A LONGITUDINAL INVESTIGATION USING MAXIMALLY MAINTAINED INEQUALITY IN THE GEORGIA PUBLIC HIGHER EDUCATION SYSTEM

by

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(Under the Direction of Scott L. Thomas)

ABSTRACT

The study examined college going in the University System of Georgia (USG) public higher education system longitudinally. The framework centers on a sociological stratification theory called Maximally Maintained Inequality (MMI), which states stratification will exist, even in times of expansion, until a saturation point is met by the controlling group. Investigating college going patterns using MMI over a 15 year period using a mixed linear model with variables related to academic preparation, demographics, and affordability, as identified from the literature, allowed for an analysis of patterns across time. Results revealed that, during the increased pressure from policymakers to improve access to higher education, the USG became more stratified in terms of demographic and academic preparation.

INDEX WORDS: College going, higher education access, Maximally Maintained Inequality, Sociology of Education, stratification

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INTRODUCTION

Introduction

Issues over differences in college-going have been a long-standing concern in the United States. With rising higher education costs and growing income disparity, interest in college-going rates has risen recently. A scan of the industry's premier current issues publication, the *Chronicle of Higher Education*, over the past year, reveals that this issue is important to both researchers and practitioners. Frequently, these issues have been framed as inequality among the various groups, such as income and racial categories. One issue is the inequality in public high school graduates' college-going rates. College going has been studied for decades (Hearn, 1980; St. John, 1991; Perna, 2000). One conclusion from these studies is that what matters more than enrolling in higher education is the value obtained from it, and this varies by the type of institution attended, and is often correlated to social class origins (Thomas and Bell, 2008). This inequality of opportunity starts in the K-12 system with public high schools affecting where and even whether students attend. It is true that more lower-income and minority students are attending higher education institutions; however, the stratification within higher education forces these students to enroll in the less selective institutions, while those from higher income groups attend the more elite colleges. (Bowen and Bok, 1998; Bowen, Kurzwell, and Tobin, 2005; Thomas and Bell, 2008).

During the last six decades, those developing educational policies have attempted to democratize the distribution of higher education opportunities by improving access to college through financial aid, preparation accountability, and communication of the importance of educational attainment. These efforts have expanded enrollment in college. However, although more diverse student types have achieved access to higher education, rather than equalizing opportunities, these policies have resulted in a highly stratified system, meaning more students from minority groups are being funneled into the less selective institutions.

The next sections will briefly discuss the expansion of higher education, enrollment patterns of students, and the changing demographics of future pipelines into higher education. State and Federal initiatives to increase access to higher education played a major role in this expansion. Each section explores the framework of stratification within the education system.

Expansion

Between 1939-40 total student enrollment in higher education was just under 1.5 million, but by 1949-50 it had risen to 2.7 million; in 1960 enrollment was 3.6 million, and by 1970 it hit 7.9 million (Thelin, 2004). Increases during this time were the result of federal and state policies on access and shifting demographics. Starting with the Servicemen Readjustment Act (G.I. Bill), federal and state policies instituted programs to improve access to higher education. The G.I. Bill of 1944 provided tuition and a monthly stipend to veterans of World War II who enrolled in higher education. Colleges saw this as a fundamental addition to their revenues and began marketing to veterans (Thelin, 2004). One of the net results of the G.I. Bill was the doubling of college enrollments between 1943 and 1946.

The 1947 Truman Commission on Higher Education helped establish the community college system, which offered free and reduced cost education (Thelin, 2004). The commission not only aided in the large increase but realized this expansion would mean a diversity of needs (Smith and Bender, 2008). Parts of the commission's report opened the doors for minority and low-income students to attend higher education institutions, and it also advocated the end of segregation (Smith and Bender, 2008). Authors of the report felt education was essential in maintaining democracy, equality, and opportunity (Smith and Bender, 2008). Prior to this report, the idea of using education to equalize social mobility was a new beginning in higher education. Even with the many references to women and minorities in the report, the largest expansion in enrollment came from male students using the G.I. Bill. Enrollment for African Americans and women remained limited to specialized institutions and locations (Thelin, 2004). During this time, many Historically Black Colleges and Universities (HBCUs) and teachers' colleges, which were predominantly female, increased enrollments. The Truman report faced major political controversy over its recommendations on desegregation, sufficient controversy that these recommendations were not implemented until John F. Kennedy and Lyndon B. Johnson introduced civil rights initiatives (Thelin, 2004).

The Truman Commission report aided in the stratification of higher education by promoting the establishment of open access and affordable institutions in the form of community colleges. Prior to the Truman Commission, most enrolled students had come from middle to upper class families with adequate academic preparation who enrolled in flagship research universities or state colleges (Smith and Bender, 2008). Americans began to see higher education as necessary to maintain or increase social mobility, during this period, but the institutional resources could not keep pace with the demand. Students required services and curriculums that

the institutions could not provide. Private institutions capped enrollments and increased costs to focus on the best research and most qualified students (Smith and Bender, 2008). Flagships, also, began restricting enrollments through the use of increased high school GPAs and standardized test scores, scrutiny on course taking patterns and rigor, and raising the costs of attendance. A more recent trend has seen public state flagship institutions target recruiting toward students with the financial ability to pay out-of-state premiums (Baryla and Dotterweich, 2005). Non-resident students benefit institutions by paying a tuition premium, graduating earlier, and by being better prepared (Zemsky and Oldel, 1983). Moreover, the funds raised from non-resident tuition allow for unbudgeted increased spending, thus improving facilities and academics that further raise institutional prestige, however, each enrollment spot filled by a non-resident displaces a state resident.

Vannevar Bush's report, *Science, The Endless Frontier,* pushed for funding from the federal government and helped create the modern National Science Foundation (Smith and Bender, 2008). In addition, institutions with strong applied science departments became attractive to the Department of Defense and Atomic Energy Commission. This new funding facilitated the building of laboratories and the hiring of graduate students. The Sputnik crisis of 1955, when Russia put a satellite into space, forced the U.S. government to spend millions on the sciences and defense research through the National Defense Education Act (Geiger, 1999), This new funding allowed the federal government to directly finance buildings, labs, and research programs. The increase in funding in the 1950s also provided more resources for the expansion of graduate programs, leading to an increase in students earning doctoral degrees.

The 1960s saw improved access for minorities, including women. The Committee of Equal Employment Opportunity, appointed by President Kennedy in 1963, reported unfair practices against women and minorities (Glazer-Raymo, 1999). Following this report, the Civil Rights movement of 1964 saw the growth of black militancy and feminism (Glazer-Raymo, 1999). In 1964, President Johnson signed three acts prohibiting discrimination on the basis of race, sex, religion, color, and national origin. These helped begin the movement of civil rights in higher education.

In 1970, the Women's Equity Action League filed a lawsuit about discrimination in higher education (Glazer-Raymo, 1999). The purpose of this lawsuit dealt more with faculty salaries and benefits, but it spurred future policies for enrollment equity, specifically Title IX, which banned discrimination at any institution receiving federal grants and contracts (Glazer-Raymo, 1999). Title IX addressed admissions, employment, and tenure, and helped create an expansion of the number of women in higher education. Women's participation has grown steadily from the 1970s, until now it tops male participation rates. By 1976, the gender gap in higher education closed and, by 1989, women surpassed men in college enrollment numbers (Mortenson, 2008). In fact, one of the most significant gender concerns in higher education today is the ability to attract and retain males in the system (Lewin, 2009).

Federal government policies continued to push for equality. In 1980, President Jimmy Carter created the Department of Education (DOE) as a cabinet level agency. The idea was to tie the DOE with the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and the Rehabilitation Act of 1973, which prohibited discrimination. The DOE assisted the expansion of minorities in higher education, but most of this expansion came from part-time enrollment at two-year institutions and adult women enrolling in continuing education (Baker and Velez, 1996;

Glazer-Raymo, 1999). Despite these efforts and significant gains in enrollment, the enrollment gaps among racial/ethnic and class groups persist. The gaps continue today with the exception of gender, females have started to outnumber males in higher education (Mortenson, 2010).

Financial aid polices played an important role in the expansion of higher education. Over the last five decades, both federal and state policies have offered some form of aid to all groups. However, these policies are distinctly different in form, for example, need based federal aid (such as Pell grants) and non-need based state aid programs like the HOPE scholarship These differences can be seen through the push of middle class voters to provide higher education for their children. Even with the increase in the number of lower-income students over the last few decades, enrollment of these students at selective institutions has declined (Thomas and Bell, 2008). Part of this decline is due to affordability and academic preparation.

Modifying the Basic Educational Opportunities Grant in 1972 and renaming it the Pell Grant was the first major step at a financial aid program for all those interested in attending higher education (Thelin, 2004). The Pell provided tuition and fees for students meeting federal criteria and for the first time made the grants portable by attaching them to the student and not the institution. But even with Pell, institutions have significant costs and academic preparation barriers, which have increased faster than Pell grants. Using Mortenson's data of Pell recipients in the 2006-07 academic year, those with Pell tend to enroll in the public two-year and less selective public four-year institutions with private-four year colleges being the least likely to attract Pell recipients (Mortenson, 2008). This indicates that, even with federal financial aid, the gaps between the enrollment of different groups in selective institutions continues to exist. Further hindering the closure of this gap is the change in federal polices from grants to loans, slowing the affordability progress made in the last decade. Federal programs began to reduce the

costs of higher education and were targeted at lower-income students, but they failed to focus on where the students were enrolling and, thus, unintentionally participated in the stratification of higher education. This situation has not been directly resolved but attention has risen within the Higher Education Opportunity Act.

Unlike federal programs, which focus on lower-income students, state programs aim at academically prepared students. This is a more modern phenomenon and not historical. Today, many states have transitioned from need-based aid to non-need-based aid. This shift, combined with the failure of financial aid to match rising tuition costs, has moved financial aid attention from a lower-income focus to a middle-income one (Heller, 2001; Paulsen and St. John, 2002; St. John, 2003). Moving to non-need based aid affected lower-income students who are typically less-academically prepared. This shift, also, enticed many students to remain in state, displacing less qualified students who then ended up at lower-priced, less selective institutions (Thomas and Bell, 2008). This trickledown effect resulted from changes in financial aid policies, the lower purchasing power of the Pell, transitions from federal grants to loans, and state policies aimed toward middle-class voters whose children can compete for non-need based aid. Paulsen and St. John (2002) argue that increasing college costs, combined with the shifts in federal and state financial aid, are making college costs a major barrier for lower-income students. There is a trend in unmet need due to the declining purchasing power of federal (and state) aid programs in comparison to rising college costs, especially at more selective institutions (Mortenson, 2008). Despite financial solutions offered by the federal government, many prospective students face substantial economic barriers to higher education (Heller, 1999; Kane, 2001; St. John, 2001).

As states face economic and political pressure to provide for health care, K-12 education, welfare, and law enforcement, higher education becomes a discretionary line-item in the budget

(Hovey, 1999, 2001; Hearn, Lewis, Kallsen, Holdswroth, and Jones, 2006). To balance the reduction in appropriations, many institutions increase tuition and fees (Leslie and Brinkman, 1987). Paulsen (2001) argues the need for greater public investments in higher education based on the benefits to society, which include increases in state income through taxation, reductions in the cost of social programs, lower crime rates, and improvements in the quality of the workforce. Raising tuition, however, reduces the benefits of higher education by restricting access. State and federal cutbacks, joined with increasing costs, make it difficult for institutions to meet the needs of lower-income students, except in cases where they are clearly academically superior to other students (Heller, 1997; Johnstone, 1999). Tuition policies at public institutions have followed the trend of increasing cost of attendance to cover the shortfall between operating revenues and expenditures (Noorbakhsh and Culp, 2000), but such policies disproportionately affect those with fewer resources. Public and private institutions' tuition rates are growing faster than personal income requiring an increasingly larger share of family income (Heller, 1997).

This trend of increasing tuition to compensate for budget shortfalls creates long-term, far-reaching consequences in enrollment patterns, which include limited diversity in higher priced and more prestigious schools, lower access for minority and /or lower-income students, and enrollment shifts from four-year selective institutions to four-year open admissions institutions or two-year colleges (Noorbakhsh and Culp, 2000). Bowen, Kurzweil, and Tobin (2005) suggest that inequalities in the enrollment distribution of students from lower-income families will continue to exist unless institutions make concerted efforts to recruit such students, an unlikely scenario at a time when institutions are concerned about selectivity and prestige and revenue. Until greater attention to the consequences of national rankings and the slowing of state appropriations, these inequalities in enrollment distribution will increase.

Where Do Students Go? The Distribution of Students Attending Higher Education Institutions.

"Differentiation has been praised for increasing access to higher education and criticized for diverting students from four-year institutions" (Roksa, 2008, p. 57). Brint and Karabel (1989) use a diversion argument, which offers hope of attending college but does not place emphasis on where one enrolls, to show how students from lower socio-economic backgrounds and those not fully prepared academically are disproportionately enrolling at less selective institutions. Diversion theory begins in the K-12 system. The idea each person has an equal opportunity for success regardless of family background creates a sense of meritocracy, however, certain students are diverted into courses and tracks based on demographics (Carbonara, 1998, 2005; Karen, 2002; McDonough, 1997). Students do not immediately equate this as negative, but it ultimately affects academic preparation and diverts certain groups from enrollment in selective institutions. Thomas and Bell (2008) argue that Americans believe society is meritocratic and, thus, have a tendency to place blame for the lack of mobility on the person rather than the class system. This is essentially the idea of diversion theory. The education system is supposedly blind to demographics and allows for mobility through educational attainment. The problem is that, even with equal access, lower-income students are less prepared for higher education, as a result of the process of tracking and differing aspirational outcomes. Perna (2005) argues that affluence advantages students in the K-12 system in extracurricular activities that favor college admissions. In addition, schools cannot control for parental aspirations toward higher education and parent aspirations affect college choice and continuation (McDonough, 1997).

School quality affects college access, and as K-12 schools are linked to communities, so schools in lower-income communities may not have the resources to help advance students to selective institutions. The availability of knowledgeable college counselors at schools correlates

to college choices among the students (Perna and Titus, 2005; McDonough, 1997). Students from higher-income families will likely attend high schools with more resources, such as counseling, and thus be better prepared for college placement. (Perna, 2000). They may also be able to afford private counselors and tutors, preparation classes for standardized tests, and the opportunity to take these tests multiple times. Thus, these students entering post-secondary education are more likely to come from higher socioeconomic backgrounds, and are more likely to attend a four-year institution (Karen, 2002; Perna, 2004; Roksa, 2008). This inequality appears consistent across periods of time (Baker and Velez, 1996; Hearn,1980, 1984; Karen, 2002). Even with the large expansion of the education system, the advantage still goes to those in the higher socioeconomic groups, owing to the availability of monetary resources and better academic preparation (Gamoran, 2001). Expansion in education was to help overcome the stratification among groups, however at times it helped legitimize the separation.

According to *Losing Ground*, a 2002 report by The National Center for Public Policy and Higher Education, the gap in college attendance rates between high- and low-income families has widened over the last two decades. Although all groups have increased their enrollment rates, the proportion of higher-income students has grown more significantly than that of lower-income students. This is important since general college attendance rates have increased from a low of 40 percent to a high of 67 percent in 1997, and has since remained stable in the low 60 percent range (Mortenson, 2008).

Kane (2001) points out that 80 percent of students in the top quartile of income attend a higher education institution, compared to only 57 percent of those students in the lower quartile of income. These gaps are more apparent when looking at four-year institutions; 55 percent of the students from the highest quartile of income attend four-year institutions while only 29

percent of those in the lowest quartile of income attend a four-year institution. United States Census Bureau data (2000) reveal the discrepancy among income classes and enrollment patterns in higher education: only 50 percent of low-income students enrolled in college the October following high school graduation, as compared to 59 percent of middle-income and 77 percent of upper-income high school graduates.

Gamoran (2001) found that even though all groups have increased access to higher education, the stratification within higher education has not diminished, but actually been enhanced over time. Students from lower socioeconomic groups and minorities are generally less likely to enroll in a selective institution, due to affordability and academic preparation (Hearn, 1984). Hearn states that, by using Merton's Matthew Effect (1968, 1988), the "rich become richer" by enrolling in schools with greater outcomes potential. The skewed distribution of resources between the classes maintains the competitive advantage of those in the upper-income groups. Hearn's (1991) longitudinal study revealed ascriptive traits, such as academic preparation, play a lesser role than class factors, and obtaining the traits needed to enroll in more selective schools is correlated with class.

Pipeline Changes

Over the next decade, the United States will see an increasing number of high school graduates, but a lot of variation by state. The Western Interstate Commission of Higher Education (WICHE) estimates that approximately 3.4 million high school students will graduate in 2021-22 an increase from the current figure of approximately 100,000. Though small, this increase will also be marked by a more significant change in graduating student demographics as the percentage of white graduates declines and that of racial/ethnic minorities, many from low-income families, increases. The U.S. Census Bureau (2007) estimates that, by 2015, minorities

will account for 85 percent of the growth in the number of high school graduates. *WICHE* (2008) anticipates that 50 percent of these graduates will come from the lowest-income groups, that is, those with incomes below $50,000. This net-growth will be segmented in the West and South with other areas of the country, especially the Northeast, showing slow declines (WICHE, 2008; Mortenson, 2009). With minorities becoming the fastest growing segment of the population, and as more students plan to attend college, all types of post-secondary institutions should expect to see changes in enrollment patterns and student characteristics. These changes will increase the need to study academic preparation and affordability barriers effecting access and completion in higher education.

College attendance rates for high school graduates continued to rise at a rapid pace from 1970 to 1996 then stabilized around the mid-60 percent range for the next ten years with only slight fluctuations (Mortenson, 2007, 2008). If this rate stays stable and the projections of high school graduates are accurate, higher education enrollments will increase by 3.5 percent or approximately 1 million new students, and this increase will come disproportionally from minority and lower-income groups (WICHE, 2008; Mortenson, 2007). According to McDonough (1997) and Perna (2005), family income affects college enrollment. Students completing high school who are in the bottom quartile of income enroll in college at a rate of less than 40 percent, whereas those in the top quartile enroll at double that rate at approximately 80 percent (Mortenson, 2007, 2008). There is also evidence that the fastest growing racial and ethnic groups in the South where most attendance growth will come from, are the same groups least likely to attend college (Mangan, 2009). Those from lower-income groups who do participate in college are distributed among the least selective institutions (Mortenson, 2007).

Much of this difference can be attributed to social, cultural, and human capital variances (Coleman, 1988; Hearn, 1984, 1991; Karen, 2002; Perna, 2003). There is no random distribution of where students enroll; the majority of the growth will occur in two-year and for-profit institutions (Mortenson, 2007). Two-year and for-profit institutions are often open access or have limited admissions requirements, while also being the lowest cost segment of higher education.

As the number of high school graduates grows, public institutions face political pressure to increase access for minority students. At the same time, the need to increase tuition continues to rise because of shrinking state appropriations (Johnson, Oliff, and Williams, 2010; Toutkoushian, 2004). The impacts of increasing costs are compounded by shifts in aid, from need to non-need based approaches and increasing reliance on loans. Any increase disproportionately affects those in the lower-income groups. Increasing the financial burden on students by raising tuition and fees further stratifies the system, because lower-income students will opt to attend the less expensive institutions. Many institutions, some driven by the need for increased revenues and others desiring prestige, have realized students from higher-income groups can afford higher costs and are often better academically prepared (Thomas and Bell, 2008), whereas less expensive institutions are usually open access requiring very little academic preparation. There appears to be a cyclical effect, advances are made in financial aid policies and institutions react by raising tuition and fees, and then the cycle repeats itself, negating any gains that could be made.

Schools serve as a means of social mobility, so the effects of increased expansion should allow for more equality across all social classes. However, the outcome of this expansion of educational opportunities was improved access but more stratification in the higher education system. Even with the expansion in higher education opportunities, those with lower socio-

economic status (SES) remain less likely to participate (Karen, 2002), but when students of lower SES do enroll, the highly stratified higher education system does not adequately aid in their social mobility. Blau and Duncan (1967) argue that in times of expansion, increasing opportunities mean students from lower-income groups and racial minorities should have better opportunities to attend selective institutions. However, Hout, Raftery, and Bell (1993) claim that, even during educational expansion, inequality remains, through the heightened stratification in the education system. The distribution of education may be more or less equal over time due to the allocation process (Mare, 1981); education may be allocated purely randomly or by ascribed characteristics. This refers to the quality and attainment in the education systems, K-12 and post-secondary, which may become more equal over time.

Anyone who wishes can compete for educational opportunities in the K-12 system. It is after K-12 that the distribution may become stratified by ascriptive traits such as race, gender and socioeconomic status. Hout, Raftery, and Bell (1993) argue that, during expansion, middle- and upper-income groups control access to specific institutions. Barriers are created by the dominant groups to maintain their presence in particular institutions and to restrict access for others. . These barriers may take the form of unequal opportunities for academic preparation and increasing the cost of attendance to deter enrollment at particular institutions, thus protecting access for the ruling groups. The opportunity to adequately prepare for college begins in the K-12 system. Students from lower-income backgrounds are often disadvantaged during their time in secondary schools due to the lack of resources, (college counselors, parental advice, funds for SAT preparation courses and taking standardized tests multiple times) available to aid them in the quest to attend college. This study tests Raftery and Hout's (1993) framework of Maximally Maintained Inequality. The framework states that, even with expansion in higher education,

inequality will continue to exist until a point of saturation is reached. When the point of saturation is met for the dominant class, then, and only then, will equality begin in higher education.

One's social origin affects one's social mobility (Bordieu, 1985; Portes, 1998). While those with lower socioeconomic status have more room for mobility, the opportunities to advance depend, in part, on educational attainment, occupation, and political power. Even with more attention given to governmental policies to improve access to college, the stratification from K-12 to post-secondary opportunities tend to benefit the middle and upper classes. Kerckhoff (1995) argues that credentials from higher education provide opportunities for social mobility, however, he believes that family resources (i.e social and cultural capital) directly affect upward mobility. Studies have found that students from higher SES groups are disproportionately represented in more selective institutions, while those from the lower SES groups are more likely to enroll in the least selective (Astin and Oseguere, 2004; Hearn, 1991; Karen, 2002).

The American education system, through its structured openness and meritocratic approach, offers students many chances for mobility (Brint and Karabel, 1989). Many countries track students in primary school and then sort them on the basis of this tracking into different secondary programs, while in the U.S. all public school students compete within the one system. Students in the U.S. receive multiple chances to pursue education without constant assessment and placement. In Europe, students are placed into various fields of study and schools by assessments throughout their educational careers. America was the first country to offer secondary education to all those who wanted it (Brint and Karabel, 1989). This idea of openness and the avoidance of selection until post-secondary education reinforces the idea that one's

background is not solely responsible for one's advancement and hard work can result in upward mobility (Brint and Karabel, 1989). The education system allows for individual mobility rather than group mobility and helps hide class differences by allowing students the chance of having educational opportunities. This notion of each student having an equal opportunity, especially at the K-12 level, legitimizes the idea of meritocracy. Although many believe meritocracy defines the educational structure in America, others feel that meritocracy is a myth that is perpetuated through the U.S. education system's use of non-selective institutions, (Brint and Karabel, 1989; Karabel, 1999; Sacks, 2003).

Under the meritocratic model, if selective schools offer the credentials to help achieve success, social mobility, and economic returns, then most of the qualified and aspiring students will take advantage of their educational opportunities, however, differences in choice are still part of the SES function. Whereas enrollment in a prestigious institution is not necessary for success, it does provide a strong signal and advantages toward future success (Zemsky, 1998). The benefits of attending a selective institution include higher earnings, greater civic participation, and better health (Thomas, 2000; Zemsky, 1998), while those not attending college earn less, have poorer health, and are more frequently incarcerated (Paulsen, 2001).

In the American education system some students face daily challenges to be included in activities that will further enhance their academic preparation. Students with greater resources can excel in academics with the use of tutors, parental assistance with homework, cultural trips (museums and travel), and organized sports. The public K-12 system is open to everyone and compulsory until an age cut-off, which in most states is 16. However, this open education system is highly stratified and exclusionary. This process of exclusion begins during a student's time in the K-12 system before students even enter higher education. The process of exclusion is played

out through unequal student participation in activities such as pre-school, tracking, gifted/honors programs, types of field trips, study abroad, and school resources based on property tax. Carbonra (2005), Hearn (1981, 1984), Karen (2002), and McDonough (1997) have demonstrated that preparation in the K-12 system varies according to family income and academic track. This unequal academic preparation has long-term consequences for post-secondary attainment.

Merit-based admissions favor the upper class. Research shows that test scores are correlated with the student's SES background, so, when an institution attempts to attract a higher test scorer, the distribution of lower SES students should decrease (Astin and Oseguera, 2004; Ehrenberg, Zhang, and Levin, 2006; Viehland, 1989). Karen (2002) argues that the use of standardized tests for admissions and financial aid has created a legitimate way to exclude lower-income students from selective institutions.

Access to elite and selective schools will provide social mobility but, in practice, few lower SES students are admitted (Karen, 2002; Massey, Charles, Lundy, and Fischer, 2003). Bowen and Bok (1998) studied the effects of attending selective colleges and revealed a positive correlation between institutional selectivity and socio-economic outcomes. The selectivity of an institution provides better economic returns in the labor market through credentialism and social networking (Collins, 1971). Bowen, Kurzweil, and Tobin (2005) suggest that inequalities in the enrollment distribution of students from lower-income families will continue to exist unless institutions make concerted efforts to recruit such students, an unlikely scenario at a time when institutions are concerned about selectivity, prestige, and revenue.

Zhang (2005) compared the differences between socioeconomic groups attending higher-quality institutions versus those attending lower-quality institutions. He measured quality in terms of admissions selectivity and found that students from higher-income groups benefit the

most from attending a selective college, although lower-income students also benefit more from attending a selective four-year rather than a two-year or low-quality four-year institution. Zhang (2005) showed that students gain marginally more in terms of social networks, occupational prestige, and job satisfaction when attending higher quality institutions. In a similar study, Zhang and Thomas (2005) also found that the differences in attending a selective institution grow over time. This further advantages those already having the opportunity to attend a selective institution.

Low SES students are better represented at non-selective institutions and less represented at highly selective ones. When lower SES students attend college, it is usually at less- or non-selective institutions (Hearn, 1991; McDonough, 1997; Paulsen and St. John, 2002; Karen, 2002). McDonough (1997) has demonstrated how the inequality of resources at the high school level affects college choice. Researchers contend that students from lower socioeconomic classes have always participated in higher education, albeit in smaller numbers and at less-selective institutions (Hearn, 1991; McDonough, 1997; Walpole, 2003). Much research has been focused on this underrepresented group, but the processes through which the sorting of students takes place continues to occur, due to differences in students' aspirational orientations, academic preparation, and their families' ability to pay.

Research Questions

This study explores the process through which this stratification unfolds across time. I focus on the relationship between public high schools and public colleges in the state of Georgia. Of particular interest is the potential variance over time in the college-going rates of high school graduates. Several questions structure this inquiry.

1. How does the composition (racial and economic) of Georgia public high schools affect their University System of Georgia (USG) college going rates?
2. Have these college-going rates changed over time?
3. Is this change in USG college-going rates related to changes in student composition in these high schools?
4. Is this change associated to key shifts in state policies related to college going rates?

With these questions I expect to be able to show stable patterns of high school feeders into the USG based on the factors of race and family income. These questions will take into account Georgia state policies on affordability and access meant to improve enrollment rates.

Significance of Study

The findings of this study are important for state policy-makers and stratification researchers. Those involved with state policies will benefit from knowing the long term effects of their policies on the college enrollment behavior of their high school graduates. In our current economic decline, policies focused on affordability and access need to be examined for accountability to ensure they are aiding the targeted segment.

Stratification researchers understand how an individual state's policies can affect the distribution of students into a university system. This study will contribute to the field of social inequality by demonstrating how high schools, socioeconomic position, and race contribute to social mobility through the process of higher education. It will show what role time plays on enrollment patterns in public higher education institutions. The study employs multiple cohorts allowing for investigation into the effect of federal and state financial policies on enrollment behaviors.

Limitations of the Study

This study is limited to the University System of Georgia and students attending any public institution in this system, which does not include the technical schools. Using first-year student cohorts over a period of 15 years, 1993-2007, allows for a reasonable time period although it is still a short time frame. The study only looks at the first-year enrollment and does not evaluate outcomes such as graduation, drop outs, or transfers. Omitting the outcomes to focus just on entry and not success hinders some of the policy analysis. SAT scores were re-centered in 1997 and high school GPAs may have been prone to grade inflation due to the introduction of the state merit scholarships. These could bias the results slightly by showing increases in scores and GPA as being positive for enrollment in certain sectors, but I believe this will not influence the results enough to create bias, because of the large number of students and the law of averages over time at the high school level.

S**ummary**

As college costs rise and financial aid policies shift toward methods aimed at satisfying the middle-class, lower-income students are being diverted to less selective institutions, either two-year or less prestigious four-year colleges. The better prepared higher-income students are controlling the selective institutions and these institutions continue to enforce their barriers (affordability and preparation) to protect upper-class advantages.

In summary, many studies on college access have addressed issues of aspirations rather than achievement (Gerber and Hout, 1995). While these studies have taken the views of social and cultural capital in regards to access most have not examined how educational expansion affects social mobility (Hearn, 1991; McDonough, 1997; Perna, 2000; Perna and Titus, 2004). Others have focused on status attainment through social mobility and occupation. In contrast,

this study will use the stratification theory to investigate enrollment patterns from high schools to higher education institutions over a 15 year period. The study seeks to understand if educational expansion improved equality among certain groups. Research has shown that greater access does not always mean greater equality (Lucas, 2001; Raftery and Hout, 1993; Shavit and Blossfeld, 1993). This study uses multiple years, during changes of many admission policies, in a large state. It investigates whether distribution changes over time, as the result of polices aimed at improving access and affordability for students in higher education. The interesting aspect may be if, and how, the distribution in a large state system changes as a result of these policies.

Organization of the Dissertation

The study examines the variance in the proportion of students from a high school and their enrollment patterns in the University System of Georgia. This chapter provides an overview of the study and offers a set of guiding questions for the research. Chapter two reviews the literature of inequality and provides details about the theoretical framework. Maximally Maintained Inequality, often referred to as MMI, states that, even with expansion in higher education, inequality will remain relatively flat; the proportions attending based on the population will be stable. The goal of this chapter is to organize the study along the lines of the theoretical framework. Chapter three describes the data and methodological approach taken. I will describe the statistical approach and why this approach was chosen. Chapter four will present the results of the study, while chapter five will offer a set of conclusions and implications.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

In this chapter I will discuss the field of stratification and how it relates to education through the sociological frameworks of conflict and functionalist lenses. The use of symbolic interactionism, another main sociological framework, was not wholly applied in this dissertation, although it can be argued to be applicable in the field of stratification. The chapter begins with a broad explanation of stratification and then moves into more micro approaches, such as, stratification in education, social closure theory, social and cultural capital, and social mobility, and ends with a review of Maximally Maintained Inequality. This approach attempts to provide the reader with an overall view of stratification and how it plays a key role in the study of access to higher education.

Restating my research problems, this study explores the process through which stratification unfolds across time, specifically, in the relationship between public high schools and public colleges in the state of Georgia. Of particular interest is the potential variance over time in the college-going rates of high school graduates. An example is how the changing demographic composition of high schools affected college-going rates into the University System of Georgia and to what effect.

An important area of the sociological study of societies is the focus on inequality in social structures. This inequality is the result of social stratification, the institutionalized form of inequality that ranks members on a social hierarchy based on some characteristic. Social access

to rewards, resources, privileges, and opportunities are then distributed based on position in this social hierarchy. One's position in the social hierarchy influences decisions and life outcomes.

Two major sociological theoretical paradigms approach the foundations of social stratification from different perspectives. The conflict perspective focuses on power and class and how they affect society. Another approach, the functionalist, studies the interrelated parts of society through the use of institutions, norms, and values and assumes these institutions work together for the stability of society. Another main framework is symbolic interactionism, which is typically a micro approach, and uses a framework of people's interpretations of the world through communication, signals, symbols, and interactions. Sociologists have long been concerned about inequality in society and its effects on the participants. The study of social stratification, therefore, has been a staple of sociological focus over time.

Stratification fits nicely into the sociology of education, as inside the American education system subordinated social classes have experienced inequalities in education. This inequality exists in primary, secondary, and post-secondary education mostly on the basis of social class (Karen, 1991). A significant focus of the study of education is the study of individual experiences in the educational system and how this affects individual outcomes. I felt that using macro approaches to stratification best fit the proposed research problem: the relationship between public high schools and public colleges in regards to college going rates over time.

Stratification is most often described as a hierarchical ladder to be climbed by groups (Blau and Duncan, 1967; Collins, 1971; Davis and Moore, 1945). Studying stratification is important because most interactions are based on some form of social influence or dimension of stratification. Stratification affects the way people interact with each other and how one views one's world. The lens people use to interpret actions and communicate to others depends on their

location in society, and that location is mostly based on income and prestige, two characteristics strongly tied to educational attainment among other factors. Thus, studying stratification in the educational system is important for understanding any society's social stratification system. Examining the distribution of enrollment of the various types of students in higher education systems by the college-going rates of public high school graduates, using racial and income breakdowns, allows one to understand the mobility of certain groups and see the long term effects of policies on college enrollment and high school graduates. This dissertation studies the process through which stratification unfolds across time using the framework of Maximally Maintained Inequality (MMI).

In the American education system stratification exists in terms of social, cultural, and human capital. While the United States has many open programs and supports the notion of a meritocratic system, there is still a great deal of evidence of a tracking system that sorts students into different educational opportunities based on both real and perceived differences, and that this system does place minority groups at a disadvantage (Ansalone, 2000; Ansalone and Biafora, 2004). This "placement" system is a form of social stratification. The outcomes associated with this placement have long term consequences for students and their chances of social mobility through educational attainment.

Stratification Frameworks

Stratification is often discussed in the framework of one of three approaches: Marxist, Functionalist, or Weberian. Each approach analyzes stratification in a slightly different fashion, although overlap exists between the views. According to Collins (1975), Marxism is a classical division of social classes based primarily on economics and it has difficulty including ethnicity, race, religion, and political parties that do not coincide with economic groupings, social

networks, and social mobility. Marx also sees the Functionalist view as tying rewards to talent, whereas Weber discusses stratification through class, status groups, and power interactions. None of these approaches ties neatly into the modern view of social mobility by personal associations or family backgrounds (Coleman, 1988).

Class, status, and power are essentially the elements of stratification research (Sorensen, 2005). Weber saw the study of power coming from one's status and class position and how they affected others, while Marxists believe class (derived from position in the economic system) is the most significant element with all other things being derived from one's position in the class structure. Marx's idea of class pits groups against each other in the struggle for power. Socio-economic Status (SES) is a homogenous grouping of people with no explanation as to how the grouping initially occurred. It is, however, a measureable concept.

In structural inequality the relationship between social positions creates the inequality. Davis and Moore (1945) use this approach in their study of stratification. They explore the relationship between social position and social order in regards to occupational outcomes, believing that stratification serves a function for the good of society. They feel those best qualified deserve benefits of higher incomes, if not certain positions will go unfilled. Sorokin's idea of the vertical dimension of status allows sociologists to study social mobility, and enables the placement of people on a measurable continuum to demonstrate movement.

Weber believed the power of certain organizations legitimizes behavior undertaken for mobility. Organizations, such as schools, can be used by policy makers to provide protection for status hierarchy. The use of coercion brings more money and power to one group and denies others access to opportunities for mobilization. By controlling institutions, the upper-income groups can maintain their elite status, while constraining the mobility of the lower-income

groups. This idea can be seen in secondary and post-secondary education in America today through unequal academic preparation and lack of affordable four-year higher education institutions. The use of two-year institution provides legitimate reasons for selectivity among higher education, while delivering false hopes (Brint and Karabel, 1989).

Prestige groups related to Weber's status groups are those that can practice exclusion. This exclusion takes various forms, such as, occupation, education, and power and has been widely used in many occupational studies (Duncan, 1961; Goldthorpe and Hope, 1974; Collins, 1979). These occupational rankings have been used to identify socioeconomic status (Duncan, 1961; Featherman and Hauser, 1976) by calculating the occupation's average educational attainment and income related to the position. Wright (1979) argues for the use of occupational prestige over class structure due to its measurability. More recent scholars argue against the use of occupational prestige as a measure of SES (Sorenson, 1998; Warren and Hauser, 1997). They feel the concept is now obsolete and advocate the use of scales compiled from educational attainment and wages instead of the survey ranking occupational prestige, albeit the notion of occupation prestige comes from education. Those who are well-educated can obtain prestigious employment and most prestigious positions correlate to higher incomes. Education can, thus, provide the means of social mobility by offering the opportunities for a better-paying career.

Marx's theory of class conflict cannot fully account for labor market inequality, education, skills and ability. However, educational attainment can logically be argued to be class-related. Marx sees class as one's ability to gain or access economic resources as controlled by the market, thus the markets create the inequality. Property ownership, however, allows groups to mobilize for protection, and greater resources mean broader participation and access to resources. Today those with greater resources have the opportunities to participate in activities

boosting their educational attainment and making them more attractive in higher education application (Perna, 2000). One example of this is that those with higher incomes can afford private tutors and college counselors. Student from lower socio-economic backgrounds, also, cannot afford the cultural experiences of travel abroad or museums that admissions offices often regard as attractive.

Class formation comes from similar people with a common interest defending their positions in society. The formation of admissions credentials, increased prices, and institutional, state, and federal policies protect certain classes' access to higher education. The construct of class, according to Bourdieu (1985), has a major flaw because it hides the problem of knowledge. His review of this problem stems from Durkheim's ideas of social agents belonging to a classification system and the opposing constructionists' view that social agents create their social reality by objective reasoning. The argument is that social agents are both classified and classifiers (Bordieu, 1985). So, do classes and their separation truly exist or are they constructed for science? Bordieu (1985) argues this because the movement between classes has no clear boundaries. The movement may not have boundaries but the information obtained by time in class does. Again, students from upper-income families gain information from successful college graduates and participating in activities not available to lower-income students.

In society today we do have wealthy students attending less selective institutions and low income students attending highly selective institutions. The argument then needs to focus not solely on class, but on the proportion of a class that acts in a measurable manner, by attending a certain type of institution. Many stratification models including Maximally Maintained Inequality (MMI) expand on this approach of measuring the distribution of classes or groups in certain behaviors, instead of the Marxist class approach, although these theories usually begin

with Marx's ideas that class comes from one's social reality, which is established by one's relative position to others. Bourdieu's (1985) idea of class, derived from Marx, states that class is a measurable differentiation that explains the differences between groups. I studied class difference in college-going rates using MMI, which states that expansion does not reduce education inequality until those in control allow it to occur, which will not happen until saturation, the point at which those in control are satiated. When common elements can be measured, the separation into classes occurs, placing people with similar traits together. Classes with greater differentiation, however, may not share common practices, thus causing stratification through the interpretation of common conditions differing by group membership. This process of homogeneity creates the basis of stratification, and it is those in power who decide the place of the other classes in that process.

The idea of group mobilization needs defined boundaries between groups and recognized objectives to be gained through some process, like education, before members develop a group identity (class consciousness in Marxist terminology). But depending on their position in society, certain people have neither access nor equal opportunity. While focusing on education for social mobility, we fail to see it also creates more stratification. Education itself creates the separation of groups with newly-defined requirements for group membership (Collins, 1971). Marx might argue that, for the lower classes, education is a false consciousness placed upon them by the upper classes (Collins, 1986). The education system protects the status quo while providing the illusion of equal opportunity. Education causes the formation of status groups and helps enforce, protect, and display group norms. The education system legitimizes the separation between groups because individuals are offered a chance to advance that only a minority can achieve.

Stratification in Education

Stratification of educational attainment has been examined by sociologists for generations. There are a few distinct theories surrounding educational stratification. One is a technical-functionalist approach in which education reflects society's demands based on the evolving technological need for trained workers (Collins, 1979; Davis and Moore, 1945). Another approach, conflict theory, states that education is used as a "sorting mechanism" for certain groups to maintain their status in the selection process, (Collins, 1979; Kerckhoff, 1995). The focus on educational attainment in the United States centers around the idea that increased education positively correlates with status and social mobility. Using education to increase one's social position plays an important role in the study of educational stratification.

Blau and Duncan's (1967) seminal piece studied status attainment by linking educational attainment to social origins with occupational prestige outcomes. Their results showed social origin via occupational status is influenced more by educational attainment than by one's first job. Those from higher social origins begin with an advantage (Coleman, 1988; Kerckhoff, 1995; McDonough, 1997). Not only do students from families with a higher social status begin school with increased knowledge and socialization, but there is evidence that social status affects the institution one attends. Those from a favored social status can attend institutions with better resources, including more challenging courses and more qualified teachers (Jencks, 1972; Kozol, 1991; McDonough, 1997; Oakes, Gamoran, and Page 1992). This theory fits neatly into this study by allowing me to use this framework and study high schools with better resources. I argue that the schools in more prominent areas send students to more selective institutions, while students from schools in less affluent areas predominantly enroll in less selective institutions. As mentioned in chapter 1, even though more lower-income and minority students are attending higher education institutions, the stratification within higher education forces these students to

enroll in the less selective institutions, as, at the same time, those from higher income groups attend the more elite institutions (Bowen and Bok, 1998; Bowen, Kurzwell, and Tobin, 2005; Thomas and Bell, 2008). I examine this process by using high school patterns of enrollment in public colleges in the University System of Georgia.

In the next few paragraphs I will discuss some of the different stratification theories dealing with social mobility, educational attainment, and social origins. This lays out the framework in a broad sense in order to understand the process of stratification in education and the effects of educational attainment on one's life course. Educational attainment is correlated to higher incomes, better health, and life satisfaction (Thomas, 2000; Zhang, 2005). Obtaining this education is prescribed due to the stratification existing in the system, so an understanding of stratification will help establish the macro process through which students are placed in the system and the effects of this placement.

Davis and Moore (1945) follow a structural-functionalist model. They argue that, if all positions were equal, it would make no difference who occupied what position, but social positions are not equal. For example, certain positions require special skills and training, and, in order to fill these positions a reward system must be in place. The building of this competitive reward system stratifies society. Davis and Moore justify stratification by arguing that inequality ensures most important positions are filled by the most qualified (Davis and Moore, 1945). They do, however, qualify their theory by pointing out, that society may have adequate talent, but the costs of the educational process in terms of time and money, may not be worth the credentials for some students. This approach provides an excuse for those in lower-income groups not to continue in the educational system due to cost. These costs could be financial or opportunity costs. It is important to note Davis and Moore believe stratification in the educational system

positively serves society by ensuring only the most qualified enter into specialized fields, and that those in these fields should be rewarded more due to their hard work. For example, although this process of reward for hard work is evident in today's society, I would argue that the process in which the stratification takes place in the education system is not adequately addressed. A bright lower-income primary school student wishing to become a doctor does not have the resources of more affluent students, thus the probability of attaining that dream is greatly reduced compared with the higher-income student's probability.

Tumin (1953) argues against the strict functional approach of Davis and Moore by refuting the idea of importance in society. He states that the values placed on certain positions can be ambiguously applied and derived from a value preference. Little scientific reasoning exists in placing people into certain positions. According to Tumin (1953), the more rigid a society is the less likely it is to discover new talents in its members. A rigid stratification does not allow certain members to display their talents. He further argues that access to education depends on students' social origins. In addition to access, tracking students based on their social origins affects their educational attainment. Once this stratification process begins, those benefiting from it will restrict access to their privileged positions. This is the beginning of MMI framework , where one part of the framework explains those in control, upper-income groups, restrict access to certain areas by creating structural barriers, for example, financial or academic preparation.

One way this restriction can be observed is through education and credentialism (Collins, 1979). Collins described increased specialization as a process for the controlling groups to continually protect certain social positions. He describes the needs of society as determining the rewards of the training, but the power of the "ascribed" groups controls the evaluation of the

education (Collins, 1979). His notion of credentialism claims that the higher the norms of the organization, the higher the educational requirements. The group in power creates the credential needs by continually increasing the educational requirements. Once a certain level of education becomes a norm for the upper class, and a moderate level of education is acceptable for the middle class, this increase in the supply of education will result in a creep up the educational ladder (Collins, 1979). The increase in the supply of an educated workforce has been the status quo and the level of education has now risen to offset this supply. Those with bachelor's degrees will be widely available making advanced degrees more desirable for certain positions. This can be seen today in all fields, and I argue that the institution attended is also an aspect of credentialism.

Hallinan (1994) argued school characteristics account for only part of the inequality. Her results showed between school effects, based on variances of learning opportunities, and within school differences, created by tracking or grouping by ability. Hallinan believed that, even those with the ability and drive to succeed, would still face barriers due to learning opportunities at school (Hallinan, 1994). The variance in school characteristics plays an important role in learning opportunities. This means it matters where one attends school and where one is grouped in the school. Those with greater resources can migrate to better school systems or afford private education, enabling a greater opportunity for mobility through educational attainment.

Educational attainment is part of a group membership and reflects the interests of the privileged group (Collins, 1979). Collins claims the participation in a certain groups yields a cultural identity which will advantage those in power. This cultural identity manifests itself in the notion of cultural capital so frequently studied (Bourdieu, 1977; Coleman, 1988; Dumais, 2002; Karen, 2002; McDonough, 1997). An example of group participation, for those with the

resources, is participating at greater rates in extracurricular activities, which will afford group members a benefit in the admissions process when applying to higher education (McDonough, 1997; Perna, 2003, Thomas and Bell, 2008). Knowing that participation in certain extracurricular activities benefits students in the admission process is part of the cultural capital in that group's identity. The next section will expand on cultural capital and the theory of social capital with regards to educational attainment.

Social and Cultural Capital as a Means of Social Reproduction

Cultural capital can be thought of as factors learned by an individual through one's parents and by virtue of one's social status (Paulsen and St. John, 2002). Individuals internalize their location in society through available cultural resources, which can include family, schools, or peer cultural backgrounds and attitudes. This internalized norm becomes the lens through which they view society (Bourdieu, 1977). The internalization process creates the individual's habitus or place in society's structure based on social interactions, cultural norms, and acceptable behavior (Bourdieu, 1977). Dumais (2002) better describes habitus as one's view of the world by one's place in it, while McDonough's (1997) research showed that students attending the same high schools vary in preparation according to their family SES and academic track. High school composition plays an important part in my dissertation, as I ascertain the contextual effect that occurs within high schools. In other words, I assume students from the same high school, even if they are located in different income classes, will have similar educational attainment outcomes due to the high school. I also believe the cultural capital of parents is extremely important in educational attainment, but measuring the impact of that factor is outside the model explored in this study

As noted earlier, part of access goes beyond academics and income to encompass cultural knowledge. Hearn (1991) studied a cohort in 1980 and his research indicates that background characteristics, like social standing, powerfully influence where someone attends college. While, 20 years later, a follow-up study by Karen (2002), using more recent data, found results similar to Hearn's, the effect of parental income almost doubled in Karen's research. Students are placed into higher education systems based on some form of merit, but this is directly linked to preparation, the cultural knowledge of admissions policies, financial aid, and school resources. These studies tie nicely into this research and its examination of high school resources. The high schools with greater resources should be in the more affluent communities. Incomes, closely aligned with education, provide students with cultural capital which guides them through the college preparation and application process (Hearn, 1984; Karen, 2002; McDonough, 1997; Perna, 2000). To unfold the stratification and the long term outcomes in the relationship between Georgia high schools and public college enrollment I need to understand the components involved in the college application decision process. Cultural capital is a key component of preparing for and attending higher education institutions (Karen, 2002; McDonough, 1997), and in my study I use high school composition as a measure of this cultural capital.

The concept of social capital relates to an individual’s access to resources through interaction and relationships. Students gain and internalize knowledge through casual interactions among peers, parents, and counselors. Coleman (1988) discusses the need for social capital to contain three components, financial, human, and cultural capital. To Coleman, a reduction in any of these components dilutes the effects of the others. Students gain social capital through their parents’ financial capital, by having access to places to study, attendance at educational institutions, or support materials for their education. The human capital component

includes one's parents' educational attainment. The final component needed for the transfer of social capital is the intergenerational time spent, quality time, and knowledge transference. Coleman (1988) believes that, in order to transfer social capital, all three components need to be in place. A student can have a well-educated parent but, if no interaction occurs, the student does not receive the needed social capital. Again, this is a concept that can be measured in the context of high school composition since students pass along information as they interact. Students from similar social higher-income backgrounds can offer support to each other regarding the college admissions process, while lower-income students often do not have the social capital to pass between each other. I demonstrate this problem through the high school composition variables in the study.

Social capital outside the home can come in the form of intergenerational transfers, (teachers, religious figures, older students), type and size of school attended (private, public or religious, large, small or medium), and even peer effects. Students share experiences and often learn from each other, (Coleman, 1988, McDonough, 1997, Perna, 2000). Numerous studies find parental involvement to be correlated with college aspirations (Cabrera and La Nasa, 2001; Hossler, Braxton and Coopersmith, 1989; Perna, 2000; Perna and Titus, 2005). Perna and Titus (2005, p. 503) state that "academic preparation is one of the most important predictors of both disposition toward and interest in attending college," yet, as noted earlier, access to social and cultural capital are significant factors in where one attends college. Ensuring that students attain the social and cultural capital necessary to attend the institution best suited to their ability will help improve society overall, since improving preparation for college could provide the American economy with workers who are educated and skilled enough to meet the increasing demands of the information technology economy.

This study examines social and cultural capital through high school composition. If the composition variables do not affect the selectivity of institution attended, then the Georgia public high schools have adequate social and cultural capital components aiding the students. The variance within the system ranges from ranked research institutions to open access two-year colleges. These can be isolated by controlling for the academic preparation variables, such as, standardized test scores and high school grade point averages. The University System of Georgia contains some variance in selectivity ranging from the highly selective research institutions, Georgia Institute of Technology and the University of Georgia, to open access multiple two-years institutions.

Social Closure Theory

The process of social closure occurs when a group gains advantages by limiting the opportunities of another group's social mobility (Murphy, 1988; Parkin, 1979; Weber, 1968). Social closure, in essence, protects the upper classes from losing power by limiting the vertical movement of lower classes, thus it maintains stratification. The theory of social closure shows how similar Marx and Weber's theories were. Those in a certain social position can be classified and classifier based on the distance from boundaries of other groups. Everyone is defined by their location in social space. Those in similar social spaces share knowledge and culture and protect this space by the use of symbolic, cultural, and social capital. These capitals act as a form of social closure.

Murphy (1988) argues that exclusion based on credentials and experience may be inevitable today due to avoidance of inefficiencies, but previously this was based on ownership of property, often measured by income. One problem with this is the process used to gather credentials. Admissions offices look at high schools attended as an element in the decision-

making process, which negatively impacts those with fewer resources who do not have the opportunity to attend elite private high schools. Another element of social closure theory is the process of one group monopolizing advantages by closing opportunities for subordinate groups (Murphy, 1988). Tracking in primary and secondary schools and the location of those with lower-incomes into certain tracks acts as a mechanism of social closure. The entire public school system being based on property taxes, tracking, and resources not equally shared, excludes certain groups. Schools with better guidance counselors will have better opportunities to send students to college, in particular, more selective institutions (Thomas, Perna, Bell and Anderson, 2008). School resources affect curriculums; schools with greater resources can offer more lab and advanced placement courses due to employing more qualified teachers. Parents understand this, thus, those with resources control their children's experience by where they send them to school.

The value of education may not be evident to some classes, while others instill this value in young members from an early age. McDonough (1997) reveals how the cultural aspect of the application process limits the number of lower-income students from applying due to the complexity, family background, and application fees. Many students today apply to multiple colleges at more than $50 an application. Lower-income students cannot afford to do this and often apply to the lowest cost institution (Perna, 2005). The 'gate-keeping' process of admission offices requiring standardized test scores, recommendations, and the interactions with high schools counselors advantages upper-income students (McDonough, 1997; Karabel, 2005). Karabel's (2005) book, *The Chosen,* researched the admissions process at four Ivy League institutions where administrators and admissions offices make decisions on behalf of major social groups who have political and monetary influence over the institution. The summary of

the book showed how those with resources, monetary and political, control the admission process and keep lower-income groups out of certain institutions. The creation of financial, character, and academic preparation barriers protects access to the selective institutions for the children of the dominant class, in this case upper-income groups. When an institution offers admissions on personal traits or characteristics, stratification will continue and social mobility will be controlled by the group setting policies.

The framework applied in this study, Maximally Maintained Inequality, borrows ideas from social closure by stating that middle and upper classes create restrictions to certain social activities. One of these activities is attendance in selective higher education institutions. The restriction comes from creating admission criteria only their children can obtain and increasing costs high enough that only they can afford them. This is a process of social closure by excluding certain groups access to a commodity, higher education, which then transforms the commodity into a niche product. This can be seen in the recent jump in selectivity of many of the nation's public flagship institutions. Thomas and Bell (2008) attribute a portion of the rapid rise of public flagships as a by-product of demand for the elite institutions, increased costs of attendance, and strategic plans at state institutions to recruit better faculty. Striving for rankings has created higher admissions standards and higher tuitions. Essentially, a form of social closure, this excluded specific groups of students from the market for enrollment in state flagship institutions and, thus, becomes a cause of social stratification.

Social Mobility as a Means of Advancement

Those who can mobilize can often overcome pieces of the stratification of education. Records indicate that social mobility increased during the first half of the twentieth century due to the decrease in self-employment and the agrarian economy. However, since the 1970s, the structural changes aiding mobility have decreased, causing a major slow down in social mobility (Hout, 1988). Beller and Hout (2006) state that inequality affects the difference between upward and downward mobility, those at both ends of extreme wealth and poverty usually stay there with the middle having the ability to move in either direction. Any expansion of an education system should translate into greater mobility opportunities (Walters, 2000). Adversely, Hout and Raftery (1993) argue that, even during expansion, the inequality in the distribution of enrollment in selective institutions remains by design of those in control, upper-income and educated groups. They call their framework Maximally Maintained Inequality. This means advancement in mobility also remains stagnant during educational expansions. In my study, I test MMI by analyzing public high school college-going rates into the public colleges in Georgia, over a period of time to see if lower-income students are enrolling in the more selective institutions that offer greater chances of social mobility.

Turner (1960) suggests two types of mobility exist: contested and sponsored. Contested mobility allows anyone who aspires to compete with one's own efforts to obtain elite status. The elite do not control the prize and there is a notion of fair play, as rules do exist. One problem associating contested mobility with education is the stratification within education due to social backgrounds. We do see some students gain entrance into elite institutions from lower socioeconomic families (Massey, et al, 2003) and these students do gain more marginally (Zhang, 2003), but the contest is not exactly played fairly. The elite can control the outcomes

from public policies on affordability, school reform, and admissions standards. In addition to controlling outcomes, the upper-income groups provide opportunities to their children not available to other income classes.

With sponsored mobility, the elite recruit or choose those for membership in their group. Upward mobility here is granted by acceptance into the privileged group. Utilizing admissions standards as a selection process has hurt the lower socioeconomic groups in their attempts to gain enrollment at certain types of institutions. It so happens that the institutions with open enrollment and lower tuition are the community colleges, where few students graduate with a bachelor's degree and where most students are from lower socioeconomic groups (Karabel and Brint, 1989). An increase in sponsored mobility has occurred in Georgia with the rankings advancement of the research intuitions, which produced greater measurements of academic preparation and increased costs to attend these institutions.

Pareto mobility makes one individual better off without hurting others. This mobility cannot be accomplished in higher education until expansion grows faster than demand and enrollment. Each student placed in an institution of higher education displaces another potential student. Thus a trickle down event occurs based on stratification, contested, and sponsored mobility. This is the case with the new public elites (Thomas and Bell, 2008). I tested this to see if changes occurred over time in enrollment from public high schools to the new public elites. If this is true certain high schools should lose enrollment in the selective sector, while other high schools gained.

Trow (1972) mentions education as a tool for equality. To gain equality through education, those in the lower levels of society need to improve their situation enough to be seen as equals to those who are advantaged (Murray, 1988). Education plays an important role in

social mobility. Even though schools are viewed as an ‘open’ contest for the opportunity for social mobility only some can be successful (Kerckhoff, 1995). Kerckhoff refers to this process as a sorting process, in which social origin affects one’s educational attainment. A strong correlation exists between family social origin and access to the best institutions, both K-12 and higher education (Gamoran, 2001; Jencks, 1972; Kozol, 1991; McDonough, 1997; Oakes, 1992). Some scholars suggest that the variation within schools may play a more important role than the school itself, due to public financing (Gamoran, 2001; Mare, 1981). However, this does not control for those families that can afford private schools and other resources (McDonough, 1997; Perna, 2006).

Mare (1980) found the likelihood of college attendance is affected by social backgrounds based on school attrition, but the continuation rate into college is random. He feels college attendance is based on attrition up to high school graduation. Once the student graduates from high school, social background no longer plays as important a role in post-secondary continuation. The socioeconomic effects of school decline as the schooling continues (Mare, 1980). This can only occur if the student gained enough academically to enter higher education, and then it matters where one attends it (Hearn, 1991; Thomas, 2000; Zhang, 2005).

Those who can attend an elite institution are offered selection into the privileged group (Collins, 1979; Massey, 1989; Zhang, 2003). Entrance into these elite institutions comes from ‘ascribed’ status or ‘achieved’ status. The academic preparation, cultural ability, and social power to attend elite institutions come from secondary educational attainment and participation (Collins, 1979). The students attending the best high schools have an advantage in being admitted to the best higher education institutions. The problem in the United States is that school financing is based on neighborhood demographics (Kozol, 1991). Thomas and Bell (2008) argue

that college experience is closely tied to social class origins. Thus, it not only matters that one attends an institution of higher education, but where one attends. Karen (2002) argues individuals can increase their educational attainment without gaining any social position. This can only be solved by gaining access to more elite institutions, while increasing one's educational attainment. Collins' (1979) theory of credentialism and increased differentiation to keep the controlling group strong is evidenced here. Meaning, when occupational areas begin to become mainstream those in control divide the occupation into more specialized and differentiated roles requiring increased licensing and education. And many employers will begin to hire only those from recognized selective institutions. Also, only institutions with the resources to offer these specialized programs will be able to compete. This process further hinders lower-income groups from obtaining the credentials for social mobility, by their lack of a strong presence in the elite institutions.

Gamoran (2001) believes reproduction theorists support the theory of lower-income groups' desire to increase their educational attainment for advancement, but it has only benefited higher income groups by socializing the lower SES for the workplace. The idea is that all groups have expanded their educational opportunities, but the relative social positions, even after educational attainment, remains the same. Raftery and Hout (1993) recognize this as Maximally Maintained Inequality (MMI). This theory means that stratification by educational attainment and social origin will persist until a certain level of saturation is reached. This saturation point is the point at which those in control have been satisfied and do not require product protection anymore. In this study the protected product is enrollment in selective institutions.

Maximally Maintained Inequality (MMI)

Blau (1970, p. 204) states that “increasing size generates structural differentiation in organizations along various dimensions at decelerating rates”. Blau argues that the differentiation occurs internally in an organization, thus producing a stratified unit. This agrees with the perspective of MMI and further suggests that higher education can be differentiated, so the enrollment at a particular institution matters. Some have argued that the differentiation between social classes occurs at the lowest levels of education and as students approach post-secondary school they disappear (Shavit and Blossfeld, 1993). This does not meet the MMI requirements applied by Raftery and Hout (1993). They state supply and demand equilibrium is in flux with readjustments occurring to favor the social group in control.

MMI states that educational expansion does not reduce educational inequality (Ayalon and Shavit, 2004). Lucas (2001) mentions that the expansion of secondary and post-secondary education follows the demand created by increased population and social mobility. If enrollment rises faster than demand the lower socioeconomic students receive more education, however, the class effects remain stable. When the educational attainment at a certain level becomes universal for the higher socioeconomic groups, then the effect on this level declines, if educational expansion cannot be maintained (Hout and Raftery, 1993; Lucas, 2001). Others argue that educational expansion perpetuates class differentiation by only training students to meet the outcomes of their families’ social position (Fernandes, 2005). Thus social mobility through education does not occur.

Another aspect of the theory is that, if public support for education is reduced, social class effects increase (Hout, 1993; Lucas, 2001). This may be occurring now with lower state appropriations, budget cuts, and the rising high school graduate population. Thus access to

certain institutions may be reduced for students from lower social backgrounds. This agrees with Thomas and Bell's (2008) idea of new elite public institutions because enrollment pressures increase stratification. Here social background plays a bigger role than in past, due to the lack of support. MMI suggests inequalities are maintained if the advantaged can enroll as fast as or faster than the less advantaged students. When a saturation point is obtained at a certain educational level, the expansion of that level reduces the inequality (Ayalon and Shavit, 2004; Hout and Raftery, 1993).

One issue is that saturation is rarely reached due to increasing stratification, as stated earlier, through the advancement of credentials, increased differentiation within higher education, and as the advantaged increase their educational attainment by earning higher degrees. The main point of MMI is "that transition rates and odds ratio between social origin and educational transitions remain the same from cohort to cohort, unless forced to change by increasing enrollments" (Gerber and Hout, 1995, p. 614).

Studying four cohorts covering almost 50 years in Ireland, Hout and Raftery (1993) claimed the visible results of the study to be Maximally Maintained Inequality. Even with educational expansion, social origin matters when attempting to enroll in post-secondary education. The secondary expansion happened quicker than the expansion of higher education and class effects reduced the number from the lower social classes entering college. This was manifested by transition rates being affected by social origin from within the secondary levels. Mare (1981) also found that social origin affects transitions in the secondary level more than transitions in higher education. However, when this occurs fewer lower social class members are available for college. Their class effects varied between cohorts with some effects being stronger at the secondary level and others at the post-secondary level, but the evidence for each supported

the theoretical framework of MMI. Meaning even with expansion the stratification in the system remains stable until a point of saturation is reached. Stratification will continue to occur as space is made in education system due to social backgrounds effects.

Gerber and Hout (1995) applied the MMI framework to three varying cohorts in Russia during the Soviet period. One result was that, when secondary education expanded, higher education did not keep pace. This led to an enrollment squeeze and those from lower social origins were hurt more than other groups (Gerber and Hout, 1995). Gerber and Hout's study supported MMI with regard to the theory that increasing education at one level may alleviate inequality there, but it produces greater inequality at the other levels, if expansion does not occur.

Using MMI in Israel, Ayalon and Shavit (2004) found that, as cohorts became more modern, the effects of parental education and position decline in importance for the students' educational attainment. They found academic tracks played a more important role. Inequality was reduced in Israel through reforms at most school levels but the inequality at the University-Qualifying Bagrut, an entrance examination for postsecondary education, remained stable (Ayalon and Shavit, 2004).

Another study by Jonsson and Mills (1993) of students in Sweden and Britain found early transitions to be more equal than later transitions. The effects were largest for Swedish farmers with very little effect for any British students. The longer those in the lower class remained in the school system (continuation) the more inequality existed at the next transition, but over time they saw more equality; meaning the later cohorts still faced inequality but at a lesser degree than the older cohorts. This also agrees with Mare's results (1981).

There is a theory opposed to MMI, the meritocratic hypothesis, that states if society can unite the relationship between family social positions from a student's educational attainment, equality will be maintained (Fernandes, 2005). Blau and Duncan (1967) believe this can only occur when the thing that matters most is education and not someone's social origin.

Summary

The sections of this chapter provided the framework for investigating my research problem. First, the chapter began with a macro view of stratification by explaining stratification is the interaction between people and their social positions related to inequality. This laid the groundwork to explain different reasons for stratification, in particular class differences. Tying this to education leads to the differences in outcomes of education as related to class. Those in higher-income groups are often better academically prepared and have the means to afford higher education, while, conversely, the lower-income students lack the resources to enroll in selective institutions. Since educational attainment affects social mobility, those in lower-income groups have less potential to move up the social ladder. Policies have not alleviated this inequality but, in fact, may have heightened it with shifts in financial aid from need-based to non-need based and loans. Following the Maximally Maintained Inequality framework, even with the vast expansion and demand for higher education, enrollment of lower-income students at selective institutions has not kept pace with demand. These processes may lead us to see a certain relationship between public high schools and enrollment in public colleges in Georgia. In particular, there are relationships between high school composition and enrollment rates in the different sectors of Georgia's public higher education system.

CHAPTER 3

DATA SOURCES AND RESEARCH DESIGN

Introduction

This chapter is broken into four sections. The first and second sections are a review of the research questions and framework established in chapter 1. The third section details the data sources, issues, calculations, and the merging process. The final section describes the statistical methods selected to answer the research questions.

The purpose of this chapter is to examine the variance of college attendance in the University System of Georgia (USG) from Georgia high schools between 1993 and 2007. The study analyzes the proportion of high school graduates enrolling at the various USG institutions across this period. It also examines how these enrollment rates vary by demographic and academic variables. The USG continuation rates are calculated by taking the twelfth grade enrollment of the high school and the first-time freshman enrolling from that high school in a University System of Georgia institution, ——————————————. This chapter explains the data and develops the models used to explore the relationships contained in the theoretical framework described in chapters 1 and 2. The variables used in the study will be defined and the model explained. Results of the model will be presented in chapter 4.

Research Questions

There are 33 institutions in the USG system broken into 5 categories: research universities (n=3), regional universities (n=2), state universities (n=13), state colleges (n=7), and two-year colleges (n=9). The categorization is hierarchical based on the selectivity of the institutions. I will examine high school participation at certain USG institutions to ascertain if state policies or

the changing characteristic of high school student bodies affect the subscription rates at USG institutions. The following research questions will be addressed through the methods selected and described in this chapter.

1. How does the composition of Georgia public high schools affect their USG college-going rates?
2. Have these rates changed over time?
3. Is this change in USG college-going rates related to changes in student composition in these high schools?
4. Is this change associated with key shifts in state policies related to college-going rates?

These questions will be tested longitudinally over a 15-year span. It is essential to use an approach specific enough to capture growth rate and enrollment patterns, and to control for certain variables identified as central in the theories being used to guide this inquiry. Each question will be tested using the same basic model. That model takes the form of a series of multi-level longitudinal models that capture the rate of change and subscription patterns, while controlling for a range of variables that could potentially affect the relationship of these patterns.

Analytical Framework

The analytical framework for this study centers on Maximally Maintained Inequality (MMI), a stratification framework. The policy makers and upper class control the access to higher education and within this the access to specific opportunities (Raferty and Hout, 1993). These groups control access to elite opportunities (research and regional sectors) to ensure the needs of their children are met. When the needs of the upper class are met, known as saturation, members of this class will not prevent the subordinates from trying to access the elite

opportunities, but they will not assist them. Thus MMI offers a framework to organize analyses of class mobility vis-á-vis access to education and, specifically, the access to elite opportunities in the post-secondary arena.

During the last six decades educational polices have attempted to democratize the distribution of higher education opportunities (Astin and Osguera, 2004; Karen, 2002; McPherson and Schapiro, 1998). Schools serve as a means of social mobility, so the effects of increased expansion should allow for equality across the classes. However, on the surface, this expansion of educational opportunities has little bearing on improvement in the stratification in higher education. Schools may serve the role of social reproduction, rather than improving social mobility. I will investigate this through the use of the MMI framework. Even with the expansion in higher education opportunities, those from lower socioeconomic status (SES) backgrounds are less likely to participate (Karen, 2002), and when students of lower SES do enroll, the highly-stratified higher education system does not adequately aid their social mobility (Perna, 2000). This fits the premise of MMI, as capacity and opportunities in higher education increase, the upper class allows the subordinate class to enter higher education, but still restricts their access to the best opportunities. Because subordinates' opportunities did not match those of the upper class, their chances for social mobility are marginal compared to those of the elites. The elite institutions keep their upper class barriers in place in order to restrict and protect access. As post-secondary opportunities have expanded, class barriers have kept pace with the expansion (Hout, 2004).

MMI suggests that stratification by educational attainment and social origin will persist even during periods of improved access. The framework states that equilibrium is in a constant state of flux and ever changing in favor of the upper socioeconomic class. This flux in

equilibrium can be seen when enrollment rises faster than demand and the lower socioeconomic students receive more education, however, the class effects remain stable as the upper class restricts access to the best opportunities. When the educational attainment at a certain level becomes universal, the higher socioeconomic groups' dominance declines, if educational expansion cannot be maintained (Hout and Raftery, 1993; Lucas, 2001). This means that, when the upper class feels their needs are met, they will allow the lower class access without help, but at the same time they change the rules, whether by increasing academic admission criteria, raising costs, or reducing the dissemination of information to certain high schools, so that the distribution between the parties is maintained. The access now granted to the lower class is restricted and the upper class creates stratification within the higher education system blocking access to the elite institutions. In the USG system, access to the selective institutions is blocked by high academic preparation expectations and greater costs, whereas, the less selective institutions offer open access and low costs. Even though some costs are covered by HOPE the total cost of attendance appears hierarchial by selectivity. Additionally, with the current poor economy and constant reductions in state budgets for education, institutions raise costs to cover these reductions (Johnson, Oliff, and Williams, 2010). Johnson et al's report shows at least 41 states cut funding to higher education in the last few years, resulting in most state universities raising tuition to balance costs, with some universities in California increasing tuition by 32 percent. The lack of state appropriations to subsidize higher education forces institutions to inadvertently restrict access.

These restrictions come in the form of higher admissions standards and the increased cost of attendance (Thomas and Bell, 2008). If this occurs, social background will play a larger part in location and enrollment in the higher education system (Hearn, 1991; Karen, 2002). For

example, when tuition increases 10 percent this amounts to a larger proportional increase for the lower classes or, if the upper class feels too many from the subordinate class are rewarded access, they will create barriers by raising the admissions standards through increases in standardized test scores, requiring a higher high school grade point average, or by implementing a placement test.

Often the upper class is described by racial and economic indicators, white middle-to–upper class, while those from underrepresented groups are from minority or lower-income families. Students from a favored social status can attend high schools with better resources, including more challenging courses and more qualified teachers (Jencks, 1972; Kozol, 1991, McDonough, 1997; Oakes, 1992). The ability to attend institutions providing better resources and prestige affects one's social mobility and future earnings (Thomas, 2000; Zhang, 2005). The college experience is closely tied to social origins and social mobility, (Thomas and Bell, 2008). Thus, it not only matters that one attends college but where one attends college has a significant impact on future success.

This study examines aggregate transitions from twelfth grade into the University System of Georgia. Examination of high school continuation to college, by sector, using identifying background characteristics, will test the MMI framework. MMI focuses on barriers erected by the controlling group, higher income in this study, and does not predict the effect social background has on educational opportunities (Hout, 2004).

Data

Data came from the University System of Georgia (USG), the National Center for Educational Statistics (NCES) Common Core data set, the United States Census Bureau, and the Georgia Department of Education. Data were cross-walked by NCES school ids, FICE & Educational Testing Service (ETS) codes, while using census data for economic variables. A number of controls were used. These include academic preparation (HS GPA, SAT, learning support indicator for remedial coursework), demographic indicators (race, gender), distance from the high school to institution attended, financial aid variables, poverty rates, and high school characteristics, such as racial composition. The learning support indicator is a method of measuring minimum competency in English and Math, as determined by a cut-off score on standardized tests as assessed by the University System of Georgia. Students not meeting the cut-off score are placed into remedial courses called learning support to meet the competency deemed necessary for post-secondary courses. This chapter will provide explanations of how to measure the expansion of higher education and continued stratification within institutions. I will investigate enrollment patterns from high schools into USG institutions over time to ascertain whether high school composition, location, or academic preparation altered enrollment into the USG system, as expansion occurred.

If the enrollment patterns remain stable, or become more stratified, the analysis will agree with the concept of MMI. Using the framework of MMI that, even during educational expansion, the distribution into the overreaching hierarchy will remain stable. Meaning that those in control of access to selective institutions will ensure more of the higher-income and academically best-prepared students are enrolling in the elite institutions by erecting barriers to entry through costs and increasing preparation measures. Even though opportunities appeared for lower-income

students during periods of expansion, the higher-income groups took control and used this expansion to their advantage. This control was an unconscious leveraging of policies, specifically merit aid, to increase the attractiveness of enrolling into a USG institution.

Unit of Analysis

The unit of analysis in this study is the high school. Making the high schools the unit of analysis in the study allowed the school variables to vary across time. If the students were the unit of analysis the schools would be fixed across time, since the study looks at the feeder patterns of high schools, over time, fixing them would not tell the correct story. To produce better results high schools were fixed in time and time was allowed to vary. This was due to admissions practices and costs of attendance varying across time, especially with the rapid rise of the selective institutions in Georgia. The post-secondary attendance data came from the University System of Georgia. The data represent enrollment patterns at USG institutions for the fifteen years from 1993 until 2007. This created a total pool of feeder high schools with 419,514 students over the fifteen years. Details will be shown in a subsequent table (Table 3.2).

The proportion of each high school's graduates enrolling in the individual institutions and sectors of the USG is the outcome variable. This variable measures the stratification across the sectors (research, regional, state universities, state colleges, and two-year colleges) and time nested in high schools. Independent variables include demographic indicators, academic preparation, subsidized lunch programs, distance, poverty measures, and location. Table 3.1 displays the hierarchy of the USG system. Each institution has been placed in its corresponding sector: research universities, regional universities, state universities, state colleges, and two-year colleges. Next to each institution is a very brief history in which one can see the mission creep that occurred in 1996 in the state university sector, and in the mid 2000s in the state college

sector. During these times, the mission of the institutions increased with more degree programs and some institutions going from two- to four-year institutions. This expansion occurred in the less selective sectors. Class sizes have been increasing faster than campus resources. In the fall of 2005, the minimum requirement of a 400 SAT Math score and 430 SAT English test score was removed from the state-college and two-year college sectors.

Table 3.1 The University System of Georgia sectors and brief history

Institution	Brief History
Research Universities	
Georgia Institute of Technology	Opened in 1888
Georgia State University	Founded as GT evening school in 1913, became Ga State in 1969
Medical College of Georgia	Chartered in 1828
University of Georgia	Charted in 1785, established as University of Georgia in 1801
Regional Universities	
Georgia Southern University	Established 1906, became Georgia Southern University in 1990
Valdosta State University	Established 1906, became Valdosta State University in 1993
State Universities	
Albany State University	Started as private 2-year in 1903, became Albany State University in 1996
Armstrong Atlantic State University	Started in 1935, became state university in 1996
Augusta State University	Began in 1783 as Academy of Richmond, became state univ. in 1996
Clayton State University	Established in 1965, changed name to Clayton State University in 2005
Columbus State University	Began in 1958, became state university in 1996
Fort Valley State University	Established as land grant in 1890, became state university in 1996
Georgia College & State University	Started in 1889, became state university in 1996
Georgia Southwestern State University	Began as A&M in 1906, became state university in 1996
Kennesaw State University	Started as junior college in 1963, became state university in 1996
North Georgia College & State University	Began as Ag College in 1873, became state university in 1996
Savannah State University	Established as land grant in 1890, became state university in 1996
Southern Polytechnic State University	Began in 1948 as part of GT, became state university in 1996
University of West Georgia	Began as A&M in 1906, became state university in 1996
State Colleges	
Abraham Baldwin Agricultural College	Began as A&M in 1908, changed mission to state college in 2006
College of Coastal Georgia	Established in 1861, changed mission to state college in 2008
Dalton State College	Chartered in 1963, first Bachelors offered in 1998
Gainesville State College	Authorized in 1964, became a state college in 2005
Georgia Gwinnett College	Authorized in 2005, first freshmen class in 2008
Gordon College	Began as private seminar in 1852, became a state college in 2006
Macon State College	Established 1965, first Bachelors offered in 1997
Middle Georgia College	Began as a denominational in 1884, became a state college in 2006
Two-Year Colleges	
Atlanta Metropolitan College	Established in 1965, changed name to current in 1988
Bainbridge College	Established in 1970, changed name to current in 1987
Darton College	Established in 1963, change name to current in 1987
East Georgia College	Authorized in 1970, changed name to current in 1987
Georgia Highlands College	Authorized in 1968, change name to current in 2005
Georgia Perimeter College	Began as Dekalb College in 1964, became GPC in 1997
South Georgia College	Began as A&M in 1906, became South Georgia College in 1932
Waycross College	Authorized in 1970, became Waycross College in 1987

Source: The Board of Regents of the University System of Georgia, Research and Policy Analysis Office. Student Digest Report, authored by Susan Whitman (2006).

High School Data

High school data came from two sources, the University System of Georgia and the National Center for Educational Statistics Common Core data set. Longitudinal data were provided by the Board of Regents of the University System of Georgia. These data include students' demographic variables, financial aid information, and academic preparation information (SAT, ACT, learning support, and high school GPA). All student-level data were aggregated to the school level, and in this study the high school level will be treated as the primary unit of analysis.

The Board of Regents of the University System of Georgia (BOR) supports and leads the missions of 35 public higher education institutions in the state of Georgia. During the time of this study, 1993 to 2007, 33 institutions enrolled first-year students; the Medical College of Georgia does not enroll freshmen or sophomores, and Georgia Gwinnett College was just opening. The only undergraduates at MCG transfer into selective health profession majors upon completing the core curriculum at any USG institution. Again, in the timeframe of this study, certain institutions have experienced mission creep. Thus, some institutions have changed from two-year institutions to state colleges, state colleges to state universities, and from state universities to regional universities. Since the study intends to examine entrance to post-secondary institutions and not the students' intended degree, either associates or bachelors, the change of mission does not pose a significant issue. Each institution and sector will be examined for variance in proportion of students enrolled from high schools nested in time. The study was restricted to public high schools within Georgia, so a reduction occurred in the number of high schools in the study due to the elimination of private and out-of-state schools. Table 3.2 shows the number of Georgia public high schools sending students to USG institutions over time.

Table 3.2 Students distributed across time in study enrolled in USG, the total number of twelfth graders enrolled in the high school, and the number of high schools included in this study.

Year	Number Students in Study	Number of 12th Graders in High Schools in Study	Percent of students going to USG from High Schools in Study	Number High Schools
1993	22,380	59,717	37.5	297
1994	22,605	61,502	36.8	299
1995	23,928	61,214	39.1	302
1996	24,892	63,497	39.2	303
1997	24,543	66,941	36.7	305
1998	24,382	69,159	35.3	311
1999	25,594	70,110	36.5	314
2000	25,617	70,714	36.2	325
2001	27,001	73,580	36.7	327
2002	29,543	76,408	38.7	331
2003	31,591	78,953	40.0	340
2004	31,735	81,597	38.9	343
2005	33,877	86,326	39.2	348
2006	35,328	87,654	40.3	351
2007	36,498	92,745	39.4	356

Two different National Center for Education Statistics Common Core (CCD) data sets were used, the public elementary/secondary school universe survey data and the local education agency finance survey data. The universe survey included the total high school enrollment, ninth through twelfth grade enrollment, enrollment by race, and number of free or reduced priced lunches. To create the percent breakdown by race I used the high school's racial enrollment (number of students identified as black/the total number of students) divided by the total enrollment. Due to the long time frame investigated in the study and the revisions of CCD collection, certain years did not completely match or contain data from the most recent surveys. Georgia, for example, did not report race until 1992, hence the reason the data go from 1993 to 2007.

I attempted to address the missing race data by substituting missing values using a linear interpolation method. Since high school composition may affect the enrollment patterns, the missing racial variables needed to be addressed. Replacing the missing data from 1985-1989

using a linear interpolation and a means approach was investigated. The means approach just substitutes the missing value with the grand mean, however, with the variability of high school composition in the state, this method was not chosen. Linear interpolation attempts to fit curve patterns by using two nearby points; since the statistical methods discussed below measure growth patterns, the linear interpolation method appeared to fit. This method works by connecting points on the growth curve and interpreting what the missing values would be. By replacing the missing racial values the contextual high school effects can be better captured. If the values were not replaced, there could be a potential for reporting distorted results. However, after the mixed linear models were run, I reviewed the results and made the final decision to remove all missing values due to apparent distorting in the early 1990s. This reduced the time frame studied by seven years, but produced better statistical results.

The CCD finance survey provides information on instructional expenses over the years. This total instruction expense was divided by total student enrollment at the school to yield the instruction costs per student. This variable is one of the high school characteristic variables.

State and federal data were matched by creating a crosswalk using NCES school id, agency, and state to ETS codes. When performing this match, it was found that CCD and USG data contained a few duplicate codes. If the correct code could not be determined, both were removed from the data. Matching occurred in SPSS and an Oracle database using structured query language (SQL).

Aggregating the students to the high school level yields variables that are sums, percents, proportions, and means, i.e. average SAT, percent African American, and proportion of whites from a certain high school enrolled in institution A. The academic preparation variables became means (SAT and HS GPA), while the learning support indicator (remedial coursework needed)

became a proportion by taking the sum of those enrolled in learning support (remedial courses) divided by the total of all students enrolled from that high school. This procedure was completed for race, gender, HOPE, Pell grants, full-time status, and gender.

In Georgia and the Southeast, counties with high poverty levels have been labeled "Black Belt" counties. A variable called Black Belt was created with census data. I closely defined the Black Belt counties using *The Black Belt Data Book* (Wimberley, Morris, and Woolley, 2001). This variable indicates a county's continued poverty rate of 20 percent or greater for consecutive years. For example, if Quitman County had consistent rates of 23.2 and 22.4 percent of the population living in poverty, the county would be considered a Black Belt county.

To create the distance variable the latitude and longitude of each high school was plotted in ArcGIS with the USG institutions. A simple algorithm in the program calculated the distance in miles from the centroid of each high school attendance area to the USG institution. Distance to an institution affects those with fewer resources in terms of finding new living arrangements and travel costs between home and place of enrollment. Distance can also have a social capital effect; campuses closer to home will be better known to the community and high school, however, the elite campuses will be better known across the state (Hossler, Braxton, and Coopersmith, 1989; McDonough, 1997). It is unlikely that many high schools in northeast Georgia have sent students to Darton (a state university) 4 hours away in southwest Georgia but, if a research institution was located in Albany (southwest Georgia), more students would come from northeast to southwest Georgia. College choice are often on a basis of social capital of student, which comes from teachers, counselors, parents, and friends. A local school or well know school's impact will be greater in the college choice over a lesser known.

Following other work in the area (Hearn, 1980, 1991; Karen, 2001, 2002; Kerckhoff, 1995; McDonough, 1997; Thomas and Bell, 2008) I have specified variables to observe the effects of race, family income, academic preparation, and institutional quality. Adelman (1999) found math to be one of the best predictors of post-secondary attendance and completion. The study includes a variable measuring the proportion of students from a high school requiring remedial support in math. It would be expected that upper-income students have better academic preparation and, therefore attend USG institutions of higher selectivity, while those from underrepresented or lower-income groups have less academic preparation and are concentrated at the non-selective institutions. Where one enrolls for higher education depends less on the social origin of those with greater levels of academic preparation than it does for those with minimal levels of education (Hout, 2006). In other words, social origin affects where students with minimal academic preparation attend college more than those with higher academic preparation. However, higher-income students with low academic preparation still have better resources and choices of institutions to attend compared with lower-income low-qualified students. So, even with expansion in higher education closing the gaps, the enrollment in elite institutions will not increase or at least not increase for the lower-income, minimally-prepared students.

Looking at this through MMI, I expect to see that, as education opportunities expanded, the participation of all groups rose and gaps closed, but the closure of gaps may be concentrated in certain sectors by race and income groups. Increased access is not necessarily correlated with greater equability of opportunity (Lucas, 1999; Hout, 2006: Raferty and Hout, 1993; Shavit and Blossfield, 1993). I also expect to see that state polices aiding the transition to post-secondary institutions helped the expansion, although the upper classes helped draft these policies and will maintain their barriers to certain sectors and institutions. In addition, I anticipate seeing location

(metropolitan area) and region (north of fault line) affecting high school participation in the USG system. Those from cities will have the advantage of a greater exposure to cultural and historical effects, increased social capital through items related to college campuses, graduates, and employment requiring a college degree.

Race and income are highly associated with academic preparation and academic preparation is associated with the selectivity of the institution one attends (Hearn, 1984, 1991; Karen, 2002; Kerckhoff, 1995; McDonough, 1997; Perna, 2004; Thomas and Bell, 2008). Variables capturing these factors are included in my models. The variables used to capture the effects mentioned here are presented in table 3.3 with their name, source, and a brief description.

Table 3.3 Variables used in analysis

Data	Source	Description
Propenrolled (dependent)	USG & CCD	Enrollment in a specific USG institution from a high school divided by grade 12 enrollment from CCD
MultiID	USG	Concatenated ETS and Institution ID to track high schools over time
Time		Reocded years 1986-2007 as 0-21
Quadtime		Time * Time
Type Code	USG	Sector indicator
INSTRUCPERSTUDENT	CCD	Instruction cost per student
MILES	USG and CCD	Distance in miles from high school to USG institution of enrollment
BLACKBELT		Counties with persistent poverty rates of >=20 percent
SATT	USG	Average SAT Total at a USG institution from a high school
HS_GPA_AVG	USG	Average grade point average from a high school at a USG institution first term of enrollment
TRANS	CCD	Grade 9 four years previous divided by current grade 12
FRERED	CCD	# of free or reduced lunch in the high school
PROPLSMATH	CCD	Proportion enrolled in learning support Math from at and USG inst from a high school
PCTAMIND	CCD	Percent American Indian at a high school
PCTASIAN	CCD	Percent Asian at a high school
PCTBLACK	CCD	Percent Black at a high school
PCTHISP	CCD	Percent Hispanic at a high school
PCTWHITE	CCD	Percent White at a high school
PUPTCH		Pupil to teacher ratio
MEMBER		# of students in the high school
CITY	CCD	Locale of high school
SUBURB	CCD	Locale of high school
TOWN	CCD	Locale of high school
RURAL	CCD	Locale of high school
PROPASIAN	USG	Proportion of Asians attending USG inst. from total High school enrollment in USG
PROPBLACK	USG	Proportion of Blacks attending USG inst. from total High school enrollment in USG
PROPHISP	USG	Proportion of Hispanics attending USG inst. from total High school enrollment in USG
PROPMULTI	USG	Proportion of Multiracials attending USG inst. from total High school enrollment in USG
PROPWHITE	USG	Proportion of Whites attending USG inst. from total High school enrollment in USG
PROPUNKNOWN	USG	Proportion of Unknowns attending USG inst. from total High school enrollment in USG
PROPFEMALE	USG	Proportion of Females attending USG inst. from total High school enrollment in USG
PROPFT	USG	Proportion of Full-time students attending USG inst. from total High school enrollment in USG
PROPLOAN	USG	Proportion having loans attending USG inst. from total High school enrollment in USG
PROPPELL	USG	Proportion having Pell attending USG inst. from total High school enrollment in USG
PROPPELL	USG	Proportion having HOPE attending USG inst. from total High school enrollment in USG

Statistical Methods

Before any analyses were performed, the USG and CCD data were pooled into one file. This file contains fifteen years of high school enrollment patterns in public higher education institutions under the authority of the Board of Regents. A few different statistical approaches were used in this study. The first was a descriptive analysis of the pooled data. This provides a visual way to identify trends and changes over time. Reviewing a trend analysis allows one to address significant changes over time in demographics, high school size, and academic preparation. Pipeline changes into higher education have changed and continue to change over time regardless of the racial breakdown of those graduating from high school. Again, this study examines the degree to which these pipeline changes and increases in the diversity of high school graduates have reduced the stratification in post-secondary enrollment by institution type. Using descriptive and frequency analyses I examined changes in the proportion of students enrolled from individual high schools into USG sectors and the changes over time. I then examined high school compositions over time in order to see if the racial distribution of a high school mattered in college continuation and, if so, to which type of institution it mattered.

These simple descriptive analyses do not say much, as they are a measure on just one occasion. There is no way to identify the temporal relationships by looking at single points in time, where time is a key factor in understanding how certain processes work (Heck, Thomas, and Tabata, 2010). Given the outcomes measured over several points in time the data lend themselves nicely to a repeated measure design (RMD). The large number of repeated measures in the data increases the statistical power in determining if changes took place (Willett, 1989).

The repeated measure in the model is enrollment at a USG institution from a high school, as tracked by ETS code. This enrollment is nested within high school and school districts across

a time of 15 years. The grouping variable (ETS and system code) allows the independent predictor variables to be attached to an identifier but vary across time. A variable called time was created by recoding the year (1993 to 2007) to time points, 1993=0, 1994=1 . . .2007=14. This makes the starting point, 1993=0, the intercept to measure growth from this point. The growth will be proportion enrolled from this starting point. A quadratic time variable was also created to capture non-linear growth over time, this occurred by multiplying time by time.

Following MMI, the model will be able to measure if changes in enrollment patterns occurred with expansion or if the same stratification remained through the years. MMI's idea that, even with expansion, the upper class will still maintain barriers to the elite opportunities, the model will track enrollment and use the high school composition to see if only the upper classes are attending research institutions. If the high school composition contains greater numbers of underrepresented or lower-income students, as measured by race, those receiving Pell or loans, those living in Black Belt counties, the high school's proportion attending a certain sector of the USG system should show this stratified enrollment pattern. If MMI does not fit then over time those from high racial concentrated high schools, should be increasing their enrollment at the elite and selective institutions during expansion. Using a model that allows for multiple years of analysis to run at the same time will allow a direct testing of the MMI framework. Investigating 15 years of data during an expansion process in Georgia will allow for an examination of the upper class controlling access to elite sectors.

Many RMD longitudinal studies can be set as multi-level and hierarchical, in this study the multiple outcomes are nested in the high school. The study has change in the proportion enrolling at a particular USG institution from a high school nested in the high school for level 1 and the difference between the high schools defined as level 2. There may be an opportunity for

a third level with nesting in school districts. Prior to specifying a multi-level model, a univariate repeated measure ANOVA (analysis of variance) needs to occur. The ANOVA supplies information on the shape of the growth curve, sphericity issues, and means comparisons. In addition to those, the ANOVA allows for a quick test of the null hypothesis. Sphericity refers to the equality of variances between the levels of repeated measures. One wants the variances equal to each other in order to report valid results. Three methods exist to correct a violation of sphericity: Greenhouse-Geisser, the Huynh-Feldt, and the Lower-bound. These correction methods work by altering the degrees of freedom, which in turn alters the significance of the F test by movement in the distribution. The test for sphericity used a null model. If the null can be rejected then there is change over time, the variances are different. The null test, , where H_0 = the null hypothesis, μ_1 = the variance at point 1, and μ_2 = the variance at point 2; the null test assumes the two samples will be the same. In the ANOVA model the null tests to see if the variances are equal, = When the variances are not equal sphericity exists. With differing variances an effect of randomness has been introduced where I cannot fully explain an observation without first controlling the difference.

The univariate ANOVA assumes the variance and covariance are similar over time. Thus they are homogenous, meaning the variance of the variance does not change over time, this should be the case between the covariances as well. To test this assumption the study uses Mauchly's test of sphericity. If the test results are significant, the null is rejected, then the variances and covariances differ over time; they are heterogeneous. The variances are not following a normal distribution pattern and the effects (enrollment patterns) may vary by chance and not because of the independent variables associated in the study. A correction can be applied to the degree of freedom and this adjusts the significance level within the F-test, two such

methods are the epsilon approaches of the Greenhouse-Geisser test and the Hyunh-Feldt test (Heck, Thomas, and Tabata, 2010). These corrections are applied to lower the risk of committing type I error; rejecting the null when it should be accepted. Another concern running this type of model is if the between subjects factors effect or alter the growth patterns of the high schools (Heck, Thomas, and Tabata, 2010). A test parallelism can be done to see if the growth patterns are the same for the different high schools.

Analyzing a single outcome over time, specifically for investigating growth, can be challenging. One issue is if the measurement varies at different time points. In this study the measurement comes from the first term of matriculation for a first-year student as defined by the Integrated Postsecondary Education Data System (IPEDS). IPEDS defines a first-time student as a student attending any institution for the first time at the undergraduate level in the fall. This includes students who enrolled for the first time in the prior summer term. IPEDS also includes students who entered with advanced standing, college credits earned before graduation from high school (joint enrollment, dual enrollment, Advance Placement, International Baccalaureate).

Upon completion of the ANOVA to determine the shape of the growth pattern an individual change model was done. Measuring the outcome and independent variables over time allows the temporal relationship to provide a better picture of the changes in policies, capacity, and the expansion. I used a longitudinal analysis in SPSS mixed to show growth in continuation rates from high schools to USG institutions and especially growth in certain sectors. This approach allows an examination of growth between and within high schools and school districts. Using a mixed linear model, MLM, with random-coefficients furnishes benefits in examining missing data, differing time patterns of measurement, and complex error structures (Heck, Thomas, and Tabata, 2010).

This method employs a multi-level model using high school as the individual level 1 with the measure of proportion enrolled nested in the high school and level 2 examines the difference between the high school based on the compositional, location, and finance variables. This approach allows the growth trajectory to be captured, thus showing if a particular high school has grown its enrollment in a particular sector. Examining growth over time in this study provides a way to see if the number of students attending a USG institution or sector from a high school was linear or non-linear, patterns that could be affected by implementation of educational or financial policies.

In this multi-level model high schools are the individual level (i) with measurements (t). Level 1 has repeated measures of the proportion enrolled at a USG institution from a particular high school over time. In this study there are 15 time points between 1993 and 2007. Level 2 explores the variance between the growth patterns of the high school. Depending on the results, there may be a level 3, which would measure the difference in trajectories between the school districts. Thus is a function of growth over time with random error (Heck, Thomas, and Tabata, 2010). Level 1 of an individual change model can be represented as

In this level ( ) is the linear change, ( ) is the quadratic with , , are the time varying variables, is the intercept, , , are the linear, and quadratic growth rates showing changes at each measurement, and is the variation in the growth of the high schools. By coding the first year, 1993=0, it sets the intercept at this date with other dates representing growth from this point. The measurement between fall semesters is represented by and the rate of change between semesters is . The error component of the model, , places a value between the observed versus the true measure. Error structures typically follow a

normal distribution function, Gaussian**,** which produces the bell curve (Heck, Thomas, and Tabata, 2010). This function contains a mean of zero and constant variance with the notation of), however, using longitudinal data this distribution is not sufficient. This can be verified by the test of sphericity run in the univariate ANOVA. The correlation across time periods within the high schools requires a different covariance matrix.

Due to many time points and the correlation between them, the model employs an autoregressive error covariance. Covariance is shared variance between two things and measures that are uncorrelated share no variance. The errors are not independent of each other over time, they are correlated to each other. The observations are similar to each as a function of their separation in time. Using a normal distribution would violate the independent error assumption and produce incorrect and inefficient estimates. To solve this issue the autoregressive error matrix contains coefficients to control for autocorrelation. The matrix appears as

ARH(1)

where is the correlation between time periods. This controls for the autocorrelation and allows for a better model by capturing the heterogeneity. The covariance structure at level 2 will vary by the number of random effects and the results of the ANOVA sphericity tests. If a quadratic or cubic shape slope appears they will be fixed and not random.

With controls for sphericity and autocorrelation, and knowledge of the shape of the slope, the model will become a random-coefficients model with time varying covariates. The model can be transformed from

to a model with time coefficients. Substituting , and with where the coefficients are the intercept with the individual residuals the level-1 model becomes:

To see the differences between high schools level 2 is added:

in this level and are the variance of slopes between high schools. This reveals the contextual component of the high school to identify the between school differences.

By implementing a longitudinal mixed linear model I have the ability to identify and control for the shape of the slope, fix the sphericity and autocorrelation issues, and then examine within and between high school variances across time. This will help answer the research questions as seen through MMI: has participation risen among all groups so the enrollment gaps have closed, or have the gaps eroded at only certain less selective locations? The model allows me to see the changes in high school continuation to certain USG sectors. Specifically, it allows a deconstruction to occur to see if high schools with large concentrations of diversity changed their college going patterns over the time studies. Does stratification of education attainment continue to exist during times of expansion or has the upper class reached saturation moving them forward to some other means of social mobility? If the needs of the upper class have been met and saturation occurred, does it follow Collins (1971) theory of credentialism? Has the value of the bachelor degree deteriorated and is how the upper class control access to advanced degrees the new way to achieve social mobility?

The four sections in this chapter provided descriptions of the data and methods used in this study. The research questions were aligned to the data and statistical procedures to best fit the analytical framework. The next chapter will display the results of the method selected.

CHAPTER 4

RESULTS

Introduction

This study examines differences in college attendance from Georgia public high schools sending students to the University System of Georgia (USG) between 1993 and 2007. Analyzing the proportion of high school graduates enrolling at the various USG institutions by demographic and academic factors over time allows a test of the stratification frame of MMI. The study seeks to see whether, during periods of expansion in higher education, the upper class relaxes its exclusionary practices on post-secondary education and, if so, did this relaxation result in opening access to all institutions? To investigate this, I used the USG continuation rates as calculated by taking the twelfth grade enrollment of the high school and the first-time freshman enrolling from that high school in a University System of Georgia institution. Each sector: research universities, regional universities, state universities, state colleges, and two-year colleges were examined separately to determine its specific change over time.

This chapter will provide the analysis to address the research questions developed throughout the dissertation. Specifically, how does the composition of Georgia public high schools affect their USG college-going rates? I performed descriptive analyses to investigate these questions.

1. How does the composition of Georgia public high schools affect their USG college-going rates?
2. Have these college-going rates changed over time?

3. Is this change in USG college-going rates related to changes in student composition in these high schools?
4. Is this change associated with key shifts in state policies related to college-going rates?

Descriptive analysis was performed to answer question one. Question two was analyzed by using a mixed linear null model to access the growth patterns and change in college-going rates over time, while questions three and four took the same approach but added covariates that would answer the questions to the equation.

High School Composition and College-Going Rates

Aggregating the data by year allowed me to look at high school racial composition over the fifteen years and observe trend patterns in the racial distribution. Table 4.1 indicates change occurred among minority students, with Asians and Hispanics more than doubling their continuation rates, while Blacks also gained almost six percentage points. Whites slowly decreased approximately ten percentage points between 1993 and 2007. The continuation rate is the Common Core Data Set grade 12 divided by the USG enrollment from a particular high school. Continuation rates rose at a steady pace until a small drop occurred during the dot com boom in the late 1990s.

Table 4.1 High school racial composition and the continuation rate per year

	Average Percent Race of Georgia High Schools						Average Continuation Rate
Year	**Number of High School**	**American Indian**	**Asian**	**Hispanic**	**Black**	**White**	
1993	297	0.1	1.4	1.2	37.1	60.2	37.5
1994	299	0.1	1.5	1.4	37.5	59.5	36.8
1995	302	0.1	1.5	1.6	38.8	58.0	39.1
1996	303	0.1	1.8	1.9	38.5	57.7	39.2
1997	305	0.1	1.9	2.0	39.0	57.0	36.7
1998	311	0.1	2.1	2.3	38.7	56.9	35.3
1999	314	0.1	2.2	2.5	39.0	56.1	36.5
2000	325	0.1	2.3	3.1	38.8	55.7	36.2
2001	327	0.1	2.3	3.5	39.4	54.6	36.7
2002	331	0.1	2.3	3.9	39.2	54.4	38.7
2003	340	0.1	2.3	4.5	39.9	53.1	40.0
2004	343	0.1	2.4	5.0	40.7	51.8	38.9
2005	348	0.1	2.5	5.7	41.5	50.1	39.2
2006	351	0.1	2.6	6.2	42.1	48.9	40.3
2007	356	0.2	2.7	6.7	42.7	47.7	39.4

Table 4.2 Descriptive statistics in the study

Variable	N	Mean	Standard Dev
Total of Free Lunch and Reduced-Priced Lunch Eligible	59234	348.70	317.750
9th Grade Students	58982	430.61	202.363
10th Grade Students	59256	350.55	168.773
11th Grade Students	59256	299.73	146.110
12th Grade Students	59256	262.84	134.019
Sum of 9-12 grades	58982	1342.2935	620.49831
Total Students of All Grades	59256	1113.29	764.798
Total AM Indian/Alaskan Students	59256	2.03	3.208
Total Asian/Pacific Islander Students	59256	38.31	76.465
Total Hispanic Students	59256	57.12	103.603
Total Black Non-Hispanic Students	59256	518.13	440.536
Total White Non-Hispanic Students	59256	744.19	549.684
Sum of Ethnic groups	59256	1359.7917	589.73099
Percent Asian	59256	.0219	.03452
Percent American Indian	59256	.0014	.00217
Percent Hispanic	59256	.0368	.05982
Percent Black	59256	.3973	.28606
Percent White	59256	.5426	.28242
Instruction cost per student	45271	4454.4710	961.58771
City	59256	.1590	.36570
Suburban	59256	.3660	.48172
Town	59256	.3660	.48172
Rural	59256	.3125	.46350
Counties with consistent years of 20+ poverty	59256	.27	.443
Counties north of fault line	59256	.63	.482

Tables 4.3 and 4.4 display expansion in the USG system over the time period studied. Enrollment at the research and state universities decreased as a percentage of the system total, while the largest percentage increase occurred at the least selective sector, two-year colleges.

Table 4.3 Enrollment of first-time students straight from Georgia public high school breakdown by USG sectors

Year	Research Universities	Regional Universities	State Universities	State Colleges	Two-year Colleges	Total
1993	4,438	3,320	7,203	3,888	3,531	22,380
1994	4,927	3,430	7,091	3,762	3,395	22,605
1995	5,176	3,883	7,613	3,894	3,362	23,928
1996	5,195	4,100	7,655	3,935	4,007	24,892
1997	6,129	3,447	7,558	4,107	3,302	24,543
1998	6,046	3,576	7,616	3,702	3,442	24,382
1999	6,133	3,773	7,699	4,051	3,938	25,594
2000	6,234	3,149	7,845	4,315	4,074	25,617
2001	6,338	3,530	7,658	4,766	4,709	27,001
2002	6,517	3,624	9,086	5,081	5,235	29,543
2003	6,716	3,949	10,075	5,800	5,051	31,591
2004	6,575	4,075	9,549	5,951	5,585	31,735
2005	6,830	4,190	10,151	6,591	6,115	33,877
2006	7,207	4,001	10,896	7,016	6,208	35,328
2007	6,988	4,361	10,693	7,727	6,729	36,498

Table 4.4 Percent breakdown of enrollment in USG by sectors

Year	Research Universities	Regional Universities	State Universities	State Colleges	Two-year Colleges
1993	19.8	14.8	32.2	17.4	15.8
1994	21.8	15.2	31.4	16.6	15.0
1995	21.6	16.2	31.8	16.3	14.1
1996	20.9	16.5	30.8	15.8	16.1
1997	25.0	14.0	30.8	16.7	13.5
1998	24.8	14.7	31.2	15.2	14.1
1999	24.0	14.7	30.1	15.8	15.4
2000	24.3	12.3	30.6	16.8	15.9
2001	23.5	13.1	28.4	17.7	17.4
2002	22.1	12.3	30.8	17.2	17.7
2003	21.3	12.5	31.9	18.4	16.0
2004	20.7	12.8	30.1	18.8	17.6
2005	20.2	12.4	30.0	19.5	18.1
2006	20.4	11.3	30.8	19.9	17.6
2007	19.1	11.9	29.3	21.2	18.4

The next four tables, 4.5 to 4.8, show the racial distribution percentage across the system for the time studied. Table 4.5 indicates Asian enrollment increased in research universities, state colleges and two-year colleges. Asians gained a stronger presence in the selective and least selective sectors, while losing ground in the comprehensive institutions.

Table 4.5 Distribution of Asian enrollment in USG sectors over time

Year	Research Universities	Regional Universities	State Universities	State Colleges	Two-year Colleges
1993	49.0	4.7	22.1	6.4	17.8
1994	50.6	6.3	18.3	6.6	18.3
1995	52.9	7.4	20.8	4.7	14.2
1996	53.0	4.9	20.0	4.4	17.7
1997	57.3	4.7	19.1	4.8	14.1
1998	57.5	5.3	18.6	4.7	13.8
1999	57.2	6.0	14.6	4.7	17.5
2000	53.5	4.2	16.7	5.5	20.1
2001	55.0	3.5	15.1	5.9	20.5
2002	51.4	3.7	15.3	6.1	23.5
2003	51.1	3.4	18.0	7.2	20.3
2004	52.6	3.0	17.7	6.8	19.8
2005	53.0	3.2	15.7	5.6	22.6
2006	54.2	3.8	14.0	5.7	22.2
2007	55.1	3.3	13.7	9.9	18.1

Asians gained a proportional presence in the research sector over the time period (table 4.5), by reducing enrollment in the regional and state universities. This may mean Asian students, over time, became better prepared academically to obtain increased access to the research sector.

Table 4.6 Distribution of Black enrollment in USG sectors over time

Year	Research Universities	Regional Universities	State Universities	State Colleges	Two-year Colleges
1993	11.0	18.2	43.4	11.6	15.8
1994	12.1	19.6	42.7	10.7	14.9
1995	14.6	20.6	40.6	10.1	14.1
1996	12.1	20.7	38.8	12.2	16.2
1997	15.9	16.5	41.1	11.3	15.1
1998	13.4	17.6	41.3	10.0	17.7
1999	12.4	17.6	37.8	12.1	20.2
2000	13.8	14.1	38.4	12.6	21.2
2001	13.2	13.7	33.9	15.0	24.2
2002	12.2	11.5	37.5	14.2	24.6
2003	11.0	11.2	39.7	15.7	22.4
2004	11.3	11.3	38.5	15.5	23.4
2005	11.7	10.9	35.6	17.6	24.2
2006	10.9	10.1	37.0	18.7	23.3
2007	10.1	11.4	33.8	19.5	25.1

Black enrollment, seen in table 4.6, decreased in all sectors except the two-year colleges, the least selective. Of Blacks attending college, more enroll in the non-selective institutions. In 1993, only 29 percent of Blacks in the system attended a selective institution, research and regional universities, and in fifteen years this decreased to 21 percent in these sectors. Blacks

appear to enroll at greater rates in the state and two-year colleges with lower academic admissions criteria and cost of attendance.

Table 4.7 Distribution of Hispanic enrollment in USG sectors over time

Year	Research Universities	Regional Universities	State Universities	State Colleges	Two-year Colleges
1993	27.7	11.3	34.7	11.3	15.0
1994	33.1	9.5	30.0	9.5	17.9
1995	28.1	11.7	34.2	8.9	17.1
1996	27.5	11.1	34.2	6.7	20.5
1997	28.8	9.6	32.2	16.1	13.3
1998	29.0	11.5	32.9	12.5	14.0
1999	19.0	12.8	29.6	17.0	21.5
2000	29.2	6.7	27.4	17.7	19.0
2001	28.6	7.5	24.8	22.6	16.4
2002	22.8	8.3	23.7	25.3	19.9
2003	22.5	6.7	29.6	23.0	18.1
2004	21.9	8.6	27.4	24.6	17.4
2005	21.7	7.6	27.0	24.2	19.6
2006	22.6	5.5	25.4	24.7	21.7
2007	22.1	7.2	21.6	26.4	22.7

Hispanics, as seen in table 4.7, followed the same trend as Blacks with decreases in their distribution in the system occurring at the more selective institutions, but increases happening in the non-selective sectors. Again, the institutions with lower admission criteria and lower costs of attendance saw increases in the Hispanic distribution in the system.

Table 4.8 Percentage of White enrollment in USG sectors over time

Year	Research Universities	Regional Universities	State Universities	State Colleges	Two-year Colleges
1993	21.9	14.1	28.6	19.8	15.7
1994	23.8	14.1	28.0	19.2	15.0
1995	22.7	15.0	29.3	19.0	14.1
1996	22.3	15.5	28.6	17.7	16.0
1997	26.3	13.6	28.0	19.2	12.9
1998	26.7	14.2	28.5	17.6	13.0
1999	26.0	14.3	28.4	17.9	13.5
2000	25.6	12.4	29.0	19.3	13.8
2001	24.2	13.7	27.6	19.6	14.9
2002	22.5	13.5	30.0	19.3	14.8
2003	22.9	13.9	29.8	20.3	13.1
2004	21.8	14.4	28.0	21.1	14.8
2005	21.2	13.9	28.8	21.5	14.6
2006	21.8	12.8	29.8	21.5	14.1
2007	20.8	10.6	30.0	23.8	14.9

Whites, table 4.8, slightly decreased enrollment in the research, regional, and two-year sectors, while gaining in the state college sectors. The limited decrease, 21.9 in 1993 to 20.8 in 2007, in the selective institutions ties in neatly with MMI that educational expansion does not

reduce the stratification across the systems. This can be seen from table 4.5 to 4.8 where the proportion of Blacks and Hispanics attending selective institutions did not increase at the same rates as the proportions attending the less selective institutions. However, whites maintained their proportion of those attending selective institutions during this expansion. This may be a factor of increasing costs and academic admissions criteria at the selective institutions. In the mid to late 1990s, when the selective institutions began rising quickly in stature, the distribution of whites attending the selective institutions was at the highest levels. It is important to note the proportion of Asians, Table 4.5, in the system rose in the most and least selective sectors, possibly replacing the decrease in white student from these sectors.

The next table, 4.9, provides the distribution enrollment in the USG system by public high school students receiving free or reduced lunches. Using free or reduced lunch as a proxy, I ascertained that enrollment by those who qualify for this program decreased over time in all sectors except state universities.

Table 4.9 The percent free or reduced lunch in high school enrolling into the USG system

Year	Research Universities	Regional Universities	State Universities	State Colleges	Two-year Colleges
1993	12.75	13.49	17.81	11.93	11.05
1994	11.85	13.24	19.09	13.42	11.10
1995	11.61	12.57	18.25	13.05	10.65
1996	11.86	12.17	18.86	14.46	10.93
1997	10.39	13.93	18.56	13.83	12.42
1998	11.08	13.51	18.38	14.26	13.51
1999	10.89	12.70	18.13	13.90	12.72
2000	11.07	14.67	19.52	14.21	13.84
2001	10.84	14.11	20.01	14.41	12.32
2002	10.65	13.99	18.88	12.95	12.59
2003	10.50	13.17	18.10	13.10	11.34
2004	10.81	12.54	19.30	13.26	10.60
2005	10.53	12.51	19.41	12.55	10.29
2006	10.20	13.22	18.39	12.24	10.15
2007	10.37	12.41	18.92	12.07	10.66

Analysis of Variance and Individual Change Results

An Analysis of Variance (ANOVA) was run for each sector. These ANOVAs tested the assumption that the variances of the measure were the same over time, and also looked at the effect of time on the means, while providing the shape of the slope for the mixed linear model.

Table 4.10 Measure: Proportion enrolled

			95% Confidence Interval	
	Mean	**Std. Error**	**Lower Bound**	**Upper Bound**
Research Universities	.047	.002	.044	.051
Regional Universities	.045	.003	.040	.051
State Universities	.062	.004	.055	.069
State Colleges	.131	.009	.113	.149
Two-year Colleges	.095	.007	.082	.109

Table 4.11 Proportion enrolled across time

	Research U		**Regional U**		**State U**		**State C**		**Two-year C**	
Time	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**
1993	0.047	.002	.052	.004	.071	.005	.135	.011	.092	.007
1994	0.049	.002	.051	.004	.066	.004	.121	.009	.087	.007
1995	0.051	.002	.057	.004	.072	.004	.132	.013	.088	.007
1996	0.049	.002	.055	.004	.070	.005	.124	.010	.100	.007
1997	0.054	.002	.046	.003	.065	.004	.123	.009	.077	.006
1998	0.051	.002	.048	.003	.063	.004	.110	.009	.077	.006
1999	0.049	.002	.047	.003	.064	.004	.119	.008	.086	.006
2000	0.049	.002	.039	.002	.062	.004	.120	.009	.086	.007
2001	0.047	.002	.042	.003	.057	.004	.122	.009	.099	.008
2002	0.046	.002	.039	.003	.061	.004	.136	.011	.102	.008
2003	0.047	.002	.042	.003	.064	.004	.145	.010	.100	.008
2004	0.044	.002	.043	.003	.058	.004	.136	.0110	.106	.009
2005	0.044	.002	.042	.003	.055	.003	.146	.011	.110	.009
2006	0.044	.002	.039	.002	.056	.004	.151	.011	.108	.009
2007	0.040	.002	.039	.002	.051	.003	.145	.010	.112	.009

The results from the univariate ANOVA show the grand mean of the proportion enrolled in a USG sector by the number of public high school twelfth graders in Georgia, table 4.10. This measures transition from the K-12 system into public higher education in Georgia. The results, table 4.10, reveal the research sector (.047) had the lowest proportion of Georgia high school

students followed by regional universities (.052), state universities (.071), two-year colleges (.092), and finally state colleges (.135). This result is fairly non-significant, but it provides a benchmark of where to compare the individual years. I want to see if growth occurred at the more selective sectors over time, following the changes in policies and expansion. This means each time point displayed in table 4.11 allows me to examine changes over time. It appears that over the 15-year time period investigated the proportion of students enrolling in the more selective sectors decreased, research institutions went from .047 to .040, regional institutions dropped from .052 to .039, and state universities declined from .071 to .051, which could be due to barriers against entry, such as increasing academic admissions criteria or cost of attendance. The less selective sectors saw gains, the state colleges increased from .135 to .145, and two-year colleges almost doubled from .092 to .112. There are some patterns of growth in the selective sectors in the early to mid 1990s, then declines in the early 2000s. The less selective institutions also faced some shrinkage in the early 2000s, but rebounded after a few years with increases in the proportion of students from Georgia high schools enrolling in the sector. The state university sector contains the largest number of institutions followed by state colleges and two-year colleges, however, the largest enrollments occur in the research sector. The regional universities, Valdosta and Georgia Southern, have enrollments slightly less than the state colleges.

Other results from the ANOVA include the test of sphericity. Mauchly's test of sphericity examines the variance and covariance to see if they differ over time. In a repeated measure, one wants them to be the same (homogeneous) over time (Heck, Thomas, and Tabata, 2010), as having heterogeneous variances and covariances could affect the statistical power and significance, if not corrected.

I used Mauchly's test to see if the null hypothesis, that the variance and covariances were the same over time, should be rejected. The significance of (p=.000) seen in table 4.12 indicates I need to reject the null hypothesis in each sector and use a correction to the degree of freedoms in the F distribution.

Table 4.12 Mauchly's Test of Sphericity[b]

Measure:propenrolled

	Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[a] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Research U	time	.082	714.493	104	.000	.645	.667	.071
Regional U	time	.046	655.948	104	.000	.605	.631	.071
State U	time	.040	999.858	104	.000	.555	.570	.071
State C	time	.038	392.949	104	.000	.627	.678	.071
Two-year C	time	.002	945.038	230	.000	.376	.391	.048

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

b. Design: Intercept
Within Subjects Design: time

Because of rejecting the null hypothesis, due to Mauchly's test of sphericity, I need to use another significance test that corrects the equality of means across time by manipulating the degrees of freedom in F. The Greenhouse-Geisser or Huynh-Feldt tests are suitable substitutions. Both tests indicate in table 4.13 that I can reject the null hypothesis that proportion enrolled in the research sector across time are the same and significant differences do exist; research (F=9.354, p=.000), regional (F=13.702, p=.000), state universities (F=14.572, p=.000), state colleges (F=9.465, p=.000), and two-year colleges (F=11.058, p=.000).

Table 4.13 Tests of Within-Subjects Effects

Measure:propenrolled

	Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Research U	time	Sphericity Assumed	.054	14	.004	9.354	.000
		Greenhouse-Geisser	.054	9.024	.006	9.354	.000
		Huynh-Feldt	.054	9.337	.006	9.354	.000
		Lower-bound	.054	1.000	.054	9.354	.002
	Error(time)	Sphericity Assumed	1.675	4074	.000		
		Greenhouse-Geisser	1.675	2625.912	.001		
		Huynh-Feldt	1.675	2717.194	.001		
		Lower-bound	1.675	291.000	.006		
Regional U	time	Sphericity Assumed	.108	14	.008	13.702	.000
		Greenhouse-Geisser	.108	8.466	.013	13.702	.000
		Huynh-Feldt	.108	8.839	.012	13.702	.000
		Lower-bound	.108	1.000	.108	13.702	.000
	Error(time)	Sphericity Assumed	1.716	3052	.001		
		Greenhouse-Geisser	1.716	1845.564	.001		
		Huynh-Feldt	1.716	1926.859	.001		
		Lower-bound	1.716	218.000	.008		
State U	time	Sphericity Assumed	.166	14	.012	14.572	.000
		Greenhouse-Geisser	.166	7.765	.021	14.572	.000
		Huynh-Feldt	.166	7.980	.021	14.572	.000
		Lower-bound	.166	1.000	.166	14.572	.000
	Error(time)	Sphericity Assumed	3.598	4410	.001		
		Greenhouse-Geisser	3.598	2446.070	.001		
		Huynh-Feldt	3.598	2513.805	.001		
		Lower-bound	3.598	315.000	.011		
State C	time	Sphericity Assumed	.259	14	.019	8.465	.000
		Greenhouse-Geisser	.259	8.775	.030	8.465	.000
		Huynh-Feldt	.259	9.496	.027	8.465	.000
		Lower-bound	.259	1.000	.259	8.465	.004
	Error(time)	Sphericity Assumed	3.832	1750	.002		
		Greenhouse-Geisser	3.832	1096.927	.003		
		Huynh-Feldt	3.832	1187.036	.003		
		Lower-bound	3.832	125.000	.031		
Two-Year C	time	Sphericity Assumed	.286	14	.020	11.058	.000
		Greenhouse-Geisser	.286	5.268	.054	11.058	.000
		Huynh-Feldt	.286	5.472	.052	11.058	.000
		Lower-bound	.286	1.000	.280	11.058	.001
	Error(time)	Sphericity Assumed	4.092	2212	.002		
		Greenhouse-Geisser	4.092	832.415	.005		
		Huynh-Feldt	4.092	864.511	.005		
		Lower-bound	4.092	158.000	.026		

The within-subject contrast test, table 4.14, furnishes me with the shape of the slope. The results reveal both linear and quadratic to be significant for the research, regional, state colleges, and two-year colleges. This means the slope is curvilinear, that the growth or decline over time is

occurring at a changing rate. The results in table 4.11 suggest that the growth in the proportion enrolled decreased over time with faster declines in the research, regional, and state universities. Only the state universities were linear, meaning I can track growth over time but not the acceleration/deceleration.

Table 4.14 Tests of Within-Subjects Contrasts

Measure:propenrolled

	Source	time	Type III Sum of Squares	df	Mean Square	F	Sig.
Research U	time	Linear	.032	1	.032	24.226	.000
		Quadratic	.012	1	.012	21.364	.000
		Cubic	.002	1	.002	4.685	.031
	Error(time)	Linear	.381	291	.001		
		Quadratic	.163	291	.001		
		Cubic	.110	291	.000		
Regional U	time	Linear	.078	1	.078	44.145	.000
		Quadratic	.003	1	.003	4.048	.045
		Cubic	.002	1	.002	3.988	.047
	Error(time)	Linear	.387	218	.002		
		Quadratic	.153	218	.001		
		Cubic	.110	218	.001		
State U	time	Linear	.138	1	.138	47.429	.000
		Quadratic	.000	1	.000	.137	.711
		Cubic	.001	1	.001	.848	.358
	Error(time)	Linear	.919	315	.003		
		Quadratic	.271	315	.001		
		Cubic	.306	315	.001		
State C	time	Linear	.107	1	.107	18.187	.000
		Quadratic	.077	1	.077	22.204	.000
		Cubic	.021	1	.021	9.515	.003
	Error(time)	Linear	.734	125	.006		
		Quadratic	.432	125	.003		
		Cubic	.280	125	.002		
Two-Year C	time	Linear	.159	1	.159	16.985	.000
		Quadratic	.042	1	.042	15.979	.000
		Cubic	.015	1	.015	8.405	.004
	Error(time)	Linear	1.481	158	.009		
		Quadratic	.419	158	.003		
		Cubic	.284	158	.002		

The next analyses run were the random-coefficients approach to examine individual change. This approach allows flexibility in dealing with missing values, differing occasions of observations, and complex error structures (Heck, Thomas, and Tabata, 2010). The first test will be to see if the slopes vary randomly across the high schools.

Table 4.15 Model Dimension[a] , All Sectors

		Number of Levels	Covariance Structure	Number of Parameters	Subject Variables
Fixed Effects	Intercept	1		1	
	TIME	1		1	
	Quadratic	1		1	
Random Effects	Intercept + TIME[a]	2	ARH1	1	DISTANCEID
Residual				1	
Total		5		5	

a. Dependent Variable: USG institution total enrollment divided by G12.

Table 4.15 indicates there are 5 parameters, 3 fixed effects, and 2 random effects. The intercept, (, of the model, as seen in table 4.16, below, is .029 for research institutions, .036 for regional universities and, .020 for state universities, .024 for state colleges, and .025 for two-year colleges, all with a significance of (p = .000), while (time is non-significant in all sectors. The (quadratic time is significant in every sector except the research institutions. The growth patterns of the high schools with enrollment into state and two-year colleges is negative quadratic, this suggests the growth decreases over time. The regional and state universities have a positive pattern with the quadratic slopes being significant. These sectors saw growth over time.

Table 4.16 Estimates of Fixed Effects[a]

	Research U		Regional U		State U		State C		Two-Year C	
Parameter	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	.029*	.000	.036*	.001	.020*	.000	.024*	.001	.025*	.001
TIME	-.000	.000	-.000	.001	-.000	.000	-.000	.001	-.000	.000
Quadratic	-1.745	1.478	1.950*	.000	4.490*	1.122	-1.508*	2.577	-2.342*	3.272

a. Dependent Variable: USG institution total enrollment divided by G12.

Note: * indicates *p<.05; ** p<.10*

Examining the variance and covariance estimates allows me to see how much variance is left at each level (Heck, Thomas, and Tabata, 2010). At level 1 the variance summarizes the population variability in the average high school growth around the true pattern (Willett and Singer, 2003). The

level 1 estimate is less than .000 and significant (p = .000) in each sector. The significance of the Wald Z statistics (p =.000) reveals the residuals are independent and normally distributed across the high schools. At level 2 the Wald Z statistic (p = .000) indicates there is significant randomness to be explained by the high school characteristics.

Table 4.17 Estimates of Covariance Parameters[a]

		Research U		**Regional U**		**State U**		**State C**		**Two-year C**	
Parameter		Est.	Wald Z	Est.	Wald Z	Est.	Wald Z	Est.	Wald Z	Est.	Wald Z
Residual		.0003*	62.72	.0004*	54.56	.0003*	92.07	.0007*	57.74	.0008*	49.63
Intercept + TIME [subject = DistanceID]	Var	.0003*	26.49	.0006*	23.07	.0004*	50.89	.0009*	34.33	.0007*	28.69

a. Dependent Variable: USG institution total enrollment divided by G12.

Note all estimates were significant to p=.000.

Knowing there is variability across high schools at each level, I can create a between-subjects model. This will, in turn, create a level 2 with predictors (race, gender, instruction cost per student, income proxies) to explain differences in high schools' growth patterns. Georgia public high school characteristics will help explain enrollment patterns in the various University System of Georgia sectors. There are thirty-four fixed effects and two variance-covariance parameters in the model.

Table 4.18 Estimates of Fixed Effects[a]

	Research U		Regional U		State U		State C		Two-Year C	
	Estimate	**SE**	**Estimate**	**SE**	**Estimate**	**SE**	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	-.035*	.011	-.001	.010	-.000	.004	-.027*	.009	-.037*	.014
High School Composition										
Percent Asian	.068*	.017	-.015	.014	-.011	.009	-.034	.028	.054	.035
Percent American Indian	-.816	.612	-.310	.571	-.031	.352	-.884	816	.957	1.237
Percent Hispanic	.044*	.015	-.018	.015	-.006	.009	..006	.021	-.108*	..035
Percent Black	-.028*	.005	-.019*	.004	-.010*	.003	-.009	.006	-.029*	.008
Free or reduced lunch	-.000	.000	-.000	.000	.000	.000	.000	.000	.000*	.000
Instruction cost per student	.000*	.000	.000*	.000	.000	.000	.000	.000	.000	.000
Enrollment Patterns										
Proportion American Indian	-.004	.003	-.000	.003	.016*	.003	.011*	.005	.003	.008
Proportion Asian	.014*	.005	.012**	.007	-.041*	.005	-.021*	.008	.023**	.012
Proportion Black	-.007	.009	.011	.010	-.003	.008	.091	.013	-.027	.017
Proportion Hispanic	.001	.005	-.001	.007	.000	.005	.007*	.007	-.006	.011
Proportion Multiracial	.006	.004	-.039	.005	.003	.005	.035*	.008	-.023*	.011
Proportion Loan	.047*	.009	.044*	.008	-.016*	.007	-.047*	.016	.049*	.025
Proportion HOPE	.204*	.017	.248*	.016	.221*	.015	.072*	.028	.196*	.041
Proportion Pell	.001	.002	.002	.001	.010*	.002	-.004	.002	.001	.003
Proportion Female	.116*	.016	.072*	.185	.142*	.015	.309*	.029	.183*	.041
Academic Preparation										
High School GPA	-.003	.003	-.008*	.002	-.002*	.001	-.002	.002	.001	.003
Total SAT score	.000*	.000	.000**	.000	.000*	.000	.0000	.000	.000	.000
Learning support Math	-.052*	.025	-.079*	.021	.051*	.005	.0280	.007	.052*	.008
Location										
Black Belt counties	.007*	.002	.001*	.002	.001	.001	-.002	.003	.013*	.004
Miles	.000*	.000	-.000*	.000	-.000	.000	.000	.000	.000	.000
City	.006*	.003	.008*	.002	.003	.002	.013*	.004	.012*	.005
Suburbs	.008*	.003	.011*	.002	.003**	.002	.011*	.003	.020*	.005
Rural	.007*	.003	.010	.002	.000	.002	.009*	.003	.011*	.002
Nested Variables										
Pct Asian * TIME	-.000	.001	.001	.000	.000	.001	.001	.001	-.001	.061
Pct American Indian * TIME	.004	.029	.010	.031	-.001	.018	.020	.032	-.070	.001
Pct Hispanic * TIME	-.000	.000	.000	.000	.000	.000	-.002**	.001	.000	.000
Pct Black * TIME	-.000	.000	.000	.000	-.000	.000	.000	.001	-.001	.000
Instruction cost per student * TIME	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001
Proportion American Indian * TIME	.000	.000	.000	.000	-.001*	.000	-.001**	.000	.000	.001
Proportion Asian * TIME	-.000	.000	-.001*	.000	.002*	.000	.000**	.000	-.001**	.001
Proportion Black* TIME	.001*	.000	-.001	.000	.000	.000	.000	.001	.000	.001
Proportion Hispanic * TIME	.000*	.000	.000	.000	-.000	.000	.000	.000	.001*	.001
Proportion Mutliracial * TIME	-.000	.000	.000	.000	-.00	.000	.000	.000	.001*	.001

a. Dependent Variable: USG institution total enrollment divided by G12. Note: ***** indicates *p<.05; ** p<.10*

The fixed effect estimates are displayed in table 4.18. The intercept is the growth trajectory of the high school enrolling white males into the different sectors over time, when controlling for the other variables in the model. Structuring whites into the intercept allows me to see the effects of race on enrollment in the USG system. This intercept can be interpreted as the initial growth rate of the high school controlling for location, instruction cost, income proxies, student demographics, and enrollment patterns in USG. The estimates in 4.18 are the variances explained in enrollment in the various sectors. I will address each sector separately as the estimates vary among them.

Research Universities – please refer to table 4.18 estimates of fixed effects.

The intercept for the proportion of white male students enrolled in a research institution from Georgia public high schools was -.035 and significant. This means the proportion of public high school graduate white males enrolling in research institutions as first-time students has decreased 3.5 percent between 1993 and 2007. An earlier table, table 4.8, revealed the proportion of whites enrolling at research institutions to be relatively flat, 21.9 versus 20.8. Since the intercept is for males, it appears that white males are being replaced by females at rates fast enough to maintain the white presence, but possibly also creating a gender inequality among whites.

Two high school composition effects were significant to the proportion enrolled in the research sector. The results indicate high schools with larger concentrations of Hispanics (-.0435) and Blacks (-0.0275) are sending fewer students to the research sector, while high schools with a larger number of Asians (.068) are more likely to enroll students in the research sector. High schools with larger percentages of Hispanics and Blacks in Georgia are not sending

students to the research sector in the same rates as previously, a decrease of 4.35 and 2.75 percent respectively occurred with enrollment in this sector.

Enrollment patterns over time show Asians (.0148) gaining proportionally among all enrollments at a rate of 1.48 percent. Students receiving loans (.047) and the HOPE (.204) scholarship have also gained representation in the research sector over the period studied. This may be associated with the rising costs of attendance and increased selectivity of the research institutions. The HOPE estimate is very large and indicates a 20 percent increase in the proportion of students enrolled with HOPE. Since HOPE is a merit-based scholarship requiring a 3.0 average it reveals that those with better academic preparation are enrolling in greater rates over the fifteen years. This increased selectivity will further stratify the system. Females (.116) have grown in enrollment over the time period, which follows national trends of females outnumbering males in higher education in the last few decades.

Academic preparation effects, such as total SAT score and the placement into remedial math, affected enrollment in the research sector. Students with higher SAT scores were more likely to enroll in the research sector, however those requiring learning support in math have decreased their enrollment by 5.2 percent over the period studied. The average total SAT score in the research sector rose over forty points during the time studied.

The control variables for high school location were significant in explaining variance of high schools sending students to the research sector, although all the variables contributed less than one percent. High schools located in counties with high poverty rates (Black Belt), cities, and suburban areas positively increased enrollment in the research sector. High schools in cities and suburbs tend to be better funded and closer in proximity to the research institutions. Thus, the students may have been more aware of admissions policies and better prepared. High schools

in high poverty counties may have federal programs such as Trio aiding them, or a small sample size of twelfth graders skewing results. The distance to research institutions did not dissuade students from enrolling.

None of the racial nested variables displayed significance. In this case race is not driving the enrollment, but other factors, such as academic preparation, affordability, quality high schools, or barriers created by the upper class, one being character assessment on college applications. The meaning of being Asian, Black, or Hispanic shows no significance across time.

Regional Universities – please refer to table 4.18 estimates of fixed effects.

The intercept controlling for white males was non-significant, no change in enrollment patterns occurred. In the regional sector, high school composition matters, high schools with a large percentage of Blacks (-.018) and free or reduced lunch recipients (<.01) are sending smaller proportions to regional sector institutions. This could result from lack of resources, social capital, or academic preparation. High schools with large numbers of free or reduced lunch students, a proxy for lower-income families, are sending fewer students over the time studied to the regional institutions.

During the time studied the proportion of Asian students enrolling in this sector has increased 1.2 percent. Students requiring loans, 4.4 percent have also increased over time, while students with the HOPE scholarship rose in enrollment by 24 percent.. This may result from the increasing costs or financial aid programs moving away from grants to loans and from need-based to non-need based aid. Female enrollment (.10) has increased during the time studied.

In the academic preparation control variables, results show students have enrolled with slightly lower high school GPAs over time, conversely those requiring remedial math courses decreased their enrollment by 8 percent over the study. This could mean students may be earning

marginally lower grades, however, the rigor of courses taken, specifically in math, is improving. High school location seems to have little effect on all location control variables, the largest effect came from high schools in suburbs and rural areas sending 1 percent more to the regional institutions.

Controlling for time, the meaning of being Asian has decreased. It was more important in the years at the start of the study than at the end. This slowing, of less than 1 percent, was marginal.

State Universities – please refer to table 4.18 estimates of fixed effects.

As seen in the regional sector, the intercept of white males is non-significant. The results show high schools with larger concentrations of Blacks send fewer students to the state universities across time. More Blacks in a high school reduced the probability of students from that high school enrolling students from that high school at a state university by 1 percent. Over the time studied those of American Indian background show a 1.57 percent increase in enrollment, while Asians lost ground with a decrease in enrollment of 4.1 percent. Asians gained in the two more selective types of institution, so those leaving the state universities may have improved their academic preparation, or had better resources to afford the higher costs in the research and regional institutions. The proportion of students requiring loans decreased enrollment in state universities. During this same time period the proportion of students' receiving the HOPE scholarship increased enrollment, also those receiving Pell increased enrollment. These financial aid programs may have replaced the need for loans. The proportion of female students increased enrollment over time by 14 percent.

The proportion of students needing remedial math increased by 5 percent, while those enrolling with higher high school GPAs decreased by 1 percent. Only high schools located in suburban areas increased the proportion of students enrolling in the state university sector. This may be due to the expansion of enrollment in USG, as well as increased academic barriers in the more selective sectors. In the nested variables, the meaning of being American Indian has slightly decreased over time in regards to state universities, while being Asian positively affects the proportion enrolled.

State Colleges – please refer to table 4.18 estimates of fixed effects.

The significant intercept indicates high schools with larger percentages of white males have decreased their enrollment in state colleges by 2.7 percent. This was the only significant high school composition variable. The proportion of students enrolling in the state college institutions identifying themselves as American Indian (.01), Hispanic (.091), and Multiracial (.035) rose over the time studied. It appears the state colleges may become more diverse in regards to Hispanic and Multiracial students. The proportion of Asians enrolling at state colleges decreased over the time studied by 2.1 percent and, as seen earlier, Asians increased their enrollment in the more selective institutions, so this may be a substitution effect of enrolling in a more selective sector. Those receiving loans (-.047) or Pell (less than negative .00) have decreased over time, as the proportion enrolling with the HOPE scholarship rose by 7 percent. The proportion of students enrolling in the state colleges identified as females had a large increase of 31 percent. It also appears the proportion needing remedial math increased over time by 2.8 percent. Expansion has allowed more students to attended colleges but those with deficiencies in math have moved from the more selective to the less selective sectors.

High schools located in cities, suburbs, and rural areas have all increased the number of students sent to the state college sector. Schools in cities increased the proportion enrolling by 1.2 percent with suburbs and rural areas slightly lower, at around 1 percent. Similar to the state universities, the meaning of being American Indian over time negatively affects enrollment, while being Asian means marginally more over time for enrollment. High school composition, nested in time, indicates the changing percentage of Hispanics in high schools negatively affects future enrollment in the state colleges.

Two-year Colleges – please refer to table 4.18 estimates of fixed effects.

In the two-year sector the intercept reveals high schools with large numbers of white males have been sending fewer white males (-.037) to the two-year institutions over the time studied. High schools with larger percentages of Hispanics (-.11) and Blacks (-.029) have also been sending fewer students to the two-year sector. It is not known if these students are attending more selective institutions or just not enrolling in higher education. The proportion of Asians enrolling in this sector rose 2.3 percent. The largest two-year institution is located in Atlanta, where the Asian population has grown. The proportion of female (.18) students in the two-year sector increased.

The proportion of students needing remedial math instruction increased over the study by 5.2 percent. The proportion of students requiring loans increased by 5 percent, but only in the more selective institutions. So, either the costs at the selective institutions require loans for many students, or more lower-income students are attending the two-year sector. In addition, high schools with free or reduced lunches and those located in counties with consistent poverty rates above 20 percent (.013) are sending more students to the two-year sector. High poverty rates could be correlated to academic preparation. The proportion of the enrollment receiving the

HOPE scholarship (.19) also grew. High schools located in suburban, cities, and rural areas are sending more students to the two-year sector, (.019, .012, .011) respectively. The two-year colleges exist in all areas of the state and close proximity may be luring the lower-income students to attend the less costly institutions closest to them. Nesting the proportion of Hispanics enrolled in the two-year sector over time indicates that being Hispanic positively influences one's enrollment in the two-year sector. This may be a function of increasing academic preparation or higher costs of attendance.

HOPE Scholarship Changes

This section investigates changes in Georgia's HOPE scholarship in regards to enrollment in the USG sectors. Other state policies could not be easily defined and incorporated into the model, and curriculum and diploma type changes occur frequently with little documentation. In addition, the USG system does not alter admissions policies each time a change occurs in the K-12 system. Thus, the major state policy affecting higher education enrollment in Georgia, was the creation and modification of the merit-based program titled Helping Outstanding Pupils Educationally, HOPE.

In 1991, Governor Miller introduced legislation to establish a lottery to fund scholarships for Georgia's college-going students and proposed HOPE. By 1993, the HOPE scholarship was being awarded. The HOPE scholarship has been modified over the years, for example, the $100,000 income cap for HOPE eligibility was abolished in 1995. Students entering high school in 1996 had to complete a required curriculum of courses in English, math, social studies, foreign languages and science, maintaining a B average in order to receive the HOPE scholarship upon graduation. In 2000, modifications were made to allow students to receive full benefits from Pell and HOPE. Previously, HOPE only covered the remaining difference after Pell was paid. After

the signing of House Bill 1325 in 2004, a recommendation was made altering the courses and calculation of grade point averages, which was implemented in 2007. Another change that was introduced required checking students' college grade point average at the end of each spring term. The model, which contains 10 fixed and 2 random effects, captures these changes and was run to see the effect on enrollment in the different selectivity sectors.

Table 4.19 Estimates of Covariance Parameters[a]

		Research U		**Regional U**		**State U**		**State C**		**Two-year C**	
Parameter		Est.	Wald Z	Est.	Wald Z	Est.	Wald Z	Est.	Wald Z	Est.	Wald Z
Residual		.0001*	14.78	.0000*	11.19	.0000*	19.71	.0001*	11.16	.0001*	9.95
Intercept + TIME [subject = DISTANCEID]	Variance	.0000*	6.46	7.775*	4.57	3.227*	12.34	2.063*	5.26	.0001*	5.25

a. Dependent Variable: USG institution total enrollment divided by G12.

Note all estimates were significant to p=.000.

Even with the predictors in the model, the covariance table (table 4.19) suggests that each sector still has significant variance to be explained. The Wald Z statistic for each sector produced significance of .000. The slope of the research sector is interesting, as it appears flat with an estimate of .000, while all others were positive. The influence of HOPE on the enrollment sector has not changed or accelerated/decelerated, meaning changes in HOPE have little effect on the enrollment patterns at the research institutions.

Table 4.20 Estimates of Fixed Effects[a] State Policies

	Research U		Regional U		State U		State C		Two-Year C	
	Estimate	**SE**	**Estimate**	**SE**	**Estimate**	**SE**	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	.034*	.009	.049*	.015	.041*	.008	.067*	.018	.086*	.019
PerCaptia Adjusted1991	.000	.000	.000	.000	.000**	.000	.000**	.000	.000*	.000
HOPEProposed	.000	.001	.001	.002	-.001	.001	.001	.002	.002	.002
HOPE	-.001	.001	.002	.002	.000	.001	-.001	.002	.000	.002
HOPE100k	.000	.001	.003	.002	-.002*	.001	-.005*	.002	-.003	.002
HOPEnocap	.001	.001	.007*	.002	-.001	.001	-.004**	.002	-.003	.003
HOPEBavg	-.001	.001	-.006*	.002	-.003*	.001	-.005*	.002	-.004	.003
HOPEandPell	-.003*	.001	-.005*	.001	-.003*	.001	-.001	.002	.001	.002
HOPE3.0avg	-.004*	.002	-.007*	.002	-.004*	.001	-.003	.003	-.004	.003
HOPEnewGPA	-.002*	.001	.000	.002	-.001**	.001	-.001	.002	.002	.002

a. Dependent Variable: USG institution total enrollment divided by G12. Note: ***** indicates *p<.05; ** p<.10*

The results of investigating the relationship between HOPE and enrollment can be seen in table 4.20. The effects are very marginal with no effect seen until the third decimal place. Changes in HOPE affected all sectors negatively. In the research sector, the number of those receiving HOPE and Pell shrank over time. This may be a function of the increased stratification over time in the research sector as eligibility to receive Pell is correlated to income, so upper-income students are not likely to be Pell recipients. HOPE requires a high school grade point average of B, so the student would have to be academically prepared for admission to the selective sector and from a lower-income background to have both HOPE and Pell. This negative relationship may indicate the student body is becoming proportionally more from upper-income families, thus fewer qualify for the Pell grant, which has one part based on family income. Thus, supporting a piece of MMI, in times of educational expansion stratification will continue to exist. The new standards for calculating HOPE also reduced the proportion of students enrolled with HOPE. Each new calculation slightly increased the credentials required to receive HOPE.

The regional sector saw similar results except the new high school grade point calculation was non-significant. Again students receiving HOPE and Pell decreased enrollment during the time studied. This could be a factor of increased selectivity in the more selective sectors by a function of MMI, where the more selective sectors are becoming more stratified with higher enrollments from students with greater tests and GPA scores. The admissions focus on academic preparation pushes more students from lower-income families into the less selective institutions.

State universities experienced a decrease in the proportion enrolling with HOPE at each policy. The new academic requirements, (B average, 3.0 calculation, and the new GPA) eliminated the number of students receiving HOPE enrolled in this sector. As these new academically-linked requirements were implemented, they slowly reduced the number capable of meeting these standards in the state universities. The academic preparation obtained from high school did not always match the prerequisites needed to obtain HOPE in this sector. When the income cap was removed from HOPE the proportion enrolled at a state university receiving the scholarship increased slightly. State colleges saw negative changes in the proportion enrolled with HOPE during the removal of the income cap and the B average requirement.

The two-year sector had no significant estimates. This may be due to their mission of offering open access at an affordable price. Students attending this sector are often not as academically prepared or have the disposable incomes of students in the other sectors. Thus these students may be less likely to earn the HOPE scholarship, due to the correlation of income to academic preparation, although they are enrolled in higher education.

Summary

This chapter examined the data through descriptive analysis, the use of ANOVA, a null linear mixed model, and two between effects linear mixed models. The purpose was to see what variables affect enrollment in the varying sectors of the University System of Georgia and provide results for examining the research questions. Some significant findings support ideas of the upper class creating financial or academic barriers to entry into certain institutions in order to benefit their children. These barriers came in the form of increased cost-of-attendance, while the purchasing power of federal and state financial aid diminished, and the chasing of rankings raising academic standards in the research and regional universities. These results will be discussed in chapter 5 in relation to the research questions.

CHAPTER 5

DISCUSSIONS, IMPLICATIONS, AND LIMITATIONS

Introduction

This study examined the distribution of public high school graduates into a large stratified state system and tested Raftery and Hout's (1993) framework of Maximally Maintained Inequality. The MMI framework states that, even with expansion in higher education, inequality will continue to exist until a point of saturation is reached. The intent was to determine if educational expansion, resulting from state and federal policies, made college enrollment for certain groups more accessible, in particular, enrollment in the more selective institutions. Policymakers and most educators agree that greater access to higher education, specifically 4-year institutions, needs to occur. These policies have created an expansion in higher education through a variety of programs, such as, Trio, Gear Up, Dual Enrollment, and Joint Enrollment.

Higher education has expanded significantly in the last six decades (Thelin, 2004). Some scholars believe that this expansion should be accompanied by a more equal distribution of students into the system (Blau and Duncan, 1967; Mare, 1981). Thus, one would expect to see larger numbers of lower socioeconomic students attending all institutions. However, many studies have shown that, even in times of expansion, the distribution of students from different socioeconomic backgrounds becomes more stratified (Bowen, Kurzweil, and Tobin, 2005; Gamoran, 2001; Hearn, 1984, 1991; Hout, Raftery, and Bell, 1993; Lucas, 2001; Raftery and Hout, 1993; Shavit and Blossfeld, 1993).

Gamoran (2001) argued that, even though all groups have increased access to higher education, the stratification within higher education has not diminished, but actually been enhanced over time. Students from lower socioeconomic groups and minorities are generally less likely to enroll in a selective institution, due to affordability and the requisite academic preparation (Hearn, 1984). Schools serve as a means of social mobility, so the effects of increased expansion should result in more equality across all social classes. However, the outcome of this expansion of educational opportunities was improved access, but more stratification in the higher education system. Blau and Duncan (1967) argue that in times of expansion, increasing opportunities mean students from lower-income families and racial minorities should have better opportunities to attend selective institutions. However, this has not been the case. The results of this study agree with Hout, Raftery and Bell (1993) that, during educational expansion, stratification will be maintained until a saturation point is reached. In Georgia, when more students entered the University System of Georgia, the distribution became more stratified. Students from high schools with larger minority and lower-income populations enrolled in the selective institutions in fewer numbers proportionately over the time studied.

Discussions

The first research question asked how Georgia public high school composition affected college-going rates. Using the estimates from the mixed linear model, I conclude that high school composition, the racial and economic distribution of students in the high school, matters. Students from high schools with a larger concentration of minorities had a reduced probability of attending a selective institution. This appeared consistent for each sector, except the state colleges. It should be noted that high schools with large Asian populations significantly increased the proportion of their students enrolled at the research institutions. The proxy variable

for income, free or reduced cost lunch, provided little value for understanding the enrollment patterns of lower-income students into higher education, for the time period selected. It appears race predicts enrollment into the USG sectors better than income. Where one attends public high school matters when it comes to the probability of attending a more selective institution in the University System of Georgia. This finding is consistent with the work of many scholars, (Astin and Oseguere, 2004; Hearn, 1991; Karen, 2002; McDonough, 1997). Stratification of high schools as the basis of resources matters. Perna (2000) and McDonough (1997) argued that high school resources affect college choice and enrollment. This appears to be true in Georgia, and may be a function of the social and cultural capital available to the student.

Policymakers' attempts to improve access to higher education appears, inadvertently, to have supported greater stratification. If the success of the numerous programs trying to increase access to higher education is measured by the increased enrollment of targeted groups into higher education, then some programs have been very successful. Trio and Gear Up, although not easily identified in this data set, target underrepresented students, and the data reveals these students have increased enrollment into higher education. However, the increase has been at the less selective institutions. These programs promoting expansion into higher education may have unintended consequences by targeting large groups of students, rather than small groups or individual students, thus failing to offer all the options open to those individuals with the potential to enroll in more selective institutions. Just because a student attends a high school with a large concentration of minorities does not mean he/she is not capable of success at a selective institution. The student, however, may only see certain institutions recruiting, follow friends to a less selective institution, or be totally unaware of financial incentives or awards that lessen the financial burden of the more selective institutions, due to this blanket approach of

communication to the high school students through one of the federally-funded programs. Higher education institutions need to better target recruitment strategies and be conscious of general statements, which result in outcomes that fail to maximize potential. Applying MMI theory, this is an example of a policy that unintentionally stratifies higher education. I believe the intentions of the governing groups to increase access to higher education possibly created this stratification. When enrollment spots become scarce, the competition for these spots increases, hence our new elite flagship institutions. The increased demand for these spots in certain sectors, due to their opportunities for social mobility, allows the institutions to charge premiums and sort their applicants. When this occurs, those less academically prepared and those with fewer financial resources are pushed into the less selective sectors.

Students lack information about the admissions process and on preparing academically for college (Kirst and Venezia, 2006). To address this, the federal government created programs to assist students under Title IV. Another reason these Title IV programs unconsciously create social closure is the transference of information as social capital. The schools selected by these programs meet some minimum criteria, (e.g. number graduating, passing exit exams, and meeting thresholds of diversity) for student body composition. Then the programs target specific criteria, for example, minimal competencies for enrolling in higher education. By focusing narrowly on these areas, the social capital is created, internalized, and becomes intergenerational transference, unconsciously creating a form of social closure. This social closure occurs when administrators emphasize the admissions process for less selective institutions, while the intricacies and extracurricular components of selective institutions may not be fully explained.

Other programs, such as dual and joint enrollment, rely on minimal standards often closely related to the previous year's first-year class average, thus standardized test scores and GPAs are often high. These requirements construct barriers for the lower-income and less academically-prepared students, but offer an advantage to those from more privileged backgrounds. Having the ability to enroll in college courses allows the student to earn high school and college credit, while learning the differences between teaching and learning styles. These college credits further advance the student in the competition for admittance into a selective institution. In addition, the student is usually responsible for transportation to the program site and a portion of the tuition, and students from lower-income backgrounds may not have the resources for either.

Schools located in concentrated minority areas face a more difficult task in sending students to selective higher education institutions, as access to selective institutions requires academic preparation, affordability, and aspiration. High schools in Georgia with larger percentages of lower socioeconomic students suffer in their attendance in the two top sectors, research and regional universities. This concurs with the literature, that those from lower socioeconomic groups with access to higher education usually enroll in the less selective institutions (Hearn, 1991; Karen, 2002; McDonough, 1997; Perna, 2004). There are several possible explanations: generational transfer of knowledge by having parents who attended less selective colleges, lack of financial resources as price is positively correlated with selectivity in Georgia, or the lack of academic preparation.

Using the framework of MMI, this research shows that, with expansion of the University System of Georgia, the size of the freshmen cohort increased 33 percent between 1993 and 2007, however, students from certain high schools still fail to enroll in the same proportion at selective

institutions. The stratification thus increased with reductions in the proportion of minorities at the selective institutions. These reductions follow policy shifts focused more on access to higher education, rather than completion of degrees. The success of these policies can be seen with the increased numbers of minorities enrolling in higher education, but the problem remains that this expansion among minorities mainly occurs at the less selective institutions. Meanwhile, admission to the selective institutions becomes more restrictive. So, by attempting to improve access in a fashion that protected the interests of upper-income children, the policymakers created more stratification. Academic barriers to entry may also have reduced the probability of enrollment in selective institutions when the student attends a particular high school. Enrollment at Georgia's selective research institutions grew over time, but they enrolled fewer students from high schools with a large percentage of minorities and those from lower socioeconomic groups. So, by continually increasing their admissions standards and costs, these selective institutions have reduced the diversity of their student bodies. Applying the MMI framework, the upper class believes these institutions to be worthy of elite access and aided in the creation of financial and academic barriers to restrict the access of certain groups. These beliefs may have unconsciously affected policy efforts. This trend will continue until a point when the upper class feels satiated at these institutions. Stratification in the Georgia public K-12 system maintains stratification in the University System of Georgia.

The mean continuation rate from Georgia public high schools to the USG remained stable at approximately 38 percent. Only twice did the rate reach 40 percent or more, in 2003 and 2006, when the economy may have played a part with fewer employment opportunities being available for high school graduates, during these small recessions. Examining the continuation rate by race and selectivity, with descriptive statistics, indicates that Hispanics and Asians gained ground

displacing white students from the research sector, however this growth did not keep pace with the entire enrollment in each sector. Asian students seized the expansion opportunities, and the proportion of Asian students enrolled in the selective sectors increased, during the time studied, while decreasing in the less selective sectors.

Academic preparation played a role in the enrollment patterns, with students requiring remedial courses losing places at the selective institutions while gaining them at the less selective institutions. With the admissions criteria continually increasing in the top sectors fewer students needing remedial courses were enrolled over time. Standardized test scores were positive and significant in the more selective sectors. Stratification by achieved traits, such as academic preparation, played a role in the study. The distribution of students according to their academic preparation is apparent in the USG, with less-prepared students growing in number and attending at greater rates in the less selective institutions.

Research of HOPE, the state merit aid program, indicates that it improved enrollment at only the regional institutions. This is probably due to the fact that the minimum grade point average required to receive HOPE is lower than the GPA needed to gain admission to research institutions. This could be an artifact of control by the upper class to improve the affordability for their children by knowing less fortunate students cannot meet the admission standards at research institutions. Enrollment of HOPE scholars in the less selective sectors decreased slightly with modifications to the scholarship. This may be due to the low costs and lack of admissions policies, while HOPE is based on academic preparation and achievement rather than need.

Summary

If the goal of higher education is to serve as a means of social mobility and those from lower socioeconomic status have more room for mobility, then any enrollment into higher

education should be encouraging. However, Collins (1971) argues the selectivity of an institution matters in economic returns due to credentialism and social networking. Stratification in higher education results in little social mobility for lower socioeconomic students due to the academic and financial barriers constructed to deny entrance into selective institutions. These students face great challenges when considering college attendance, challenges that stem from high school experiences, academic preparation, parental advice (generational transference), and affordability. The results of this study showed that, during expansion, minority (Black) students lose access to more selective institutions as the system becomes more stratified. Thus, using higher education as a means of social mobility has not only failed in Georgia, but has, in fact, hurt Black students.

The increased stratification confirms the research of Brint and Karabel (1989) who feel meritocracy is a myth and non-selective institutions are used as diversionary tactics. Thomas and Bell (2008) argue that Americans believe society is meritocratic and, thus, have a tendency to place blame for the lack of mobility on the person rather than the class system. By unequally distributing Blacks in two-year institutions, it removes the stigma of their not participating in higher education, but, at the same time, it also fails to really aid in their social mobility. Merton's Matthew Effect (1968, 1988) theory of the "rich getting richer" occurs in higher education because: 1) the correlation of academic preparation and affordability to income enables upper-income students to monopolize the selective institutions; 2) upper-income students also gain advantages in extracurricular activities (Perna, 2000), and 3) schools cannot control for parental aspirations toward higher education, and parental aspirations affect college choice and continuation (McDonough, 1997).

This study revealed that, even when enrollment in the University System of Georgia increased annually, the number of students from minority groups is not increasing proportionally

at the selective institutions. The selective institutions offering the best credentials and probability of social mobility are controlled by the upper class. The use of merit-based admissions, created by the upper class, controls the entrance into these institutions and creates a barrier for lower socioeconomic students. Karen (2002) found admissions standards and financial aid have legitimated a means to exclude students. By controlling access to institutions the upper-income families maintain their position and retain the opportunities for social mobility for their own class. Enrollment in a selective institution is not essential for mobility; however it provides a stronger signal and advantage over less selective institutions (Thomas, 2000; Zhang, 2005).

Exclusion from selective institutions in Georgia follows national trends and research (Karen, 2002; Perna, 2004; Roska, 2008). The K-12 system attempts to provide equal opportunities for students, although, even with equal access, students from lower incomes are less prepared. This lack of academic preparation can be seen in the USG system by those students requiring remedial courses being negatively correlated in the selective sectors, but positively correlated in the less selective sectors.

Since educational attainment is a part of group membership and indicates the privilege of the ruling group, those who achieve it gain power through a cultural identity (Collins, 1979). Students enrolling at the selective institutions gain an advantage by receiving the cultural identity of attending a well-known and respected institution. Those enrolling in the less selective institutions are disadvantaged by the stigma attached to attending an open access institution with low academic standards. The study revealed that, across the time period examined, the proportion of Blacks attending research institutions was decreasing, while the proportion of Blacks attending state colleges was increasing. So, even though the number of Blacks attending college is increasing over time, the upper class maintains control of the selective institutions. The

gate-keeping process at the selective institutions is an example of social closure. This process of social closure protects the white students by limiting the vertical movement of minorities in the USG system. Employers know the social position, ranking, of institutions within the state. Thus, attendance at a selective institution may provide a big advantage for the job seeker. As employment affects social mobility, for Black students to improve their position in society, access to selective institutions is imperative. However, we see this as decreasing in Georgia, due to high school contextual effects.

High schools with larger percentages of minorities send fewer students to selective institutions in the USG. This may come from the lack of academic preparation at these schools or the interactions within the high school among students, between students and counselors, and in participation in extracurricular activities. The cultural aspect of these high schools reflects the social capital of the counselors and parents, resulting in a high school contextual effect that is negatively related to sending students to selective institutions, thus creating a perpetual cycle of control for the least diverse high schools.

Even with growing access and social programs aimed at helping minorities, such as Trio, Gear-Up, and Upward Bound, over time the proportion of Blacks attending selective institutions in Georgia has decreased. At these high schools the students are not internalizing the knowledge needed to attend selective institutions but are internalizing a sense of defeat by seeing so few of their peers gaining admission to the selective institutions. This type of social capital, partially created by the barriers constructed by the upper class, negatively affects communities by reducing the chances for social mobility. The intergenerational transference will remain in the community and aid in the controlling power of the white upper-class. Reductions in the proportion of Blacks over time at the research and regional institutions will have a lasting effect

on future students. Reproduction theorists, such as Gamoran (2001), believe lower-income people wish to improve their status in society through education, but this has only benefited the upper class by socializing lower-income workers for the labor force.

Beller and Hout (2006) argue that inequality affects the difference between upward and downward mobility. Expansion in education should, theoretically, translate into greater mobility (Walters, 2000). Georgia's public higher education system enrolled 33 percent more first-year students, during the time period studied. Some students from lower socioeconomic backgrounds have gained access to selective institutions with contested mobility, meaning that all students who wish to can compete to gain status, but most faced the dilemma of sponsored mobility, in which the elite group selects persons for membership (Turner, 1960).

The increasing status and ranking of the research institutions has done two things. First, it made upward mobility through the contested approach, in which all students who wish to aspire can compete to gain status, slow down by increasing academic and financial barriers to entry. The rise of the research sector includes increased standardized test scores, greater GPAs, higher tuition and fees, and an increased rigor of curriculum for admissions purposes. When the institutions began weighting admissions by the number of advanced placement courses taken and awarding credit toward the calculation of grade point averages, students from lower socioeconomic status were penalized. Students from lower socioeconomic backgrounds cannot afford the financial increases nor do their high schools have the resources to offer multiple advanced placement courses. Students attending the best high schools have the advantage of being admitted to the best higher education institutions. Those who can attend an elite institution are offered selection into the privileged group (Collins, 1979; Massey, 1989; Zhang, 2003). Entering this group in Georgia comes from academic preparation, cultural ability, and social

power stemming from the secondary educational attainment and participation, fitting Collins' framework of stratification. Public high schools in Georgia vary in providing the academic preparation and cultural knowledge needed to enroll a large number of students from specific high schools into selective higher education institutions.

The second effect of the increasing status in the research sector is the strengthening of sponsored mobility. To maintain reputation, the research institutions recruit students of high academic performance, who mostly come from higher-economic backgrounds. Institutions with open access have increased enrollment at a faster rate due to the enrollment caps at research institutions. These enrollment caps function as a barrier by increasing demand, thus allowing these institutions to become more selective. Fewer students requiring remedial courses entered the selective institutions, while more of them enrolled at the less-selective institutions.

The stratification by education and social origin persist in Georgia and has even hurt certain groups during this expansion. All groups have expanded their educational opportunities during the last two decades, but the relative social positions, even during this expansion, have remained the same for most and decreased for Blacks; this is Maximally Maintained Inequality (Raftery and Hout, 1993). The decrease in high schools with large percentages of Blacks sending students to the selective institutions, while at the same time increasing the number enrolling in the less-selective sectors, is MMI. The fact that enrollment at a particular institution is affected by the high school composition and that the USG system has become more stratified, agrees with MMI. A state of equilibrium has not occurred. The upper class, controlling good high schools, still sees the need to construct barriers to entry into selective institutions in Georgia and, by doing so, has increased the status of these institutions, thus creating a perpetual cycle that is not broken until the upper class reaches saturation.

The higher education expansion in Georgia has not reduced educational inequality. This study's results are consistent with Fernandes's (2005) that educational expansion perpetuates class warfare by training students to match the outcome of their families' social position. The current cuts in the Georgia budget may eventually create more stratification by increasing the cost of attendance. During the writing of this study, tuition in the USG increased over 20 percent. Results showed students requiring loans increased significantly in every sector except state colleges. This may restrict access to higher education for students of lower socioeconomic backgrounds. Enrollment of the upper class in the selective sectors appears to have occurred over time, suggesting Maximally Maintained Inequality exists inside the University System of Georgia. The transition rates from the K-12 system into the USG remained the same across groups, but with decreases of students from high schools with majority Black enrollment in the selective institutions.

Implications and Recommendations

Maximally Maintained Inequality exists in the University System of Georgia. During the enrollment expansion over the last two decades certain sectors became more stratified. This stratification included enrolling more students from the upper class and fewer from lower socioeconomic backgrounds. Without a major policy shift this trend will continue, as the cost of attendance increases due to budget cuts and institutions chasing national rankings.

Public higher education in Georgia will face greater homogeneity in the selective sectors without intervention. Students from lower socioeconomic backgrounds will be isolated in less-selective institutions reducing their opportunities for social mobility. The causes for this include, but are not limited to, higher cost of attendance, increased academic qualifications, and high school contextual effects, such as, the social capital in the school.

This homogeneity of institutions, however, does not equate to quality. Research shows specialized colleges (women's colleges, HBCUs, and liberal arts) serve certain groups of students better than other institutions (Wolf-Wendel, Baker, and Morphew, 2000; Morphew, 2002). The increased homogeneity at the less selective institution in Georgia may fit this model, where the specialized institutions provide a developmentally better atmosphere for students who may not be prepared for the comprehensive or research institutions (Morphew, 2002). Another problem is the continual mission creep of institutions aspiring to be in a more selective peer group for many reasons: improved legitimacy, a gain in external resources, to better reflect a comprehensive nature (Morphew, 2002). This mission creep occurred in the USG with many colleges becoming state universities in the late 1990s and two-year colleges becoming state-colleges in the early 2000s. Each increase in sector brings an increase in admissions criteria, further affecting the less academically prepared and lower-income students, thus mission creep contributes to MMI and the increased homogeneity of the institutions.

Many of my recommendations concern the idea of improved relationships between the K-12 and higher education systems. These systems need to be involved in policy creation together, which is currently difficult due to the misaligned budget separations of education in Georgia and many other states. To begin, better communication between the USG institutions and high schools with clear information of what it takes for admission into the selective institutions, would help high schools reduce the number of students graduating with academic deficiencies, resulting in the need for learning support.

The proportion of students requiring loans increased over the time studied. A state need-based program could aid in the reduction of loan amounts, making the more expensive institutions affordable for lower-income students.

A mere high school diploma no longer provides the credentials needed in today's employment market; a college degree has become the required credential for better jobs and social mobility. Most students understand this and desire to pursue some form of higher education. (Kirst, 2004). Access forces many high school seniors to rethink their post-graduation plans for higher education. A combination of items (preparation, affordability, cultural, and aspirational) affects the decision and ability to enter higher education. An attempt was made in Georgia to alleviate some of these access issues by eliminating criteria for admissions in the less selective sectors. This began in 2005. Research on the success or failure of this policy needs to be carried out.

Many students aspiring to attend institutors in more selective sectors are unclear of the academic standards required. The lack of clear communication between selective institutions and K-12 schools may be a function of inadequate social capital or the higher education institutions' decision not to recruit in a certain area. Admissions offices need to balance resources and utilize recruiting strategies for the best return, so recruiting in a majority minority high school may lead to only a few students, whereas, this same recruitment at a wealthy white high school may return the investment with many applicants. This resource game of trying to maximize returns on investment leads to an entry barrier for minorities. The barrier is created by decision makers attempting to optimize funds, rather than making socially conscious decisions. Improved information on what it takes to be admitted into a selective institution needs to be communicated to high schools with large concentrations of minority and lower-income students.

The Georgia education system needs to fix the disconnection between K-12 and higher education. A collaboration between the systems can address the cultural aspects, accountability, and the redefining of norms. Teachers, college faculty, and policymakers need to build unified

requirements for exiting high school and entering the post-secondary environment. The model suggests a pipeline problem associated with academic preparation at certain high schools. These schools need better resources to compete with the successful high school before the stratification increases. A further analysis to why this occurs needs to be undertaken.

The cultural and aspirational deficit in certain segments of the population affects the community. Higher education institutions need to engage with the community is where they are often the largest employer. This engagement offers the possibility of cooperation which could improve the community, the schools, and the tax base. Grassroots events between higher education, departments of education, and K-12 systems would inform the students of the importance of attending college and what is needed to be prepared for college. Talking to students earlier in the academic process, perhaps in eighth grade, about what it takes to attend a certain institution could help reduce the lack of social capital and better prepare all students for selective institutions. Many students do not realize that taking the most rigorous curriculum or participation in advanced placement courses matters in admissions decisions. The Georgia Department of Education could fund workshops for high school guidance counselors to better inform them of the entrance requirements for the various types of higher education institutions in the USG. The recent announcement of Georgia's Move on When Ready program will help, but these programs are often only for those already intent on attending college, specifically a four-year institution. An expansion of these programs to those not already college bound could help over time by creating and transferring the knowledge of what is needed to attend college.

Until access to selective sectors improves for all students, Maximally Maintained Inequality will continue to exist. The upper class will control the research institutions through barriers to entry, while the less selective sectors will become more diverse. Social mobility for

the lower socioeconomic students will be hindered by the social position of the institutions they attended. While those students attending selective institutions will have greater opportunities and increased chances of mobility.

Limitations

This study is limited to students transitioning from public high schools to public higher education in Georgia over a fifteen year period. Data on private high schools or institutions were not available. However, Georgia has a strong public enrollment compared with some other states. The Georgia Office of Student Achievement claimed that in 2007 approximately 80 percent of those attending college in the state are at public institutions. When checking IPEDS data for Fall 2008 the total enrollment in the public systems was approximately 75 percent. A longer time period and more substantial segment nationally would produce stronger results.

The study focused solely on the transition from twelfth grade into higher education. Many students drop out and fail to graduate. Using only the transition outcomes to measure social mobility may not be the best approach. Further assessment of the outcome after the student is enrolled would shed more light on the problem of social mobility.

Methodologically, performing the analysis by sectors limits the results, however, the political implications of naming institutions needed to be avoided. The research sector may be slightly skewed to show less of an effect with a particular institution not being highly selective. The state universities and the three Historically Black Colleges and Universities (HBCUs), may have shown less of an effect, however, this sector still indicated a slight movement in becoming more stratified. Sectors were defined by the University System of Georgia, while some institutions appear different within the sector, there are similarities in the student body and

mission of the institutions. Even using sectors instead of institutions, patterns of increased stratification over time emerged. These patterns may be higher or lower at specific institutions.

A constraint in the model, but one that can be easily overcome for future research, is the tracking of specific high schools feeding students into the USG system. Individual high school feeder patterns could lead to better interventions, however, for time and sensitivity this pattern analysis was not included in the model. Permission from the Georgia Department of Education would need to be obtained prior to researching individual high school feeder patterns.

Future Research

This study should be repeated using students as the individual level and tracking their transition from high school to college. To achieve this, high school data would need to come from the Department of Education. Additional variables including parental education and income, neighborhood income levels, and transcript information from the student could also improve this study. Just examining transitions from high school to higher education may not be enough; the research should also include graduation from college.

I would assess the outcome of attending college, in particular graduating, at the different sectors within the USG. It would be interesting to see the impact of selectivity on annual income over time for the graduates from the USG. These data are obtainable by joining the USG and Department of Labor databases. The analysis would control for major to see if the selectivity of institutions matters in employment and social position. Investigating the returns of graduating by controlling for institutional reputation and program areas, would allow for a better examination of social mobility through education.

Another approach would be a return on investment analysis. This could occur at two levels, student and institution. There may be some institutions with highly paid faculty offering

programs that are not leading to returns to the state. An examination of the graduates in the workforce could determine whether they remained in state and received employment worth the costs of the program by the graduates paying greater taxes versus lower cost programs, or if lower cost programs pay more over time by having a larger number of graduates. The research could also examine whether social mobility can be achieved by studying a certain program. Social mobility will be measured as or when the graduates increase their annual income substantially over their parents.

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