, which demonstrates that participation in college readiness programs has a positive effect on college continuation (Berkner & Chavez, 1998; Cabrera & La Nasa, 2000b).

For the state of Georgia, the finding has important implications given that compared to the national norm, Georgia high schools lag in graduation rates and continuation to college. For

example, in 2006 the chance that an 8th grader would attend college by age 19 was only 32 percent while in some states it is a high as 51 percent. Also, about 14 percent of the adult population has less than a high school diploma or its equivalent, compared with 15 percent of adults nationwide (National Center for Public Policy and Higher Education, 2006). Consequently, the use of effective, well-designed college readiness programs should be encouraged and embraced within the overall policy framework of increasing college continuation in the state alongside other policies. The programs should not only prepare the underrepresented population groups for college, but also help them transition into more selective institutions within the university system. Research shows that when the underrepresented groups enroll in college they usually enroll at two-year colleges and less selective four-year colleges (Baum & Payea, 2004; Ellenwood & Kane, 2000; National Center for Education Statistics, 2003; Thomas & Perna, 2004). Policymakers and practitioners should design programs to specifically target the underrepresented groups with the aim of increasing their enrollment into the more-selective four-year institutions.

Second, and corresponding to research question two, the degree to which specific programs contributed towards college enrollment varied among predominantly Black and White high schools. While participation in five of the seven programs (Governor's Scholarship Program, Governor's Honors Program, High Schools That Work, Talent Search, and PROBE fairs) made a positive impact in at least one model in White high schools, only one program, Upward Bound, was associated with a positive impact in predominantly Black schools.

This implies that the success of college readiness programs may depend on the racial make-up of participating high schools. Some programs tend to be more successful in Black high schools while others are more successful at their White counterparts. Therefore, a strong case

could be made for the need to re-orient certain programs towards predominantly Black or White

high schools in order to maximize their chances for success. Specifically, elements that make

specific programs succeed in Black schools should be identified and incorporated in order to

modify existing programs and to design new ones. Hence, policymakers and practitioners should

consider designing programs that take into account the predominant race of the high school

population.

Third, and corresponding to research question three, based on the analysis of the results

from Black high schools, Upward Bound is the most successful program and can be

recommended for developing a model program targeting Black high schools. It is also important

to note, as previously discussed, that although only UB is associated with a statistically

significant increase in continuation for Black high schools, all seven programs contributed

positively and significantly to college continuation when all high schools are considered.

Therefore, a focus on existing programs with a view to targeting Black high schools can still

result in a positive impact in those schools. For example, participation in GSP makes a positive

impact in all models for all high schools, when the predominant race is not a factor. Since GSP is

a scholarship program that allows two graduates from each eligible high school to apply as

entering college freshmen, predominantly Black high schools should be encouraged to

participate by encouraging their Valedictorian and STAR students to apply. However, as

previously noted, it is also possible that participating Black high schools could be matriculating

students to private Historically Black Colleges and Universities (HBCU's).

Black high schools should also encourage students to participate in the Governor's

Honors Program. Moreover, although participation in the GHP is based on merit and is very

competitive, the program offers elements of success that can be duplicated in designing a non-

merit program based entirely on the premise that increasing college participation for the underrepresented group is good for the economic well-being of the state. For example, GHP aims at making participants "independent, life-long learners". To do so, the program helps students acquire the requisite skills, knowledge, and attitudes (Georgia Department of Education, 2007). Participating students receive intensive instructions in academic areas.

To increase participation of Black high schools, GHP should be modified to grant automatic admission to all Valedictorian and STAR students from each high school. At present each school system is assigned a nomination quota after which students undergo statewide screening interviews and auditions. Granting automatic admission to all Valedictorian and STAR students would increase the chances of participation by all high schools, including predominant Black schools.

Implications for research and recommendations for further study

In conclusion, several findings of this research should form the basis for further study of the impact of college readiness programs. First, an evaluation based on the impact of college readiness programs on individual students can strengthen the findings of this study. As previously noted, this research places individual high schools as the unit of analysis. By making the student the unit of analysis, it would help determine the added value contributed by the programs. Such an approach is consistent with the I-E-O model that looks at the input (the student), the environment (college readiness program), and the outcome (Astin, 1993). Such an evaluation should document specific elements of the program that impact students, as well as the degree of impact.

Second, this research includes only seven college readiness programs out of numerous state, federal, community, and university-based and sponsored programs. The research can be expanded to include additional programs if available, to determine the degree to which the results of this study can be replicated. Attempts should be made to determine if the results are consistent with the outcome of this research, and document the common elements contributing to the common findings as well as the findings that differed with this research.

Third, as noted, Upward Bound was the only program that exhibited a positive impact on continuation for Black high schools. Hence, additional research, particularly an evaluation of the other six programs, should be done to determine why they were not associated with an increase in continuation in Black high schools. Attention should be paid to the design and operation of the programs to isolate the possible reasons. Gandara & Bial (2001) noted that many programs "do not appear to have a major impact on increasing the number of students who go on to selective colleges and universities who would not have otherwise done so" (p. 64). However, in this research Gandara & Bial's observation would apply only to Black high schools. It is notable that of the seven programs included, only Upward Bound made a positive contribution into research universities for Black high schools. In contrast, five programs contributed to continuation into research universities for White high schools.

Fourth, this study does not include private high schools, which presents an opportunity for further research to extend the present study. This would certainly provide useful data to policymakers and practitioners. One important focus of that research should be to determine the extent to which the findings differ from the findings of this study.

Other correlates of college continuation: Discussion, Implications for research, policy, and recommendations

In addition to college readiness programs, the central focus of this research, I examined other variables with the potential to affect college continuation. The results of these variables - composition and geographic effects - were also included in chapter 4 in the discussion of results of data analysis. In this section, I discuss composition and geographic effects on college continuation, and make policy and research recommendations.

Composition effects

Socioeconomic status (SES) of high schools and race were each strongly associated with continuation rates. First, participation in free and reduced-price lunch, the low SES factor in this research, exhibited different effects on Black and White schools. In fact, net of all other factors in this research, a 1 percent increase in participation in the lunch program in Black schools was associated with a 7 percent decrease in continuation to research universities ($p < .001$), 5 percent ($p < .005$) to regional, and 6 percent ($p < .001$) to the overall USG system.

In contrast, participation in the lunch program for White schools had a negative impact on research and regional models only, but no statistically significant effect on the overall USG total, and state universities/colleges. And even for the two models the decrease was by a much smaller percentage: 1.7 percent for research universities and 1 percent for regional universities ($p <. 001$). The differences in continuation can possibly be attributed to the differences in the severity of the low SES between the two races. One reason might be that unlike Black high schools, participating White high schools are at the higher end of the low SES spectrum. This finding could also imply that low SES White students are more likely to enroll in college (albeit

to a less-selective universities/colleges) than Black students. In any case, there is a need to further investigate this finding in future research.

Additionally, this research has documented that participation in free and reduced-price lunch by Black schools was more than double (58 percent of students) that of predominantly White schools (25 percent). Since participation in the lunch program is an indication of low SES, it helps in explaining the reason that Black schools are clearly at a disadvantaged position. Since SES tends to be directly related to continuation, more efforts should be directed at increasing continuation in Black schools. Those efforts should include the extension and redesigning of college readiness programs as recommended in this research. Also, further research should be undertaken to determine additional possible reasons that low SES Black high schools exhibit more negative effects on continuation relative to the low SES White schools.

Second, net of all other variables in this research, there is a strong correlation between race and continuation rates. For example, relative to their non-Black counterparts, Black high schools experienced rates of continuation to any USG institution that were 20 percent lower ($p <$ .001), net of all other variables in the model (Table 4-9). While this association was expected, other strong determinants associated with race including, participation in college readiness programs, the extent of the low SES factor among Black schools, and the degree of selectivity of institutions to which students from Black schools matriculate - all indicate that more can be done to improve college continuation for Black high schools. Each of these issues can be addressed separately at the school or school district level, with only marginal budgetary effects.

Another finding on race is that the proportion of White students in a predominantly Black school was associated with a 0.013 ($p <$ .001) increase in continuation to research universities. This implies, for example, that net of all other effects, a 10 percent increase in White students in

a predominantly Black school increased continuation to research universities by 13 percent. This is an important and interesting finding that raises numerous questions. For example, is it the mere presence of White students that causes matriculation to increase? Is the increase in continuation related in any way to the degree of individual high school funding? What proportion of the increase in continuation is comprised of Black students? These are important issues that warrant further research.

Geographic effects

As detailed in Chapter 4, the findings of this research have demonstrated that school location has a significant effect on continuation. First, relative to a large town locale, an urban school resulted in 51.3 percent less continuation to any USG institution. This is a huge disadvantage that disproportionately falls on Black high schools. Indeed, while 11.5 percent of predominantly Black high schools are in the urban locale (Table 4-10); none of the predominantly White high schools is urban (Table 4-12). One possible reason is the presence of many choices of higher education institutions, both public and private, including historically Black colleges and universities (HBCU's) in urban centers, particularly Atlanta. The end result of competition from those institutions might be a reduction in continuation to USG universities and colleges. However, further research should be done to determine the extent to which the negative outcome is due to the presence of the private institutions or if it is a consequence of too few public institutions in the urban locale. It should be noted, however, that continuation to research universities is 55.4 percent higher ($p < .005$) for Black high schools in an urban locale, relative to high schools in large towns, net of all other factors in the model. Hence, the poor continuation experienced by urban high schools does not extend to continuation to research institutions.

Moreover, high schools in the urban fringe locale resulted in a continuation rate to research universities that was 58 percent higher, relative to schools in large towns (p <.001). In fact, continuation to a research institution for a Black high school in an urban fringe locale was 90 percent higher, relative to high schools in large towns. This is particularly an advantage for the high schools in the suburbs, mostly in the Atlanta metropolitan area, where Georgia Institute of Technology and Georgia State University are located. Indeed, the Atlanta suburbs are within close proximity to University of Georgia as well. Moreover, as previously observed, schools in this area are better funded relative to the average state allocation of funds (Georgia Department of Education, 2007). In addition, their proximity to research institutions places them at an advantage relative to schools in other locations.

Second, relative to high schools in the northeast region, and net of all other factors in this research, continuation rate to research universities was more than 28 percent lower for a school in the southeast region (-0.284 at p < .001). In this case, the fact that the three research institutions are located in the northeast area of the state might explain the disadvantage faced by schools in the southeast. Net of all other factors, the long distance that students would have to travel away from home can dissuade them from choosing to attend any of the three research universities. This may be a significant impediment for students from lower-income backgrounds. This finding also indicates that proximity to an institution is directly related to college-going. The finding is important because about 45 percent of all high schools are located in the southeast or southwest region, an area that is currently without a research institution (Table 4-5).

Another notable geographic effect is that, relative to high schools in the northeast region, continuation to a state university/college for a school in the southeast is substantially lower (-1.105, p <.005). One explanation is that in the southeast there are only two institutions that fit

this category: Savannah State University and Armstrong Atlantic State University; therefore, compared to other regions, the colleges may not be as accessible. In the southwest, there are three institutions: Columbus State University, Southwestern State University, and Albany State University. However, there are bound to be additional factors other than location that contribute to the negative effect. Additional research should be done to identify those factors.

Summary and Conclusion

This discussion has demonstrated that college readiness programs can exert an influence on continuation rates. All seven programs examined in this research contributed positively and significantly to continuation when all high schools, and predominantly Black and White schools, and all four USG institutional models are included. There is a significant difference between high schools that participate in certain classes of college readiness programs and those that do not.

Furthermore, the positive effect on continuation, as demonstrated in this research, is more significant on predominantly White high schools relative to predominantly Black high schools. For White high schools, participation in the Governor's Scholarship Program, Governor's Honors Program, Talent Search, High Schools That Work, and PROBE had a significant effect on continuation. However, only one program, Upward Bound, was associated with a positive effect on continuation in Black schools. Participation in Upward Bound was associated with an increase in continuation to research universities and to state universities and colleges. This finding adds to a body of existing research on this program. Net of all other effects in the model, participation in High Schools That Work and PROBE, did not influence

continuation to research or regional universities, the most selective of USG institutions; nor to the aggregate continuation for all institutions.

The research also identified other high school characteristics that affect college continuation: race, low socioeconomic status (SES) as indicated by participation in free and reduced-price lunch, and geographic effects. Overall continuation for Black high schools was considerably less than for White schools. For example, Black schools continuation to research universities was 20 percent (P < .001) lower relative to non-Black schools. The study found that low SES Black high schools experience more severe negative effects on college continuation than their White counterparts. The study also found that the proportion of White students in a predominantly Black school exerted a significant positive effect on continuation to research universities.

Geographic location and urban locale of a high school demonstrated a strong association with continuation. First, relative to high schools in a large town, urban schools had a continuation rate that was 51.3 lower, net of all other variables. Indeed, this negative association falls disproportionately on Black high schools since there are no predominantly White high schools in an urban locale. Second, an urban fringe location was an advantage for all schools and for Black schools in particular. Relative to a large town location, a school in an urban fringe locale had continuation rates 58 percent higher to research universities for all schools; and a 90 percent advantage for Black schools. However, relative to a northeast location, high schools in the southeast region of the state experienced 28.4 percent lower continuation to research universities, net of all other variables. Indeed, relative to the northeast region, high schools in the southeast region experienced significantly lower rates of continuation to state universities/colleges.

I make several policy recommendations. Because results of this research show that racial composition of a high school appears to be a factor in determining the success of college readiness programs, elements that make specific programs succeed in Black or White high schools should be identified and incorporated into existing programs and in the design of new programs targeting those predominantly Black or White high schools.

Second, efforts should be made to increase continuation for Black high schools by utilizing existing programs more intensely, and by re-designing them to make them more effective and adoptable to Black high schools. For example, since GSP is considered the most successful in this research, efforts should be made to encourage participation of Black high schools. To increase participation of Black high schools, GHP should also be modified to grant automatic admission to all Valedictorian and STAR students from each high school. Granting automatic admission to all Valedictorian and STAR students would increase the chances of participation by all high schools, including predominantly Black schools.

Third, the findings of this research indicate that, net of all other effects, proximity to certain institutional models is directly related to college continuation. For example, this study determined that net of all other factors in this model, continuation to research universities is more than 28 percent lower for a high school in the southeast (where there are no research universities) relative to high schools in the northeast. Moreover, continuation to state universities/colleges is significantly lower. Consideration should be given to placing an emphasis on regional balance in making future decisions on the location of any new universities and colleges.

I also make several recommendations for further research. First, this research should be replicated using the student as the unit of analysis. Making the student the unit of analysis would help determine each program's value addition to the success of students in continuation. Second,

this research can be expanded to include additional programs. Third, further research should be done to include private high schools in a study similar to this research. Fourth, further research should be done to determine why low SES Black high schools experience more negative effects on continuation than their White counterparts.

Fifth, further research should be done to investigate why the Joint Enrollment program has no effect on models other than the research universities model.

Sixth, further research should be done to determine why PROBE and High Schools That Work, two widely subscribed programs, did not result in a positive effect on the overall continuation into USG, research, and regional models.

Seventh, additional research should be done to determine if predominantly Black high schools participating in college readiness programs are more likely to matriculate students to Historically Black Colleges and Universities (HBCU's). As noted, only one program (Upward Bound) was associated with an increase in continuation rates for Black high schools, net of all other variables in the model. If it is determined that participating Black schools are more likely to send their students to private institutions including HBCU's, then those programs can be deemed as effective.

Finally, I recommend that further research should be done to determine the factors that make college continuation from low SES Black high schools much lower than continuation from their low SES White counterparts.

If implemented, the recommendations made in this study would not only present opportunities for further research, but would also contribute towards identifying ways of increasing college continuation in Georgia.

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