NORTHWESTERN UNIVERSITY

Examining the High School-to-College Transitions of Chicago Public School Students

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

for the degree of

DOCTOR OF PHILOSOPHY

Field of Sociology

By

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EVANSTON, ILLINOIS

June 2018

ABSTRACT

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While college attendance, persistence, and completion has consistently increased since the 1970s, increases in attainment were greater for students from high-income families compared their low-income counterparts. As a result, low-income students are the least likely to attend or complete college. While college costs and poorer academic preparation are often barriers to college enrollment, disadvantaged students encounter other challenges in the high-school-to-college transition.

To investigate the transition for disadvantaged students, this dissertation utilizes administrative and survey data from a cohort of seniors enrolled in Chicago Public Schools (CPS), a predominantly low-income, minority, and first-generation district. The first study examines peer context, namely the academic strength of classmates, and its relationship to math coursework, educational aspirations, and college application choices. While some prior research showed that there might be some “hidden risks” to having more talented peers, this research finds benefits of having peers with higher levels of academic achievement in this context.

The second study investigates CPS’s work to encourage students to take three key college actions: applying to three or more colleges, completing the Free Application for Federal Student Aid (FAFSA), and applying to three or more scholarships. Analyses find that the majority of students apply to three or more colleges and complete the FAFSA, and further, these actions are associated with better postsecondary enrollment outcomes. Overall, the findings suggest that students should primarily focus on college applications and FAFSA rather than the uncertain payoff of scholarship applications.

The final study aims to understand the institutional attributes that are attractive to CPS students when making enrollment decisions. Using conditional logistic regression models, analyses find that students are attracted to institutions that are closer to home, have lower tuition costs, are an “academic match” to their own qualifications, and are at the high or low end of the selectivity spectrum. While recent research has focused on the propensity of low-income students to “undermatch” based on their academic qualifications, these analyses point to the importance of taking into consideration a number of institutional, non-academic characteristics when trying to understand students’ enrollment choices.

ACKNOWLEDGEMENTS

It is commonly said that it takes a village to raise a child, and the same goes for completing a dissertation. I have been lucky to have an amazing village of support over the last nine years. To start, I could not have completed my dissertation without the assistance and support of my committee: Lincoln Quillian, Jim Rosenbaum, and Christine Percheski. Lincoln got me excited about quantitative research early on – even though I came into the program planning on doing qualitative work. He was always supportive, answered my many methodological questions with patience, and encouraged me to try new kinds of analyses. I am also grateful for his practical advice. Lincoln also provided me with the opportunity to share my work with colleagues from Sciences Po in Paris – an incredible opportunity to travel and share my research.

Jim was a most supportive mentor and advisor throughout this process. Jim pushed me to get conference proposals submitted, helped me to get funding from alternate sources at Northwestern, and created a great network of graduate students and research assistants from which I benefitted. I had some of the most invigorating and interesting conversations in Jim's office, and I feel lucky to have found Jim and his students so passionate about educational issues, their research, and its implications for practice and policy.

Christine provided me with so much practical advice in navigating graduate school and in completing my dissertation. I have always appreciated her candor and the opportunity to discuss balancing professional and family life. I could always count on her to give me constructive feedback, and my work is stronger for it. Christine pushed me to finish my dissertation – regularly checking in via email about my progress and asking how she could be helpful. Those nudges helped me to stay on track, set writing goals, and meet them. I am so grateful for that.

I never would have believed that a PhD was possible if it were not for David Karp. I started my Boston College career as a very uncertain undergraduate, but I was inspired by his introductory course in sociology and never looked back. When I told him that I was thinking about getting a masters degree, he said I should consider a PhD and that an institution would pay me to do it. I had no idea that this option existed or that someone like me could consider getting a PhD, but he planted the seed. I am grateful for the guidance he gave me throughout my undergraduate years.

During my doctoral career, I received financial support from the Department of Sociology, the Institute for Policy Research, and the Multidisciplinary Program in Education Sciences. These grants allowed me to participate in an amazing team of researchers interested in the high-school-to-college transition, community colleges, and young adulthood. In particular, Lisbeth Goble, Jen Stephan, and Michelle Naffziger blazed the way and helped me navigate my early research. Amy Foran and Kennan Cepa helped me to process many ideas and provided invaluable edits to my writing. Jiffy Lansing, Caitlin Ahearn, and Chenny Ng were wonderful cheerleaders for my work and gave me constructive feedback when needed.

Last, but certainly not least of this group, Claudia Zapata-Gietl – I would not have made it through without you! Thank you for being a wonderful conference travel companion, a listening ear, a generally a wonderful friend. Through our time at Northwestern together, we have navigated coursework, research projects, and dissertations along with marriage and motherhood. I am very grateful for our friendship, and looking forward to celebrating your completed PhD soon!

I am so grateful to my friends who kept me grounded and helped me through the tough patches of graduate school. They always had encouraging words, would check in on how things were going, and provided welcome distractions. Thank goodness for our ICTC girls' nights – Maria Ferraro, Katie Golden, Lauren Hogel, Jen Newberry (and Pat Dwyer!), Clara Chu, Heidi DeVooght, Katie Olsen, Heather DeJonker, and Tanya Laskowski. Looking forward to being able to attend many more now that my dissertation is done.

Many in my sociology cohort made graduate school an enjoyable endeavor – in particular, Jaimie Morse, Gemma Mangione, Talia Schiff, Diana Rodriguez, and Fiona Chen. I enjoyed learning with and from each of you, and the intermittent writing group we had. I was lucky to have other friends writing their dissertations at similar times. Aliza Gilbert and I have spent more evenings in the Evanston Public Library than we care to remember. She pushed me to get words written and to finish. Those library "dates" were invaluable as were her texts asking for status updates once she finished her dissertation. We both made it!

I am also grateful to my Northwestern colleagues. In particular, Mary Desler took a chance by hiring me and really pushed me to finish my dissertation. Rob Aaron, Amy Huntington, and Mark Presnell gave much needed encouragement especially at the final push to complete it. Although working full-time extended the dissertation process, I gained so many good friends in the process – in particular, Natalie Kramer, Adrian Bitton, Kelly Benkert, Brent Turner, Val Buchanan, Zoey Meyer-Jens, Angela Mitchell, Kevin Meier, Laura Myers, Maggie Smith, Karen Pryor, and Travis Martin (you're next!).

I most certainly would not have completed my PhD without the support of my family. My parents, Calvin and Sylvia Iwanaga, sacrificed to provide me with great opportunities. Because of their commitment to my education, I was able to attend institutions where I was challenged and flourished. They encouraged me to aim high and follow my dreams, even when it meant moving far from home. I can never thank them enough for all of the love and support they have given me over the years. My grandparents, Armando and Adilia Perez and Roy and Betty Iwanaga, also had big dreams for their children and grandchildren. All of them persisted through tough times as immigrants or children of immigrants, and I am so grateful for all of them. They provided me with unconditional love, nurtured my love of reading, and were always wonderful role models. My godparents, Michael and Sonia Maez, have always coupled their love with laughter. They encouraged me in all that I did while always reminding me to always make time for fun (always to the edge but never over!). I love you all so much!

I could not ask for better siblings. My sister, Kristin, is my role model for going after what you are passionate about with lots of hard work and persistence. She has always been the most determined person I know, and I hope that has rubbed off on me a bit. I always rely on my brother, Jeff, to keep my spirits up and keep me entertained – finding television shows, movies, and music that I would enjoy to helping me stay updated on our favorite sports teams. Go Giants! (Here's to hoping there is no correlation or causation between my being in graduate school and the three World Series titles that they won.)

Everyone writing a dissertation should have the good fortune of having a partner who gave as much support as mine did. Rob - you made so much of this possible. I cannot begin to thank you enough for putting up with the long hours, late nights, and many years that this took to accomplish. Most importantly, you make me laugh and bring so much happiness into my life. And finally to Brady, who has only known life where his mom has to "work late" to write a long paper. I hope one day you remember this time and know that you too can accomplish what you set your mind to. Regardless, I am looking forward to crashing "guys' night" on a regular basis. I love you both!

DEDICATION

To my family, I could not have done this without your love and support.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Sociological tradition has long been concerned with inequalities, particularly educational inequality (Bowles and Gintis 1976; Coleman 1966; Jencks et al. 1972; Sewell and Hauser 1975). In large part, this concern is because education is at the core of our beliefs regarding the opportunity for social mobility in America. There is a widespread belief in America that education, and particularly postsecondary education, is the path to upward mobility and a precursor to economic success because of the strong relationship between educational attainment and income (Card 1999; Jencks 1979; Murnane, Willett and Levy 1995), employment status (Caspi et al. 1998), and occupational prestige (Blau and Duncan 1967; DiPrete and Grusky 1990). Research using quasi-experimental methods reach the same conclusion that one's level of educational attainment is the single strongest predictor of labor market outcomes including earnings (Rouse 1999). Collins (1979: 3) went so far as to assert that "education is the most important determinant yet discovered of how far one will go in today's world."

In particular, earning a bachelor's degree is crucial milestone for attaining economic success (Card 1999; Card 2001; Carey 2005; Goldin and Katz 2008); in 2008, individuals with bachelor's degrees earned 53 percent more than those with only a high school diploma (National Center for Education Statistics 2010). Furthermore, over the last quarter of the twentieth century, the economic returns to postsecondary education have risen tremendously while the economic returns to a high school degree have remained stagnant or declined (Autor 2010; Goldin and Katz 2008), partially due to the increasing polarization of job opportunities (Autor 2010). Because service jobs and other non-manufacturing work cannot be outsourced, higher levels of education and skills are required for the high-paying jobs that power our national economy (Autor, Levy and Murname 2003; Goldin and Katz 2008; Holzer and Lerman 2007). The Bureau of Labor Statistics (2010) predicts that between 2008 and 2018, jobs requiring a bachelor's degree will increase by 17 percent and may soon exceed the number having that credential (Altonji 2009).

Having a more educated population has benefits beyond economics; college attendance is associated with higher occupational prestige and stability (Pascarella and Terenzini 2005), better health (Ross and Mirowsky 1999), increased civic engagement (Brand 2010), and higher rates of employment (Baum, Ma and Payea 2013) among other positive social outcomes (Pallas 2000). It is no surprise then that many local, state, and national policies have focused on how to improve college-going and college-completion rates.

Although the transition to college represents opportunity for social mobility for young people, particularly those from low-income backgrounds, it is a process that also perpetuates social inequalities (Deil-Amen and Turley 2007). There are systematic patterns in which types of students enroll in college, persist in college, and complete college (Bailey and Dynarski 2011) meaning that at an aggregate level, the "academically and socioeconomically 'rich' become richer while the academically and socioeconomically 'poor' become poorer" (Hearn 1984; Zhang 2005: 42).

Students who come from families with more resources and a history of college-going are more likely to attend college and are more likely to attend selective institutions (Ellwood and Kane 2000; Kane 2004), and minority students are much less likely to apply or enroll in college than non-minorities (Bowen, Kurzweil and Tobin 2005). When disadvantaged students enroll in postsecondary institutions, they are more like to pursue pathways associated with lower odds of completing degrees such as two-year institutions (Dougherty 1987; Dougherty 1994), delaying enrollment after high school (Bozick and DeLuca 2005), attending part-time (Stephan 2010), and attending four-year institutions that are less selective than they are eligible to attend (Bowen, Chingos and McPherson 2009; Roderick et al. 2008). As a result, advantaged students gain advantages both in terms of the quantity and quality of education.

Differences in college enrollments are the result of a college search and selection process, one that is not an easy process for students to navigate. Low-income, minority, and first-generation students often lack information, struggle to complete key college actions, and face the obstacles of rising college costs and complicated financial aid processes (Klasik 2012; McDonough 1997; Perna 2006b; Spies 2001; Stephan 2010). Even students from families with a history of college attendance who attend high schools with lots of supports for college need additional information and guidance to successfully navigate the process. These processes are even more of a struggle for disadvantaged students who have less access to “college knowledge” through home and school (Choy et al. 2000; McDonough 2005; Radford 2013; Tornatzky, Cutler and Lee 2002).

Because the process of choosing and enrolling in college has important impacts on later life outcomes, additional investigation into the process and factors that influence the transition to college for disadvantaged students is warranted.

Overview of the Dissertation

This dissertation consists of three distinct, but related, chapters that address varying components of the high-school-to-college transition for a population of predominantly disadvantaged students and may explain differential college enrollment and persistence outcomes. Understanding the factors and processes that contribute to varying college outcomes can directly inform our understanding of educational and economic mobility for these populations.

Data

All three studies rely on data from the University of Chicago Consortium on Chicago School Research (CCSR), which collects data on all students enrolled in Chicago Public Schools (CPS). For all analyses, I use data on Chicago Public School (CPS) students who were seniors 2008-2009 school year. The data collection process is highly systematic, and data are synchronized between years and across sources so that students can be matched and tracked through their time in CPS (cf: Roderick et al. 2008). CCSR collects student-level demographic data such as gender, race, and free or reduced lunch eligibility. The data also include transcript information, including coursework taken, attendance, and other measures of academic achievement such as grade point averages (GPA) and American College Test (ACT) scores, which each student in the district is required to take in their junior year of high school (Klasik 2013).

At the school level, CCSR provides information on the school type (general, vocational, or magnet).[1] Other school-level variables include the average composite ACT score (as well as subscores in all four domains), average high school class size, percent of students with limited English proficiency, racial composition, attendance and truancy rates, dropout rates, graduation rates, and total enrollment.

Further, students are surveyed each year and also complete an exit questionnaire in the spring of senior year, which has a response rate of over 90 percent. Finally, the CCSR data can be matched to actual college enrollment information, which is collected by the National Student

[1] Although data is collected on alternative high schools, high schools located in jails, and special education centers, students attending these institutions are excluded from all analyses because the unique characteristics of their schools make them difficult to compare to other traditional high school settings. Further, students from charter high schools are excluded from these analyses because they typically do not report complete transcript information, school-level data, or participate in all student surveys (Roderick et al. 2008).

Clearinghouse (NSC) and includes enrollment and degree completion information from over 3400 colleges and universities and covers over 96 percent of students enrolled in public or private institutions of higher education (National Student Clearinghouse 2018).[2] Currently, NSC is the only source for information on private college attendance and public college data from multiple states.

Additional information on the attributes of the colleges and universities comes from two sources: the Integrated Postsecondary Education Data System (IPEDS) and Barron's Admissions Competitiveness Index. Both datasets are compiled by the National Center for Education Statistics (NCES). IPEDS is the primary source of data on postsecondary institutions in the United States. IPEDS data includes variables such as location, urbanicity, Carnegie Classification, cost of attendance, average net price for students, selectivity, retention and graduation rates, institutional control or affiliation, and racial composition. These variables provide a greater depth of information on the choice set students have and allow for extra richness in modeling how characteristics of the college choice sets impact application and enrollment decisions made by students. This dissertation utilizes IPEDS data from the 2007-2008 school year because this is the college information that would have been available to students in the year when they were applying, admitted, and making their enrollment choices.

Barron's Admissions Competitive Index categorizes colleges based on their selectivity taking into account the standardized test scores, GPA and class rank of admitted students as well as the acceptance rate at the institution. The National Center for Education Statistics (NCES)

[2] Although the great majority of colleges and universities participate in the National Student Clearinghouse, not all take part. The vast majority of students without an NSC record are not enrolled in college, but others could be enrolled in non-participating institutions. These enrollments likely have a small impact on results; Stephan (2010) found that just 9 percent of CPS students who reported specific plans in the spring of senior year planned to attend a non-participating institution.

compiles this data for use with other national surveys. To be consistent with the IPEDS data, these analyses also utilize the data from 2008.

The major drawback of solely using CCSR data on Chicago Public School students is that the sample is not generalizable to a national sample and may not be generalizable to other large, urban school districts. However, the data have three major advantages over nationally representative data for the purposes of this research. First, Chicago Public Schools is the third largest school district in the United States and serves predominantly disadvantaged students. Like many other urban areas in the United States, CPS students are predominantly racial minorities and from low-income families (Roderick, Coca and Nagaoka 2011; Roderick et al. 2008). Additionally, they have lower average academic achievement than high school students nationally (Stephan 2010). While national datasets can allow for generalizations to be made from results, they do not include as many low-income, minority, or disadvantaged students, which limits the conclusions that can be drawn about those particular populations.

CPS data provide a unique opportunity to investigate the high school to college transition for disadvantaged students.

Second, these data provide detailed, administrative information. Unlike other survey data that relies on student reports of coursework, grades, or test scores, these data draw on administrative records. A great deal of prior research in the high school to college transition has depended upon student self-report of enrollment plans rather than actual enrollment data; however, more recent research has found that enrollment plans, particularly those of disadvantaged students, often change over the summer (Castleman, Arnold and Wartman 2012; Castleman and Page 2011; Roderick et al. 2008; Stephan 2010). As a result, a major advantage of this data is the link to the National Student Clearinghouse data, which provides much more accurate information as to the postsecondary enrollment outcomes particularly for this population of students.

Finally, the data includes information on multiple domains of students' achievement and experiences; these data are particularly rich in items related to the college search and selection process. Their in-depth coverage of college-related items, above and beyond what those included in national data, and the link to the National Student Clearinghouse data make these data particularly invaluable for this research. As one of a few school districts that collect such comprehensive data on all students, the CCSR data provide unique opportunities.

Chapter Descriptions

Study 1: High Schools as Frog Ponds?: Investigating Peer Contexts and the High-School-to-College Transition

Intuitively, we know that social context, particularly peer composition, matters for student outcomes. However, there are competing theories of how peers impact educational outcomes, particularly college-going. Some argue that there are positive peer effects such that having more advantaged or higher-achieving peers can confer benefits to individual students while others have argued that there are "hidden risks" to having higher-achieving peers because students' own relative positions and access to coursework, grades, and other college-related resources may be diminished. Utilizing regression models and two measures of peer quality, the findings from this chapter suggest that within the CPS context, student outcomes are improved when they attend schools with students who are higher-achieving, net of students' own academic achievement. In contrast, limited evidence exists in these models that having a higher class rank – or being the "big fish" in the "small pond" – has benefits for students.

Study 2: Chicago Public Schools' Three Key College Actions: Understanding Student Completion and their Impact on College Enrollment Patterns

The process of applying to college is complicated, and it can be particularly difficult for students whose families do not have experience attending postsecondary institutions. In an effort to improve college-going rates, particularly attendance at four-year institutions, CPS has encouraged students to complete three key college actions: apply to three or more colleges, complete the Free Application for Federal Student Aid (FASFA), and apply to three or more scholarship opportunities. Using regression analyses, results suggest that applying to three or more colleges and completing the FAFSA are associated with better postsecondary enrollment outcomes. Completing scholarship applications has more mixed results. Results suggest that the significant proportions of students complete each of the three key college actions, but given the mixed results of completing scholarship applications, school personnel should more strategically support the two other efforts to improve students' postsecondary outcomes.

Study 3: Choosing a College: What Institutional Characteristics Do Chicago Public School Students Prefer?

Recent research has focused on the propensity of low-income and first-generation college students to choose postsecondary institutions that have lower academic qualifications than those they are qualified to attend, affecting both their odds of graduating and their employment opportunities. However, most of this research does not consider the other institutional attributes that might be attractive to these students such as location, cost, or demographic characteristics of the student population. Using conditional logistic regression models to estimate the odds of attending a particular institution from among those to which students were admitted, these analyses find that students are attracted to institutions located in urban areas, closer to home, and that have lower tuition costs. Institutional selectivity is more complicated; CPS students are more likely to attend schools at the highest and lowest ends of the selectivity spectrum. Further, they are more likely to choose an institution if that institution matched their own academic qualifications. These analyses point to the importance of other non-academic factors in making a college enrollment choice, and work to increase academic matching should include conversations of other qualities that are important to students.

The final chapter of the dissertation integrates the findings from each study to discuss implications for future research and practice.

CHAPTER 2: HIGH SCHOOLS AS FROG PONDS?: INVESTIGATING PEER CONTEXTS AND THE HIGH-SCHOOL-TO-COLLEGE TRANSITION

Introduction

While the impacts of school have been long explored and debated in sociology (Alexander and Eckland 1977; Bain and Anderson 1974), research on the effects of school social composition on student achievement and other educational outcomes are inconclusive (Jencks and Mayer 1990). At odds are two competing theories of the impact of school social composition. Following Brown vs. Board of Education (1954), the landmark decision on school segregation, the Coleman Report (Coleman et al. 1966) made a strong case for the correlation between individual academic achievement and school social composition – a relationship that was stronger than that between achievement and school quality. Both the court decision and national report were focused on school racial composition, which was and continues to be associated with socioeconomic and achievement composition (Bankston and Caldas 1998a; Bankston and Caldas 1998b). Since these influential works, “peer effects” research has documented that peer quality and behavior are positively associated with individual academic outcomes (Rumberger and Palardy 2005). Following this logic, having peers of a higher socioeconomic status or higher academic status confers benefits for individual students, regardless of their own status.

Explanations for the positive “peer effects” phenomenon in schools vary. In general, researchers argue that higher achieving peers help to create an educational “culture of success” (Jencks and Mayer 1990), by exposing their peers to stronger vocabularies, academic skills, and an academic environment with more rigorous curriculum and higher-level instruction. High schools with more high-achieving students are also more likely to have a culture of college-going, which impact the likelihood that students submit college applications and attend college (Alexander and Eckland 1977; Engberg and Wolniak 2010; Kim 2012; Manski and Wise 1983; Wolniak and Engberg 2007).

However, another strain of research suggests a conflicting expectation; in some situations, it may be beneficial to have lower achieving peers. In his seminal article, Davis (1966) finds that the career decisions of male college graduates are affected by the “frog pond” phenomenon. In short, given a set level of academic achievement, a student who attends a less selective college was more likely to aspire for a high-prestige career because students compare themselves to their peers and adjust their aspirations accordingly. Davis (1966) argues that it may be better to be the “big fish in the little pond” rather than the “small fish in the big pond.” Because people tend to compare themselves to those around them, the size and composition of “the pond” matter. More recent research has documented that high-performing students in less selective schools rate themselves as more confident and competent, have higher levels of achievement in class, and have higher aspirations (Jackman et al. 2011; Marsh, Kong and Hau 2000; Marsh 1987; Marsh and Hau 2003).

The “frog pond” effect was recently tested in two recent studies that investigated the process of applying to elite colleges and universities (Attewell 2001; Espenshade, Hale and Chung 2005). Both studies found that the “frog pond” effect was occurring; students’ odds of admission to an elite postsecondary institution were better if they were a highly ranked student at a less prestigious high school than a middling student at a very prestigious high school. Given the large amounts of evidence that show the positive impact of having more accomplished classmates, these findings were surprising. However, these studies leave open whether peer effects or frog pond have a greater impact on the high-school-to-college transition for those who attend less selective institutions.

While elite colleges are important given the high status they are presumed to confer to their graduates, only a small portion of students apply to or attend elite colleges. Almost 50 percent of new college students attend community colleges (open admission institutions), and most four-year college students attend institutions that are only slightly selective in their admission practices (Bowen, Chingos and McPherson 2009). The focus on elite institutions neglects these other students and begs the question of whether the transition to college is more broadly impacted by "frog pond" effects or are solely an elite phenomenon.

To fill this empirical gap, this research evaluates the merits of the "peer effects" literature and the "frog pond" phenomenon as they relate to the high-school-to-college transition of students in a diverse, urban school district. High school contexts within Chicago Public Schools vary more dramatically than the high schools studied by Espenshade, Hale and Chung (2005) and Attewell (2001). Further, the college destinations of CPS graduates are largely non-elite and non-selective institutions (Roderick et al. 2008); thus, this context provides an excellent setting to test the extent to which each of these school context theories predicts how students transition to a wider range of non-elite colleges.

This chapter uses two school-level attributes to measure high-school context. Following the peer effects literature, I use school-average ACT score to understand the relationship between peer achievement and postsecondary-related outcomes of interest. The other variable used to understand school context is class rank based on student grade point average (GPA), which is more commonly used in the "frog pond" literature. I test the relationships between these two variables and four outcomes of interest: math coursework completed, educational aspirations, applications to four-year institutions, and applications to selective institutions, while controlling for a number of individual characteristics. The results are used to illuminate the impact of peers within these particular high school contexts.

Focus on College Applications

Educational research has long documented that low-income students are less likely to attend college than their more advantaged peers, even when they have the same academic qualifications (Avery and Kane 2004; Hearn 1991; Kane 1999; Manski and Wise 1983; Pallais and Turner 2006). Low-income students are more likely to attend two-year colleges (Dougherty 1994; Kurlaender 2006; Lovenheim and Reynolds 2010; Stephan, Rosenbaum and Person 2009), and they are less likely to apply to selective institutions, even when their qualifications indicate that they are eligible for admission (Bowen, Chingos and McPherson 2009; Roderick, Coca and Nagaoka 2011). Part of the discrepancy in college attendance is because low-income and minority students do not apply to a wide range of postsecondary institutions (McDonough 1997). The college application process is complicated and difficult for many students to navigate (Klasik 2012) and particularly so for low-income students who may not have sufficient information or guidance (Cabrera and La Nasa 2000a; Cabrera and La Nasa 2000b; McDonough 1997; Person and Rosenbaum 2006).

In contrast to other research that focuses on students' enrollment choices (Engberg and Wolniak 2010; Niu and Tienda 2008), this research focuses on the application choices made by students. This choice is for a few reasons. First, while it may seem obvious, applying to college is a crucial step in the process of enrolling in college. However, many qualified students do not apply to college (Avery and Kane 2004; Cabrera and La Nasa 2000a; Hurtado et al. 1997;

Roderick, Coca and Nagaoka 2011) even though this step is crucial to enrollment at a four-year institution and full-time enrollment (Illinois Student Assistance Commission 2003; Klasik 2012).

As can be seen in the Hossler and Gallagher's model of college choice (see Figure 4.4), the choice of how many and where to submit applications is a crucial part of the college choice process (Hossler and Gallagher 1987; Radford 2013). The choice of where to apply is a step controlled by students, and it influences the rest of the process. Application choices constrain the later stages of the choice process; students cannot be admitted to or attend institutions to which they did not apply. Further, students' application choices are very influential in determining where students ultimately enroll because the majority of postsecondary institutions are not very selective (Clinedinst, Hurley and Hawkins 2011), and most students are admitted to their top choice institution (Radford and Tasoff 2009).

Thus, choices about where to apply affect enrollment choices. And enrollment choices are important because generally students have better odds of degree completion if they attend a four-year institution compared to a two-year institution (Dougherty 1994; Pascarella and Terenzini 2005; Reynolds and DesJardins 2009). This is particularly important for CPS students because the City Colleges of Chicago have extremely low completion rates, near ten percent (author's calculations using IPEDS). Furthermore, attending a more selective four-year institution leads to improved odds of degree completion (Bowen, Chingos and McPherson 2009) and can lead to a wider variety of prestigious employment opportunities (Rivera 2016; Zhang 2005).

Peer Effects in the Transition to College

Students are particularly susceptible to peer influence in their high school years (Jang 2002; Patacchini, Rainone and Zenou 2011). Research has defined "peers" in a range of ways:

from close friends, classmates, groups of students who interact, schoolmates, or by age cohorts (Brown 1989; Scheidlinger 1984) and has broadly found that peer "reference groups" (Kemper 1968) are positively associated with individual students' academic progress (Azmitia and Cooper 2001; Epstein and Karweit 2014; Mounts and Steinberg 1995; Romo and Falbo 2010). Peer groups shape individual attitudes and behaviors, such as academic aspirations, achievement, and attainment (Milem 1998), by providing a reference that students can imitate (Hallinan and Williams 1990), and peer groups are a social network through which valuable resources or information can be transmitted (Stanton-Salazar 2001). Similarly, having low-achieving peers can negatively affect otherwise motivated students. Peers can also influence misbehaviors, such as alcohol and drug use, illegal behaviors, and delinquency (Case and Katz 1991; Hallinan and Williams 1990; Mounts and Steinberg 1995; Rumberger 1983).

Not surprisingly, peers are also influential in the transition to college, and may be most influential for minority and urban youth (Azmitia and Cooper 2001; Gandara 1995; Ide et al. 1981; Stanton-Salazar 2001). As early as Piaget (1932) and Sullivan (1953), research has found that peers play a role in college aspirations and can be a source of support for difficult tasks, such as applying to college (Furman and Gavin 1989; Newman and Newman 1976). Students with friends with college-going aspirations are more likely to apply to and go to college themselves (Alexander and Campbell 1964; Alvarado and Turley 2012; D'Amico 1975; Hallinan and Williams 1990; Rumberger and Rodriguez 2002). Engberg and Wolniak (2010) find that net of individual characteristics and achievement, students who attend schools with higher average grade point averages, where higher levels of math coursework are taken, and where more Advanced Placement (AP) courses are taken – generally more academically rigorous schools – have higher odds of enrolling in four-year institutions (over two-year institutions or not enrolling in any postsecondary institution). Further, students who attend schools with higher standardized test scores and higher college-going rates, are more likely to have broader college searches and more choices when it comes time to enroll in postsecondary institutions (Wolniak and Engberg 2007).

Peer influences in the high-school-to-college transition can work in a few ways. First, having higher achieving peers may help to create a "culture of success" (Jencks and Mayer 1990) by exposing students to higher educational aspirations and increased motivation. While some studies found that peers provide direct pressure to work hard and get good grades (Brown, Clasen and Eicher 1986) as well as supply help and peer counseling (Ide et al. 1981), more often research has found that peers provide a positive model of behavior. In particular, students become more motivated by seeing others, especially those they believe to be like them, performing at higher levels or with superior skills (Festinger 1954).

Another mechanism may function at the school level. Schools with higher-achieving students may have more rigorous curriculum, and teachers may have higher expectations of student performance. Schools that serve advantaged, and often higher performing, students tend to have better school climate, improved school facilities, higher levels of parental support, more qualified teachers, and a variety of other qualities that might give advantages to all students regardless of their background (Raudenbush, Fotiu and Cheong 1998). This is partially because advantaged parents require and create such situations through their financial support and higher standards for performance and accountability (Kahlenberg 2001). These benefits can help individual students become better prepared and qualified for the transition to college.

In some schools, there is such a strong "college-going culture" that college going is assumed. Students in these schools do not make the decision of whether to go to college but rather focus their decision which college to attend (Grodsky and Riegle-Crumb 2010). A "college-going culture" can pervade a school's climate (Conley 2007; Roderick, Coca and Nagaoka 2011; Schneider 2007) and impacts how high schools allocate resources. High schools with more advantaged students tend to have more resources devoted to the college choice process, including but not limited to college counselors (Bryan et al. 2011; Engberg and Gilbert 2013; Hill 2008; Johnson et al. 2010; McDonough 1997; McDonough 2005; Perna, Rowan-Kenyon and Thomas 2008) and sophisticated software that can assist students in making college choices (Becker and Stephan 2011). Further, at some schools, school counselors dedicate more time to building relationships with colleges and universities (Hill 2008), and stronger relationships, measured by the number of postsecondary institutions that visit to recruit students, are associated with higher odds of college-going and attending selective institutions for individual students, net of individual student characteristics (Kim 2012).

Much of the impact of school contexts and peer groups occurs through social networks and relationships. Social networks are particularly important for obtaining information about college and exposure to a wider range of college choices, especially among low-income and minority students (Perez and McDonough 2008; Person and Rosenbaum 2006). Students are highly influenced by those they know who have gone to college before them, particularly parents (Avery and Hoxby 2004; Golden 2006), siblings (Avery and Hoxby 2004; Goodman et al. 2014), friends (Alvarado and Turley 2012), and schoolmates (Engberg and Wolniak 2010; Wolniak and Engberg 2007). Attending a high school where prior graduates have attended a wider range of institutions, particularly selective institutions, can influence students to consider a wider range of institutions in their own postsecondary search. Stanton-Salazar (2011) finds that middle-class peers provide access for less advantaged students to resources and opportunities, including information about college and help with college-admissions requirements. One form of information sharing happens through visits to college; the average number of college campus visits by families within a high school is positively associated with college-going rates and enrollment at selective institutions for all students, regardless of whether or not the individual student visited colleges (Kim 2012).

Broadly, there is a strong body of research that indicates that it is better to have higher-achieving and more advantaged peers. There is a positive relationship between average peer performance and individual performance, and having higher-achieving peers provides a context for a variety of benefits for all students.

“Frog Pond” Phenomenon in the Transition to College

In contrast to the findings in the “peer effects” literature, another line of research asserts a conflicting theory regarding peer contexts. Davis’ (1966) seminal work finds a negative relationship between peer academic aptitude and students’ aspirations, controlling for one’s own academic achievement. The “frog pond” perspective highlights the negative consequences of being evaluated by relative standing in a group regardless of group composition (Marsh 1987; Marsh and Hau 2003). Instead of being motivated by higher-achieving peers to improve their own achievement, Davis (1966) and others have argued that students instead temper their aspirations and career plans. As a result, he argues that it is better to have a less competitive peer group, namely to be the “big fish in the little pond.” From the “frog pond” perspective, besides absolute level of achievement, one’s relative rank is important for how one is evaluated (or evaluates oneself). As a result, Davis (1966) finds a negative association between peer achievement and individual aspirations.

While elite contexts or more advantaged schools may provide benefits to students, Crosnoe (2009: 711) cautions of the "hidden risks" of these schools, noting that "students evaluate themselves relative to those in their specific contexts, regardless of how that context 'ranks' in the larger world." Without the larger perspective of how the context compares externally, students will feel more important and confident in a "small pond" than a "large pond" net of their own achievement (Bassis 1977; Marsh and Hau 2003). Sociologists have extended this concept to include others' views of the self, not just self evaluations (Espenshade, Hale and Chung 2005). In this way, a context offering objective advantages might also bring some subjective risks.

The "frog pond" theory has been tested in other research. Sociologists found a tendency for school-average ability to be negatively associated with some educational outcomes, particularly academic self-concept (Marsh 1987), educational and occupational ambitions (Alwin and Otto 1977; Marsh 1991), advanced math and science course taking in high school (Crosnoe 2009) and standardized test scores and school grades (Crosnoe 2009; Marsh 1991). Declines in class rank have also been associated with acting out and misbehavior in class (forthcoming from Spenkuch et al.). These researchers argue that even class-level context matters; for example, students who in the top quarter of their class in English and in the lowest quarter in math are more likely to have a teacher report them as a problem in a math class.

In his book *David and Goliath*, Malcolm Gladwell (2013) makes a similar argument that attending the "best" school is not always the best choice for a given student. He describes a prospective science major who had the choice of attending either an Ivy League institution or a public, state-flagship institution. Undoubtedly, most would argue that it would be an easy choice as Ivy League institutions have high levels of resources, the most highly-touted faculty, and offer great prestige to its students and alums. However, Gladwell (2013) makes the counter-intuitive argument that this student may have been better off attending the state university. As a result of attending the more elite institution, the student dropped out of science coursework altogether because the competition in her courses was so high, and she felt inadequate. Gladwell argues that she would have been better off as a "big fish" at the less-prestigious school, where she would have had more confidence in her abilities and could have persisted as a science major. Broadly, he argues that there can be negative consequences to something that is ostensibly "better," in this case attending an academically selective and elite university.

Specifically related to the high-school-to-college transition, school-average ability is negatively associated with college plans (Alexander and Eckland 1977; Alwin and Otto 1977; Meyer 1970) and likelihood of attending college (Marsh 1991). According to the "frog pond" interpretation, this happens because higher quality schools have a greater competitive atmosphere, which depresses individual student performance and aspirations net of individual ability, socioeconomic status, and other factors.

Newer research in the area has used "frog pond" theory to consider the impact of relative rank on admissions to elite universities (Attewell 2001; Espenshade, Hale and Chung 2005). Two articles directly examine "frog pond" effects on college admissions, both focusing on elite college admissions. Attewell (2001) draws on accounts from former admission officers to describe the role that a students' class rank plays in the elite college admissions process. By running simulations using the evaluation formulas they describe, Attewell finds a "dramatic valedictorian effect," such that students at the top of their class are favored in their formula regardless of high school context. Therefore, he argues that students who attend high schools with large numbers of high-performing peers have more difficulty being admitted to elite colleges than similar peers who have higher class ranks because they attend less competitive high schools.

Espenshade, Hale, and Chang (2005) set out to test Attewell's assertions by using data from the National Study of College Experience. These data detail admissions information for three highly-selective private research universities. They confirm the "frog pond" theory and Attewell's simulations; net of academic achievement and demographic variables, students from more competitive high schools, measured by mean test scores, have a lower chance of being admitted to the three elite schools they studied. Their work confirms the notion that in some situations, it is better to be the "big fish" in the "small pond" – the most talented student among less talented peers.

Some research has investigated the rationale for these findings. One line of research follows Davis' analyses and finds that students' ambitions are altered based on their peer group. When students compare themselves to more academically advantaged and talented peers, they may temper their academic aspirations, potentially decreasing their likelihood of pursuing a postsecondary education. Alternatively, students may choose to apply to less-selective institutions as a result of their lower self-evaluation based on their peers. The research argues that students adjust their aspirations based on their peer context, regardless of how that context ranks in the larger society.

Some evidence suggests that having higher achieving peers impacts the allocation of school commodities such as placement into advanced or honors coursework. This is particularly relevant in schools where such course offerings are limited and students must compete for spaces (Mayer 2002; Schneider and Stevenson 1999). Following this logic, students in schools with higher-achieving peers are less likely to complete a college-preparatory curriculum (Alwin and

Otto 1977). Further, Crosnoe (2009) finds that low-income students make less progress in math and science coursework as the proportion of more-advantaged students increases. Similarly, when a limited number of As are awarded in each course, students must compete for those grades, resulting in lower rankings and perhaps worse outcomes for students who have more high-achieving peers (Mayer 2002; Schneider and Stevenson 1999). Overall, less-advantaged students face stronger competition if they are in high-socioeconomic status schools because those students are often better prepared for high school and have parents who know more about the high school system (Alexander, Entwisle and Olson 2007; Kelly 2009; Lareau 2004; Mickelson 2001). Given the importance of coursework and grades in college admission decisions (Hein, Smerdon and Sambolt 2013; Stevens 2009), particularly at selective institutions, the competition for these resources could indirectly impact students' chances of college admission.

The recent studies by Attewell (2001) and Espenshade, Hale, and Chung (2005) are primarily focused on how this phenomenon works for students applying to elite, Ivy League universities and institutions of similar prestige. These students also disproportionately attend elite, high-performing high schools. Admission to and experience of elite colleges is the subject of much sociological research (Attewell 2001; Espenshade, Hale and Chung 2005; Mullen 2010; Persell and Cookson 1985; Stevens 2009), news articles, and other trade books (Hernandez 1997; Steinberg 2002) because of the high prestige, educational and occupational benefits, and social networks students gain through attendance at such institutions (Brand and Halaby 2006; Rivera 2016; Zhang 2005).

However, only a small portion of high school students apply to or attend elite colleges; about half of new college students attend community colleges, which admit all high school graduates (Brint 2003; Dougherty 1994). Further, most four-year institutions admit the majority of students who apply; the average four-year institution admits 60 percent of applicants (Clinedinst, Hurley and Hawkins 2011) making them only slightly selective (Bowen, Chingos and McPherson 2009). The “frog pond” effect impacts the admission processes at elite institutions, but it is less clear whether that finding would translate to the transition to college for students who attend other, non-elite institutions.

Espenshade, Hale, and Chung (2005) acknowledge that frog pond effects may operate differently depending on the organizational setting, the type of evaluation or gatekeeping, and the resource or commodity at stake, but they do not go any further to evaluate other high school contexts or college admission procedures. However, there may be reason to believe that the “frog pond” effect might be more prevalent in CPS – because it is likely to occur in schools where resources are finite and people have to find ways to make decisions about who has access to resources (Crosnoe 2009; Marsh and Hau 2003).

This research engages the “frog pond” theory and “peer effects” research in two new ways. First, most of the prior research on frog pond effects focuses on the behaviors of the student, particularly changes in self-concept and ambitions, or the actions of external gatekeepers such as college admissions personnel. In contrast, this work aims to understand the impact of relative rank within a high school context on students’ math coursework, educational ambitions, and college application actions and choices.

Second, this work utilizes a sample that is very different that those used in prior work evaluating “peer effects” and the “frog pond” theories in the high-school-to-college transition. While Espenshade, Hale and Chung (2005) and Attewell (2001) focus on high-achieving students aiming to attend elite institutions, this research focuses on students in Chicago Public Schools. The district is made up of predominantly low-income and first-generation students who underperform compared to national averages on standardized tests (Stephan 2010). Furthermore, CPS students tend to apply to and enroll in colleges and universities that are much less selective (Roderick et al. 2008) than the elite institutions previously studied (Attewell 2001; Espenshade, Hale and Chung 2005). This research will test the relative strengths of the peer effects and frog pond theories using the case of admission and attendance at colleges of varying selectivity.

Research Questions

To contribute to our understanding of how relative position matters in relation to the high-school-to-college transition, this research will explore the following research questions:

1. To what extent does peer composition impact math course taking?
2. To what extent does peer composition impact educational aspirations?
3. To what extent does peer composition impact the likelihood that a student applies to a four-year postsecondary institution?
4. To what extent does peer composition impact the likelihood that a student applies to a selective postsecondary institution?
5. Across the outcomes listed above, what is the impact when peer composition is defined as a high school's mean composite ACT score? What is the impact when peer composition is defined as a student's class rank or relative position within their high school class?

Prior research has found "frog pond" effects in math course taking (Crosnoe 2009) and educational aspirations (Alwin and Otto 1977; Marsh 1991). While others have found "frog pond" effects in elite college admissions (Attewell 2001; Espenshade, Hale and Chung 2005), the research questions related to college applications have not been explored in previous research.

Data & Methods

Following other analyses using the same data (Roderick, Coca and Nagaoka 2011; Stephan 2010), I exclude students who attend alternative schools, such as those who are enrolled in special education and educational programs in jails. Further, students enrolled in charter schools are also excluded because grades and test scores are not available for those students. Like other analyses in this dissertation, students who are missing demographic information or data on their academic achievement or high school context are not included in these analyses. This leaves sample sizes of 13,004 for analyses on math courses, 9,877 for analyses on college enrollment, and 4,893 for analyses on educational aspirations, due to the lower response rate for the senior survey.

These analyses aim to understand the relationship between students' relative position and their access to advanced math, educational aspirations, and college application choices, while controlling for individual achievement and other important factors. Demographic characteristics and measures of academic achievement, including math courses taken, are from the Chicago Public School administrative records. School-level measures such as mean ACT composite score and class rank percentiles are computed using information from all students within each high school. Data on educational aspirations is taken from the senior survey that students complete at the beginning of their senior year. Information on the institutions to which students applied is captured on the senior exit survey, completed by graduating students in May of their senior year. These data, coupled with data from the Integrated Postsecondary Education Data System (IPEDS) and Barron's Admission Competitiveness Index, provide additional information about college sector and levels of selectivity. These analyses utilize IPEDS and Barron's data from 2008. All variables are described in Table 2.1.

Dependent Variables

These analyses look at the relationship between peer composition and students' likelihood of completing different types of college applications, while controlling for other relevant student-related factors. Two measures of student applications are analyzed, and they are described in more detail below.

1. The first outcome of interest is the level of math students are taking in senior year. Math courses taken are one factor that has been found to explain achievement differences among students (Persell 2000). Following Crosnoe (2009) and Riegle-Crumb, Farkas and Muller (2006), one set of regressions uses math level as a continuous variable. These prior researchers delineated ten levels of math coursework ranging from students who took no math coursework to students who took calculus. Among the CPS students in this data, very few were in the lowest math categories likely because students who would have completed little or no math coursework would have dropped out by the beginning of senior year. As a result, I combined some categories. These analyses use eight levels of math coursework: (0) no math, (1) pre-algebra or remedial math, (2) algebra I, (3) geometry, (4) algebra II, (5) advanced math (e.g., statistics), (6) pre-calculus or trigonometry, and (7) calculus.
2. Given that completing algebra II is a CPS graduation requirement (Chicago Public Schools 2018), a second math-related outcome of interest is whether or not students took advanced math. Here, I define advanced math as taking coursework beyond that required for graduation, namely advanced math, pre-calculus or trigonometry, or calculus, compared to those who complete only lower levels of math.

3. The third dependent variable of interest is students' educational aspirations because plans to attend college are a key part of the college transition process (Hossler and Gallagher 1987; Radford 2013). Students were asked about their educational aspirations in the senior survey distributed in the beginning of their senior year.[3] Specifically, students were asked, what is the highest level of education you plan to complete? In response to the question, students choose between the following response options: (1) high school diploma, (2) a technical/vocational school certificate, (3) two-year college degree (AA), (4) four-year college degree (BA/BS), or (5) a graduate degree (MD/MA/PhD/MBA). One set of analyses use this outcome as an ordered variable.
4. The next outcome of interest is whether or not students have educational plans to complete at least a bachelors or four-year degree. Using the educational aspirations variable, I created a binary variable, comparing those who aspire to a bachelor's degree or higher with those who aspire to lower levels of education.
5. Similar to the last dependent variable, I was interested in students who aspired to graduate degrees. Using the educational aspirations variable, I created a binary variable, comparing those who aspire to a graduate degree compared to those who aspire to a bachelor's degree or lower levels of education.
6. The sixth outcome of interest is whether or not students submit at least one application to a four-year institution. In these analyses, four-year institutions are defined as institutions that offer bachelor's degrees and are categorized in IPEDS as a four-year institution.

[3] Unfortunately, the senior survey has a relatively low response rate, especially in comparison to the senior exit survey that students complete at the end of their senior year. As a result, the number of students included in these analyses is drastically reduced.

7. The final dependent variable of interest is whether or not students submit at least one application to a selective institution. Barron's Profiles of American Colleges provides categorizes institutions by selectivity based on the average academic achievement of students admitted, specifically average GPAs, standardized test scores (ACT and/or SAT scores), and average class rank as well as the percentage of students who apply who are offered admission to the institution. While Barron's index utilizes six categories, I follow Roderick et al. (2008) in reducing the categories so that they are more relevant to CPS students (see conditional logit chapter for further conversation on this and Figure 2.1). For these analyses, "selective" and "very selective" are categorized together to create this dependent variable. Generally speaking, selective institutions admit students with at least a 2.5 GPA and 18 ACT score; however, Roderick et al. (2008) note that the GPA qualifications for a selective institution can fluctuate depending on ACT score and vice versa.

CPS has a number of initiatives to improve postsecondary attendance by its graduates. One way to improve postsecondary attendance is to improve the rigor of the coursework taken by CPS graduates and to encourage them to aspire to complete postsecondary degrees. Further, both applying to a four-year institution and applying to a selective institution, particularly for students whose academic qualifications are a match to the institution's (Bowen, Chingos and McPherson 2009; Roderick et al. 2008), are actions that CPS has promoted to high school counselors and students. As noted in the models of college choice (Hossler and Gallagher 1987; Radford 2013), all of these goals are associated with higher rates of earning a college degree (Bowen, Chingos and McPherson 2009; Dougherty 1994).

Independent Variables

The key predictor of interest is a student's academic standing compared to peers at their same high school. There are multiple ways to consider students' relative position to their peers, and I utilize two different variables in my analyses. They are detailed below.

1. The first measure is relative class rank. Each student with a GPA was given a rank within their high school class. Students with the highest GPAs were given the rank of one with the others following through the entire class. To make rank percentiles, I divided the class rank by the class size, and then I subtracted that number from one so that higher numbers indicated a higher position in the class. Finally, I multiplied that number by 100 so that the numbers range between zero and 100, representing class rank percentiles. The percentiles are then grouped into the following deciles: top 10 percent, 11^{th} to 20^{th} percentiles, 21^{st} to 30^{th} percentiles, 31^{st} to 40^{th} percentiles, and 41^{st} to 50^{th} percentiles. The bottom 50 percent are the omitted category.
2. The second measure of peer composition used is the mean ACT score of the high school. This measure is often used in research of the impacts of peer quality. Further, standardized test scores are often what the public thinks of as the measure of school quality, likely influenced by federal policies such as No Child Left Behind and their use in more commonly accessible domains like school score cards and home realty information (Black 1999; Coe 2003; Figlio and Lucas 2004; Holme 2002; Weininger 2014).

Following prior research (Roderick et al. 2008; Stephan 2010), I include a number of other independent variables that have been found to impact students' application choices. Each variable included is described in more detail below:

1. Gender: This variable is included in analyses as an indicator for being female. Males are the omitted category.
2. Race and Ethnicity: There are four main racial categories represented in CPS: African American and Black, Hispanic, White, and Asian. For comparison purposes, I use White students as the reference category, and the other three racial and ethnic groups are included in the models as dummy variables.
3. Free or Reduced-Price Lunch Status: Along with mother's level of education, these variables serve as a proxy for students' socioeconomic status. Students who receive reduced price lunch come from families whose household income falls below 185 percent of the federal poverty level, and students who receive free lunch come from households who fall below 130 percent of the federal poverty level. More specifically, in 2008-2009, students who came from a household of four would have a household income of less than $40,000 to qualify for reduced price lunch. In these analyses, I include an indicator for students who do not receive free or reduced lunch. Students receiving free lunch are the omitted category because they make up the majority of CPS students.
4. Mother's Education: Mother's level of education is asked of students on the senior exit questionnaire.[4] This variable is informative both as a proxy for students' socioeconomic status but also of their family experience with college and the college application process. This is included as a series of binary variables with the reference category as students whose mothers have less than a high school diploma.

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[4] Father's level of education is only asked of students on the senior survey, which has a low return rate. As a result, it is not included in these analyses.

5. Coach School: In the 2008-2009 school year, 11 of the 117 high schools in the district had postsecondary coaches. This staff member's responsibility is to guide students through the college application and enrollment processes (Stephan and Rosenbaum 2012). Students at these schools received additional support in the college search, application, and selection processes.[5] Previous work has found that having a postsecondary coach is associated with students applying to college and attending a college or university further from home (Naffziger 2011; Stephan 2010). This is likely because students at schools with postsecondary coaches get more specialized advice and attention in the college process, and students at other high schools rely on solely on counselors to guide them through the process of applying to and selecting postsecondary institutions even though counselors have a variety of other tasks for which they are responsible (Johnson et al. 2010; McDonough 1997; Moles 1991; Parsad et al. 2003). In the analyses, I include a binary variable for the presence of a postsecondary coach.
6. Excessive Absences: I created a binary variable by defining excessive absences as having more than ten absences in the fall semester of the senior year. Absences may have a direct impact on academic and college-related outcomes.
7. Cumulative GPA: Students' cumulative GPA is included in the models as a metric of their academic success. GPA is included in the model as a categorical variable ranging from those whose average grades are better than a mix of As and Bs (above a 3.5 GPA) through those who average grades are Ds and Fs (a 1.0 GPA or below), with the

[5] The schools that had coaches in the 2008-2009 school year were not schools with particularly high-achieving students, on average. There was no correlation between having a postsecondary coach and mean ACT score (Stephan 2010).

categories in between representing intervals of 0.5 in GPA. Students who earned a C average (2.0 to 2.5 cumulative GPA) serve as the reference category.

8. Composite ACT Score: In the state of Illinois, all students are required to take the ACT in the spring of their junior year as part of the state-mandated standardized testing (Klasik 2013). For these analyses, composite ACT scores are broken into five categorical groups: less than 17, 17 to 19, 20 to 22, 23 to 26, and 27 or higher. The category containing the lowest composite ACT scores, those less than 17, are the reference category as they are the largest group. Although a score of 17 would rank at the 30th percentile nationally (ACT 2016), fewer than half of CPS students scored a 17 or higher (Easton, Ponisciak and Luppescu 2008).

Analytic Approach

This chapter primarily uses logistic regression to analyze the relationship between peer composition and college application outcomes because they are binary outcomes. These analyses are similar to the analytic strategy used by Espenshade, Hale, and Chung (2005). To investigate the relationship between school context and the level of math courses taken, I utilize a linear regression model and math levels as a continuous variable, following prior work by Crosnoe (2009) and Riegle-Crumb, Farkas and Muller (2006). A separate set of analyses utilizes logistic regression to estimate odds ratios on taking advanced math courses. Finally, this chapter also uses an ordinal logistic regression model on educational aspirations because the outcome is ordered. Again, separate logistic models estimate odds ratios for having four-year degree plans and for having plans to obtain a graduate degree.

Results

In all tables of results, Models 1 and 2 use school-level average composite ACT score as the measure of peer composition, which is more typical of the literature examining peer effects. In contrast, Models 3 and 4 uses categories of students' class rank percentiles as the measure of peer quality, which is more typical in the literature investigating frog pond effects. The final models in each table shows the models with both measures of peer context.

The first two sets of analyses look at the relationship between school context and the highest level of math taken by students. Following Crosnoe (2009), the first set of analyses regresses the independent variables on a continuous measure of math course levels: (0) no math, (1) pre-algebra or remedial math, (2) algebra I, (3) geometry, (4) algebra II, (5) advanced math, (6) pre-calculus or trigonometry, and (7) calculus. Table 2.2 presents these results. Model 1 shows that there is a positive relationship between school-level mean ACT and math level, net of the other individual-level variables in the model. Females, Asians (compared to white students), and students with mothers who have a graduate education (compared to those whose mothers have less than a high school degree) are associated with taking higher levels of math in high school, net of the other variables in the model.

Model 2 adds in GPA categories and student attendance. Both of the new sets of variables included are statistically significant. Excessive absences are associated with lower levels of math achievement. In contrast, higher levels of GPA are associated with higher levels of math course taking. These variables stay consistently significant and in the same direction throughout the models presented in Table 2.2. The inclusion of these variables does not significantly change the relationship between school-level mean ACT and math level; however, the coefficient for females becomes negative. Asian students are still more likely to take higher levels of math, and

African American and Black students are now more likely to take higher levels of math (compared to white students), net of the variables in the model.

Model 3 includes individual-level ACT score categories. When included, school-level ACT remains statistically significant and positive although the coefficient is smaller. Black and Asian students continue to be more likely to take higher levels of math, net of the variables in the model, and being female is no longer associated with higher levels of math. Grade point average and individual-level ACT score are both positively associated with higher levels of math courses.

Models 4 and 5 utilize class rank percentiles as the measure of school context. In Model 4, being in a higher class rank percentile is associated with higher levels of math course taking. The same is true for individual-level ACT score, being Asian, and having a mother with a graduate degree. Excessive absences is associated with lower levels of math course taking. Model 5 includes individual-level student GPA into the regression model, which is positively associated with math level and statistically significant. The inclusion of these variables changes the relationship between class rank percentile and math course taking. In particular, the coefficients for each of the variables are negative, and for three of the categories, the differences are statistically significant (20 to 30th percentiles, 30 to 40th percentiles, and 40 to 50th percentiles compared to those in the bottom 50th percentiles). Holding constant individual-level achievement, class rank percentile is negatively associated with math levels.

Finally, Model 6 presents the full model with both school-level ACT score and class rank percentiles. Here school-level mean ACT is positive and statistically significant while class rank percentiles are not statistically significant. The results from these analyses point to positive peer effects in the relationship between school context and math course taking. Having peers with higher ACT scores increases the likelihood that students will take higher levels of math coursework. When controlling for individual achievement, having a higher class rank is not associated with math course taking (or the relationship is slightly negative). Both findings indicate that it might be better to have higher achieving peers with regards to math course taking.

Although other researchers have used math course levels as a continuous variable (Crosnoe 2009; Riegle-Crumb, Farkas and Muller 2006), I also checked these analyses using math levels as a binary variable – comparing those who take coursework above the minimum for high school graduation (advanced math or higher) compared to those who end their coursework at algebra II or below. Presented in Table 2.3, these logistic regression analyses broadly show the same results as the continuous results. School-level mean ACT is positively associated with taking advanced math coursework in Model 1; however, that association is no longer statistically significant when controlling for student-level ACT scores in Model 2.

Similar to the results in the linear regressions, class rank percentile is associated with advanced math course taking but the relationship is no longer significant when adding in GPA categories (see Models 3 and 4). Across all models, GPA is positively associated with advanced math course taking. In Model 6, school-level mean ACT is positively associated with advanced math course taking. While some class rank percentile groups have positive coefficients, they are not statistically significant.

Table 2.4 presents the ordinal logistic regression results on educational aspirations. Models 1 and 2 use school-level mean ACT scores as the measure of peer composition. In both Model 1 and Model 2, school-level mean ACT is positive and statistically significant. Individual-level measures of ACT score are also statistically significant when included in the regression in Model 2. These results point to the validity of positive peer effects; school-level ACT score is positively associated with educational aspirations.

Models 3 and 4 uses class rank percentiles as the measure of peer composition and students' relative position within that composition. In Model 3, higher class rank percentiles are associated with higher levels of educational aspirations. However, when GPA is entered into Model 4, the being in the top half of your high school class is associated with lower odds of having higher educational aspirations, net of the other variables in the model. The GPA categories are all statistically significant and positive.

Model 5 includes both measures of school peer context: school-level mean ACT and class rank deciles. In the final model, school-level mean ACT is positive and statistically significant providing evidence for positive peer effects. In the same model, there is also some evidence that it is best to be the in the top ten percent of your high school class. Being in the top ten percent is associated with being in a higher category of educational aspirations by a factor of almost 1.6. When controlling for individual level academic characteristics, being in the top ten percent of a high school class provides insight into a possible frog pond effect. Here there is some evidence that it is better to attend a high school where you can be at or near the top of your class, controlling for school-level mean ACT scores.

Across the models in Table 2.4, the relationship between the demographic variables and educational aspirations remain consistent. Being female is associated with higher educational aspirations. Having a mother who has attended some college, who has a bachelor's degree, or who has a graduate degree is also associated with higher levels of educational aspirations at statistically significant levels. Interestingly, having a mother with a two-year degree is not associated with higher levels of educational aspirations. It is also interesting that students with excessive absences (ten or more) have higher educational aspirations, controlling for the other variables in the models.

Table 2.5 and Table 2.6 also investigate the relationship between school peer composition and educational aspirations. Table 2.5 presents logistic regression results on whether or not students have aspirations to achieve a bachelor's degree or more education. Similarly, Table 2.6 presents logistic regression results on whether or not students have aspirations to achieve a graduate degree compared to the lower levels of education. Broadly, both tables show similar patterns to the ordinal logistic model presented in Table 2.4.

In Table 2.5, school-level mean ACT is associated with higher odds of aspiring to a bachelor's degree or higher levels of education in Models 1 and 2. In Model 3, higher rank deciles are associated with higher odds of aspiring to at least a bachelor's degree. Again, once GPA is entered into Model 4, being in a higher rank decile is no longer associated with higher educational aspirations. In Model 4, having a 3.5 GPA or higher is associated with higher odds of aspiring to a bachelor's degree compared to having a C-average. The final, full model (Model 5) shows a positive and statistically significant relationship between school-level ACT score, indicating a benefit of having higher achieving peers. Additionally, the model shows some indication that there is a frog pond effect. Being in the top ten percent of your high school class is associated with higher odds of planning to obtain a bachelor's degree by a factor of almost 1.9.

Table 2.6 displays similar patterns to the other models exploring the relationship with educational aspirations, except it regresses the variables on whether or not students have plans to attend graduate school. In Model 5, school-level mean ACT score is positive and statistically significantly associated with planning to earn a graduate degree. Students' GPA and ACT scores are positively associated with plans to attain a graduate degree. In contrast to the prior findings on educational aspirations, being in the top ten percent in the high school class is not statistically significantly associated with plans for a graduate degree. Generally, having a better individual-level academic record as well as attending a school with higher-achieving students, as measured by school-level mean ACT score, are associated with higher odds of plans of attaining a graduate degree, largely pointing to the validity of positive peer effects.

The final two tables regress the same sets of independent variables on two measures of college application choices. Table 2.7 shows the results for the four logistic regression models to test the association between the two measures of peer composition and applying to a four-year institution, while controlling for demographic characteristics, academic achievement, and other relevant school characteristics.[6] In Model 1, school-level mean ACT is the metric of peer quality and is positively associated with the odds of applying to a four-year institution. A one-point increase in school-average ACT score is associated with an increase in odds of applying to a four-year institution by a factor of almost 1.2. Model 2 shows that school-level mean ACT score is still positively associated with the outcome at a statistically significant level even when controlling for individual-level ACT score categories. In this model, a one-point increase in school-average composite ACT score is associated with an increase in odds by a factor of 1.1. In line with the findings in the peer effects literature, having higher-achieving peers is associated with a positive postsecondary outcome.

In Models 3 and 4, class rank percentiles are used as the measure of school peer quality. In Model 3, the class rank percentiles are positively associated with higher odds of applying to a four-year institution. In particular, being in the top ten percent of the high school class is associated with an increase in odds of applying to a four-year institution by a factor of 6.6, compared to students who are in the bottom 50 percentiles. Model 4 includes individual-level

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[6] Other models, not presented here, included measures of support students received particularly around completing applications. However, they were taken out as they were not statistically significant, and they did not change the other coefficients in any meaningful way.

grade point averages. These categorical variables are strongly associated with the odds of applying to a four-year institution; not surprisingly, having a higher GPA increases the likelihood of applying to a four-year institution. When GPA is included in the model, higher class rank percentiles are associated with lower odds of applying to a four-year institution. Being in the top ten percent is associated with a decrease in odds of applying to a four-year institution by a factor of 0.5, compared to students who are in the bottom 50 percentiles. Similar patterns hold for students in the top three deciles of class rank compared to those in the bottom 50 percentiles.

Model 5 includes both measures of school peer context. In this model, school-level mean ACT is associated with increased odds of applying to a four year institution by a factor of 1.1. In contrast the class rank percentiles are not statistically significant in this full model. These results point to the influence positive peer effects and show less support for the “frog pond” effects.

In Table 2.7, black students and Asian students are associated with higher odds of applying to four-year colleges and universities compared to their white peers in all models. Additionally, being Hispanic is associated with higher odds in the models that control for school-level mean ACT. Students with higher levels of academic achievement also have higher odds of applying to four-year institutions. This particularly holds true for the categorical measures of GPA. Similarly students with higher ACT scores also have higher odds of applying to a four-year college; however, this does not hold true for those in the highest ACT category (scores of 27 or higher) across all models.

Table 2.8 presents a logistic regression on the binary variable of whether students applied to a selective institution. In Models 1 and 2, school-level mean ACT is associated with higher odds of applying to a selective institution by a factor of 1.2 and 1.1, respectively. School-level mean ACT score remains statistically significant even when controlling for the categories of individual ACT scores, which are also positively associated with the outcome and statistically significant. Generally, the findings of the positive peer effects literature holds true here.

Models 3 and 4 utilize class rank percentiles as the measure of class rank percentiles to estimate the impact of students' relative positions. Similar to previous findings, class rank percentiles are positively and significantly associated with the odds of applying to at least one selective institution. However, these categorical variables become negatively associated with the odds of completing an application to a selective institution once individual-level grades are included in the model; one category, representing the 10 to 20th percentiles in class rank, is statistically significant and associated with lower odds of applying to a selective institution. Controlling for individual academic achievement, the negative association between class rank percentiles and applying to a selective institution seems to validate the positive peer effects literature. If the frog pond theory held true in this case, students in the higher rank percentiles – the "big fish" – would have an increased likelihood of applying to a selective institution.

Model 5, which includes both school-level mean ACT score and class rank percentile, finds results for both positive peer effects and "frog pond" effects. In particular, school-level mean ACT score is positively associated with higher odds of applying to at least one selective institution net of the other variables in the model. The class rank percentiles are also positive and statistically significant when controlling for individual achievement and school-level ACT score. This provides evidence that net of the other variables, having a better rank relative to your classmates is positively associated with applying to a selective institution. In Model 5, being in the top ten percent of your high school class is associated with higher odds of applying to at least one selective institution by a factor of almost 1.9.

Discussion

Sociologists have long argued that social contexts matter. Bourdieu (Bourdieu and Wacquant 1992) argues that an individual's actions cannot be fully understood except in relation to the social context in which those actions occur. To that end, much educational research has investigated the effects of class and school composition on student outcomes (Coleman 1966; Jencks and Mayer 1990; Rumberger and Palardy 2005).

Following Espenshade, Hale and Chung (2005), these analyses test the positive peer effects literature and the "frog pond" theory using two measures of school peer quality, school-level mean ACT scores and relative class rank percentiles. Although both roughly represent peer quality, they measure slightly different things. School average ACT scores measure school-level achievement, while class rank percentile more specifically indicates a student's relative position among peers with regards to their grade point average. Class rank percentile is sometimes equated to a measure of peer quality, when analyses control for individual achievement (Espenshade, Hale and Chung 2005).

Broadly, these results point to strong positive peer effects. Across all outcomes and all models, school-level mean ACT scores are positively and significantly associated with better outcomes. Students in schools with higher average achievement are more likely to take higher levels of math coursework, have higher educational aspirations, and have higher odds of applying to four-year and selective institutions, net of the other variables in the models. These findings are consistent with other research pointing to the benefits of having higher-achieving peers.

For only two outcomes are there any indications that "frog pond" effects may operate. In the full model, which includes the measure of school-level mean ACT score, having a higher class rank is associated with higher educational aspirations. In particular, being in the top ten percent of the high school class is associated with higher odds of planning to earn a bachelor's degree. The same holds true for the ordinal measure of educational aspirations. The other outcome where evidence of "frog pond" effects exist is whether or not students submit applications to selective institutions. In this case, we see more consistent positive impacts of higher class rank percentiles – not just for the top ten percent, net of the other variables in the model. As mentioned previously, in both cases, the models where top rank percentiles are positively associated with educational outcomes both include the other measure of peer quality.

While Espenshade, Hale and Chung (2005) and Attewell (2001) find evidence of "frog pond" effects, this research finds limited evidence to support it. There may be a few explanations for the differences in outcomes. First, the prior research focused on admission to elite, private institutions. In contrast, the research here looked at a wider variety of educational outcomes. Specific to the college process, these analyses focused on application choices to four-year institutions and to selective institutions. Admissions practices at elite institutions may have preferences for valedictorians or other students who rank highly in their high school class, but whether or not to apply to a four-year institution is less likely to be impacted by students' relative rank. And only in the final model is there an impact for applying to a selective institution, but it does exist.

These results point to the possible importance of scarcity in the outcome for finding "frog pond" effects. Admissions to selective institutions is by definition selective, and so admissions officers look for ways to differentiate students. And students may only feel like they could be competitive applicants to selective institutions if they rank highly compared to their peers. In contrast, a large proportion of four-year institutions are not selective (Clinedinst, Hurley and

Hawkins 2011); therefore, students' relative rank may have less impact on their evaluation of whether or not they should apply.

Further, the high school contexts differ dramatically. Whereas the students in the prior studies primarily attended elite high schools or schools where students were relatively high-achieving, the socioeconomic and academic context within CPS differs greatly. These students are predominantly low-income, minority, and the first in their families to attend college. In these schools, where academic achievement is lower on-average, the results point to the positive aspects of having higher achieving peers, and it appears that the "hidden risks" of having a lower class rank do not mostly materialize. Future research could test the mechanisms through which the benefits of higher-achieving peers work, whether it be building a college-going culture, positive modeling, or other opportunities.

CHAPTER 3: CHICAGO PUBLIC SCHOOLS' THREE KEY COLLEGE ACTIONS: UNDERSTANDING STUDENT COMPLETION AND ITS IMPACT ON COLLEGE ENROLLMENT PATTERNS

Introduction

Virtually all high schools students now say that attending college is their next step after high school (Rosenbaum 1997; Schneider and Stevenson 1999), and almost 85 percent of U.S. tenth graders plan to earn a bachelor's degree or higher (Goyette 2008; Reynolds and Pemberton 2001). Over the last three decades, students have increased their educational expectations regardless of their socioeconomic status, racial background, family experience with college, or academic achievement (Fry 2010; Jacob and Wilder 2010). Students, who in past generations would not have considered college as an option, increasingly see college as their next step after high school graduation.

Although disadvantaged students have the desires to enroll in college at similar rates as their more advantaged peers, they are less likely to turn those aspirations into reality (Ellwood and Kane 2000; Goldrick-Rab 2006; Goldrick-Rab, Carter and Wagner 2007; Holland 2014). When they do enroll in college, these students are more likely to enroll in community colleges (Dougherty 1994; Lovenheim and Reynolds 2010; Stephan, Rosenbaum and Person 2009), more likely to enroll part-time (Stratton, O'Toole and Wetzel 2004), and are less likely to enroll in a postsecondary institution immediately after high school (Bozick and DeLuca 2005; Rowan-Kenyon 2007). All are decisions that lead to lower likelihoods of degree completion (Bozick and DeLuca 2005; Dougherty 1994; Dougherty and Kienzl 2006; Kane and Rouse 1995; Leigh and Gill 2003; Pascarella and Terenzini 2005; Reynolds 2009).

Disadvantaged students who want to attend college face two major challenges in navigating the college process. The first is the soaring costs of a college education; increases in tuition costs outpace inflation as well as increases in the median household income and disposable per capita income (Fitzgerald and Delaney 2002). With declines in state and federal funding, the costs to students and families have skyrocketed (Gladieux 2002; Heller 2002b). Even with high tuition prices, low-income parents often overestimate college costs and are more likely to do so than their higher-income peers (Grodsky and Jones 2007; Perna 2004a).

Regardless of the availability of financial aid, the “sticker price” of colleges is very influential in student decisions to pursue and attend college. Specifically, college-going rates decrease by a rate of roughly three to five percentage points per $1,000 in price increase in tuition (Dynarski 2003; Heller 1996b; Kane and Spitzman 1994; Manski and Wise 1983). Not surprising, low-income and minority students are more sensitive to tuition price increases than their relatively better resourced peers (Adelman 2002; Dynarski 2000; Long 2004; Nutting 2008; Terenzini, Cabrera and Bernal 2001).

Although financial aid is available to students, the process for obtaining financial aid is complex and diffuse (Stephan and Rosenbaum 2009). The availability of financial aid, process for applying, and probability of receipt are not well understood by students and families (Avery and Hoxby 2004; Dynarski and Scott-Clayton 2006; Horn, Chen and Chapman 2003; King 2004; Perna 2004a; Perna 2006b). The complexity of the financial information required for aid applications may be especially difficult for disadvantaged students to navigate, particularly those whose parents do not speak English or those who are less educated or financially experienced (Avery and Kane 2004; Dynarski and Scott-Clayton 2007). The difficulty of completing the financial aid application and the burden of completing multiple documents can limit students’ searches and application choices (King 2004). These students may effectively avoid schools that they cannot afford based on the stated tuition price.

A second issue facing disadvantaged students is that information on how to apply to college and how to finance college is not equally distributed. Like most types of "college knowledge," socioeconomically disadvantaged students and parents are less aware of application deadlines, components of a strong college application, and how to search for an appropriate set of institutions (Auerbach 2004; Bell, Rowan-Kenyon and Perna 2009; Holland 2014; McDonough 1997; Sandefur, Meier and Campbell 2006). The lack of "college knowledge" is particularly relevant when considering the financial aid process (Grodsky and Jones 2007; Horn, Chen and Chapman 2003). Students and families must navigate a variety of sources and applications for aid. Complicating the matter still are the different types of aid that students can receive ranging from scholarships and grants (also known as gift aid), which are not to be paid back, to loans and work study, which come with repayment or work obligations. Given the complexity, it is not surprising that families struggle to understand the financial aid system. For prospective college students, the complexity can be overwhelming and the receipt of aid can be uncertain leaving students wondering until late in the process whether college will be affordable for them (Dynarski and Scott-Clayton 2006; Kane 1999; Stephan and Rosenbaum 2009).

In this new college-for-all era, a primary challenge remains – disadvantaged students are much less likely to be able to turn their college plans into reality. With fewer financial resources and less college knowledge, disadvantaged students need additional guidance and support, particularly in navigating how to pay for college, in order to successfully enroll in a postsecondary institution. Increasingly, schools, and particularly school counselors, are responsible for shepherding students through the college application and selection processes especially in schools where students have less assistance from home in these efforts (McDonough 1997; Plank and Jordan 2001). However, college counseling is only one of many tasks given to school counselors (Kirst and Venezia 2004; Moles 1991; Parsad et al. 2003). As a result, some schools and districts have tried to simplify the process of how students are advised and guided through the college admission and selection process. And we do not know much about how schools handle this responsibility and what the best practices are for improving the college outcomes of low-income disadvantaged students.

Chicago Public Schools has developed a model for improving the college outcomes of its largely low-income, minority, and first-generation student body. The district identified tasks they believe will improve students' likelihoods of receiving financial aid, thereby making college affordable and achievable. Although the model has been in place for awhile, not much is known about how the district's students are navigating this new terrain and whether the strategies aimed at improving their access to financial aid and their college outcomes are effective or not. This research will investigate how the model put together by CPS impacts the college access of its students and more largely its potential impact on the socioeconomic enrollment gaps that are a problem nationally.

Chicago Public Schools' Three Key College Actions

The process of applying to and enrolling in college, particularly a four-year institution, is complicated. Students must complete a number of steps, often in a particular order (Avery and Kane 2004; Klasik 2012). However, most college choice models do not describe the steps in detail (e.g., Hossler and Gallagher 1987), and few studies have investigated the number of discrete tasks students need to complete and how the completion of key tasks impacts their chances of postsecondary enrollment (for an exception see Klasik 2012). Further, each of these tasks vary in the time, effort, and costs to students and families. With each successive task, students weigh the costs and benefits of completing the task in order to improve their chances of enrolling in college. Thus, the decision-making extends beyond the one-time assessment that the human capital models assume. Rather, this model takes into consideration that students may make varying choices about each task because of its costs and benefits, perceived or actual.

To combat the issues related to financing college, Chicago Public Schools has identified three key actions that they require that students complete. They believe that these are key actions that students need to take in order to improve their chances of enrolling in a postsecondary institution, particularly four-year colleges and universities.[7] By compressing the college process into three key college actions, the school district is following a line of research on financial aid and grant programs showing that simpler and easier to understand programs have stronger impacts on college-going (Dynarski 2000; Dynarski and Scott-Clayton 2007). Given that the majority of CPS students qualify for free or reduced price lunch (86 percent of the graduating class of 2009, author's calculations), all three key college actions are also geared towards improving students' chances of receiving financial assistance to attend college. Each of these college actions, and their implications for financial aid, will be described in more depth.

1. Complete three or more college applications

It may seem obvious that students must apply to colleges in order to have a chance of enrolling in one. Not surprisingly, research finds that this step is crucial in the college enrollment process and a key predictor in four-year college enrollment (Klasik 2012). Further, applying to more colleges may increase students' likelihood of enrolling. A study of low-income students in

[7] CPS has encouraged students to enroll in four-year colleges and universities as opposed to community colleges because community colleges, particularly those most often attended by CPS students, have lower completion rates than four-year colleges. In particular, the City Colleges of Chicago have abysmally low completion rates of approximately 10 percent (IPEDS).

Illinois found a positive association between applying to more colleges and attending college full-time (Illinois Student Assistance Commission 2003).

However, some students who aspire to attend a four-year institution do not complete this crucial step, and the percentage who do not complete this step is particularly high among disadvantaged students (Avery and Kane 2004; Cabrera and La Nasa 2000a; Hurtado et al. 1997; Roderick, Coca and Nagaoka 2011), and has a direct relationship with student socioeconomic status (Cabrera and La Nasa 2000a). Comparing samples of urban and suburban students, Avery et al. (2004) found that only 18 percent of their urban sample had applied to a college or university by the fall of their senior year (when many four-year colleges have application deadlines). Among CPS students, only 59 percent of students who aspired to attend a four-year institution ever applied to one (Roderick, Coca and Nagaoka 2011), with Hispanic students applying at even lower rates. Even among a national sample of students who are minimally qualified to attend college and have four-year college aspirations, Klasik (2012) finds that only 77 percent apply to a four-year institution. So although a crucial and maybe obvious step, it is not one that all students complete.[8]

Applying to multiple colleges, particularly three or more colleges, improves students' chances of being admitted to more than one institution and thereby, improves their chances of being able to compare offers of financial aid prior to making an enrollment choice. Although some forms of federal and state aid are available regardless of institution attended, a large portion of financial aid comes directly from colleges and universities. In fact, college-provided grants and scholarships are the largest source of gift aid to undergraduates (Baum and Steele

[8] Although many four-year colleges and universities are not selective in their admissions processes, they still require students to submit an application. However, they tend to be less strict about the timing and deadlines for applications than more selective institutions.

2007). In 2007, grants from colleges and universities almost equaled the amount available from federal and state governments combined ($21 billion and $24 billion respectively, Baum, McPherson and Steele 2008).

In particular, private universities have high tuition but also provide high discounts in the forms of financial aid and other scholarships. Further, the amount of aid provided by colleges has been increasing. As of 2013, private colleges and universities were discounting 46 cents for every dollar that they charged in tuition for first-time, full-time freshmen (McPherson and Schapiro 2002; Rivard 2014). Students are less likely than ever to pay the full sticker price for their college education. But they must apply to colleges to be eligible for institutional aid and in many cases, they must also complete the Free Application for Federal Student Aid (FAFSA), which is described in more depth in the subsequent section.

2. Complete the Free Application for Federal Student Aid (FAFSA)

CPS requires that students complete the Free Application for Federal Student Aid (FAFSA). The FAFSA is the primary form required for federal and state financial aid, including grants and loans. Further, many postsecondary institutions require it for need-based institutional aid.[9] Thus, students must complete this task because it is crucial for receipt of financial aid from multiple sources. FAFSA completion is positively associated with enrollment at a four-year institution. In a national study, students who completed the FAFSA had 1.55 times higher odds of enrolling in any four-year college than students who did not apply for financial aid (Klasik

[9] About 400 colleges and universities also require that students complete the College Scholarship Service PROFILE, a financial aid application distributed by the College Board (accessed February 21, 2018, https://profile.collegeboard.org/profile/ppi/participatingInstitutions.aspx). Colleges and universities require it in addition to the FAFSA, and it has two major differences. First, it is more detailed than the FAFSA; for example, the PROFILE takes into consideration cash gifts from family members, medical bills, and school costs for younger children when considering a family's ability to pay for college. In contrast to the FAFSA which is free to submit, the PROFILE costs $25 to create and an additional $16 for each institution it is sent to beyond the first one. Although fee waivers are available, the cost associated with it can be prohibitive to students.

2012), and FAFSA completion also has a positive association with college persistence (Bettinger et al. 2012).

Although a crucial task for students and families to complete in order to finance a college education, many students do not complete the application even when they are very likely to qualify for grants and loans. In the 1999-2000 school year, 1.7 million students who were enrolled in colleges and came from low-income or middle-income families did not complete the FAFSA even though they likely would have been eligible for federal and state grant aid (King 2004). This discrepancy in completion is primarily because the FAFSA is a complicated form.[10] It includes more than 100 questions on a range of topics such as earnings, savings, educational attainment of parents, and receipt of government benefits. Although much of the information is similar to that required on tax returns, the FAFSA is longer than most tax forms; in particular, it is four times longer than IRS Form 1040EZ and, on average, takes families 10 hours to complete (Dynarski and Scott-Clayton 2006; Dynarski and Scott-Clayton 2007).

In addition, students who are still dependents of their parents must include their parents' financial information. At minimum, the form requires that parents furnish their financial information to their child, but often students need parental assistance in interpreting and completing the form. Some parents are unable to provide help with the form because they have a low level of financial literacy or because English is not their first language[11] (Avery and Kane 2004; Dynarski and Scott-Clayton 2006; Dynarski and Scott-Clayton 2007).

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[10] Although part of CPS policy, not all students can complete the FAFSA. Students who are not United States citizens or permanent residents, including undocumented immigrants, are not eligible to complete the FAFSA. They are therefore disqualified from all forms of aid from federal and state governments and in some cases, institutional aid. In their report, Roderick, Coca, and Nagaoka (2011) estimate that 14.5 to 17.2 percent of Latino students are undocumented; however, even this estimate does not explain their lower rates of enrollment in four-year institutions.

[11] The FAFSA and FAFSA-related communications are available in Spanish and English but not other languages (accessed February 27, 2018, https://profile.collegeboard.org/profile/ppi/participatingInstitutions.aspx).

The complexity of the financial aid process likely deters students and parents from completing the form and accessing many forms of financial aid. This step in particular contributes to the enrollment gap between high- and low-income students (Dynarski and Scott-Clayton 2006) since low-income students are more likely to rely on financial assistance to make postsecondary attendance possible. Assistance in completing this step can be key in improving rates of financial aid receipt, as well as postsecondary enrollment and persistence (Bettinger et al. 2012).

3. Complete three or more scholarship applications

Students and families are encouraged to view private scholarships[12] as real opportunities. Fast Web, a scholarship website with over 50 million users in the last 15 years (Charky 2011), brags that there are over $3 billion in scholarships available and reiterates the popular perception that millions of scholarship dollars go unclaimed because students do not apply. With lots of media coverage for the benefits of applying for scholarships (Marks Jarvis 2010), it is not surprising that students, families, and school districts see private scholarships as a viable way to finance the ever increasing costs of a college education.

Although CPS institutionalized applying to scholarships as one of their key college actions, the impact of this action on college outcomes are unknown. In fact, research has largely ignored private scholarships and their role in financing college (Institute for Higher Education Policy 2005), and there is little evidence that private scholarship applications and awards impact college enrollment. There is a dearth of research in this area because it is difficult to get data on private scholarships. A recent report on private scholarships identified almost 5,000 scholarship

[12] Private scholarships are typically defined as grant money awarded by private sources not associated with university endowments to students to defray college costs (Institute for Higher Education Policy 2005).

providers in the United States ranging from community foundations and service organizations to corporations and individual donors (Institute for Higher Education Policy 2005). With such a range of scholarship providers, it is virtually impossible to obtain data on applicants, award amounts, and college enrollments for each scholarship. Additionally, financial aid offices are not reliable sources of data because not all private scholarships are reported to them. Further, those that are reported are often treated as part of a student's financial aid package, which sometimes obscures the source of the money.

Only one study has investigated the role of private scholarships on college decisions. Focusing on the impact of financial aid packages on students' enrollment decisions, Avery and Hoxby (2004) find that private scholarships provide little explanatory power in determining students' college enrollment choices. Since private scholarships can be used at any college or university, it is not surprising that private scholarships made little difference in the choice between schools especially given that these students were high achieving and on average, came from families with high socioeconomic status. Furthermore, the impact of scholarships may have been small because the scholarship awards were relatively small. It is still unclear as to whether private scholarships or applying for them improve other kinds of enrollment outcomes, such as college attendance or four-year college enrollment.

A few other studies and journalists have investigated how high school students perceive athletic scholarships. Specifically, they investigate the number of students who believe they can earn a college athletic scholarship and go on to earn a living playing a sport professionally even though the odds that a high school athlete will play in college are incredibly remote and their chances of playing professionally are miniscule (James 2003; Simons and Butow 1997; Sperber 1995). In spite of these statistics, a majority of African American high school basketball players surveyed in one study (66 percent) believe that an athletic scholarship is their best hope for a college education (James 2003). Simons and Butow (1997) highlight how these views of the college and professional opportunities in athletics may be self-defeating because hopes of social mobility are pinned to unlikely outcomes instead of investing in other opportunities such as educational achievement. Without much information on whether scholarship applications are associated with positive college enrollment patterns, a focus on scholarship applications may be distracting students from the other key college actions.

Within CPS, there are two sources of data on private scholarships and applications to private scholarships: the annual scholarship report and the senior exit survey. While the CPS scholarship report boasts an impressive aggregate figure of over $150 million awarded to students in the district, half of private scholarships are $2,500 or less and approximately one third of students received scholarships of $1,000 (see Figure 3.1). If we consider more than $1,000 to be substantial funding,[13] 45 percent of scholarship recipients represented in the report did not receive substantial funding from private scholarships. Compared with completing FAFSA, which has high odds of payoff for CPS students (Pell Grants and state grants through the Illinois Monetary Award Program can total up to $9,500), scholarships are a relatively low-odds option.

The relatively small awards of private scholarships to CPS students are not an anomaly. In a study of very high achieving students,[14] the private scholarships students won were also relatively small. The mean private scholarship received was $200 (including zero amounts for

[13] Given that annual tuition for a state resident at the University of Illinois is over $11,000, most scholarship amounts do not substantially offset the cost of tuition, much less other costs such as room and board or school fees.
[14] The average student in this study scored above the 90th percentile of SAT takers and was in the top 10 or 20 percent of their high school class as determined by grade point average (Avery and Hoxby 2004). Further, the mean family income for this sample was over $100,000.

those who did not receive any private scholarships); the maximum amount observed in their sample was $12,500 (Avery and Hoxby 2004).

In contrast to financial aid forms like the FAFSA, which are complicated and require parental information and assistance, private scholarships seem to offer an alternative solution. They provide opportunity and hope that there is money available for college for those who take the initiative to apply (Marks Jarvis 2010). Students can complete these applications without parental assistance. An additional benefit is the ongoing timeline for scholarships; students often begin searching for and applying for scholarships earlier in their senior year (and generally earlier in their high school career) than when they can complete the FAFSA.

However, applying to a number of private scholarships can be very time consuming. Unlike other forms of financial aid and many large, state-run scholarships programs, each private scholarship requires a separate application, often with differing requirements. Further, private scholarships often have vague criteria, ambiguous (if any) information on likelihood of receipt, and a large and unknown applicant pool. The drawbacks and uncertain payoffs of scholarship applications lead The University of Chicago Consortium on School Research to note that, "Applying for small scholarships like this (they're traditionally in the range of $200 to $2,000 per scholarship) is very time consuming. The core part of financial aid depends on submitting a FAFSA, and scholarships should only be used to supplement other financial aid" (Roderick et al. 2008). While this prioritization of the key college actions may be discussed by individual counselors or by counseling departments, the official CPS policy does not indicate that applying to three or more scholarships is any less valuable to the college process than the other two college actions.

Research Questions

To better understand the impact of these three key college actions, these analyses are guided by the following research questions:

1. Who completes the key college actions? In what combinations do students complete the key college actions?
2. What student characteristics are associated with completing each of the three key college actions identified by CPS: completing the FAFSA, completing three or more college applications, and completing three or more scholarship applications?
3. What student characteristics are associated with completing the two most important actions (applying to three or more colleges and completing the FAFSA)? What student characteristics are associated with completing all three key college actions?
4. Are the three key college actions associated with college enrollment choices and patterns?

Data

The analytic sample consists of CPS seniors who have complete demographic information and academic information (N=10,029). The final set of analyses investigates how the three key college actions are related to college attendance outcomes, which is known through the National Student Clearinghouse data. Although not all colleges and universities report enrollment information to the National Student Clearinghouse, over 3,600 public and private postsecondary institutions report data to them, encompassing 98 percent of all postsecondary students in the United States.[15] In these analyses, we assume that students not appearing in

[15] This information comes from the National Student Clearinghouse website (accessed February 21, 2018, http://www.studentclearinghouse.org/about/clearinghouse_facts.php).

National Student Clearinghouse data are not enrolled in a postsecondary institution. For analyses on enrollment sector and whether students are able to follow up on their postsecondary plans are based on smaller samples for whom data are available (N=8,204 and N=7,526, respectively).

Dependent Variables

The first set of analyses look at the relationship between demographic, academic, and school-related factors and students' likelihood of completing each of the three key college actions independently. I then run logistic regressions on completion of the FAFSA and three college applications jointly, as these are the two actions that research has shown to be associated with college enrollment and other positive postsecondary options. Finally, I complete a set of logistic regressions on the completion of all three key college actions since that is the goal of the school district.

In the final set of analyses, the three key college actions serve as the independent variables in the logistic regressions on postsecondary enrollment outcomes. Three measures of college enrollment are used as dependent variables:

1. College enrollment at any postsecondary institution
2. Enrollment in four-year college or university versus to a two-year college or university
3. Following through on college plans

Each of these measures is taken from the National Student Clearinghouse data (NSC), which collects data on students' postsecondary enrollment in the fall after their high school graduation.

The postsecondary enrollment outcomes were chosen because they are of particular importance to CPS. The school district has pushed to increase the rates of college enrollment. In particular, the goal is to increase the number of students who attend four-year institutions because they have higher graduation rates than the two-year institutions that most CPS students attend (City of Chicago Colleges).

Following through on college plans is slightly more complicated. Prior research on CPS students has shown that among graduating seniors who state plans to attend a specific postsecondary institution in May of senior year, over 30 percent do not enroll in any college four months later (Roderick et al. 2008; Stephan and Rosenbaum 2012). This phenomenon, often described as “summer melt” (Arnold et al. 2009; Castleman, Arnold and Wartman 2012; Castleman and Page 2014), is problematic because it disproportionately impacts low-income and first-generation students.[16] Students can run into problems in the summer months in completing the necessary forms to complete their college enrollment process, and it occurs at a time when they have little or no access to school counselors or other school personnel who can assist them (Castleman and Page 2014). In particular, financial difficulties, such as delays in FAFSA processing or verification of family income,[17] can cause confusion and delays as students try to complete the enrollment process. [18]

The final set of regressions aim to better understand if completing the key college actions are associated with improved odds of following through on their college plans. To measure follow through, I use students’ stated plans on the senior exit questionnaire completed in May or June of their senior years to the enrollment data provided by colleges and universities to NSC.

[16] However, “summer melt” may be less of a problem than described in the literature if students who “melt” would otherwise drop out early in their college careers without a degree and with student loan debt.
[17] CPS has encouraged students to complete the FAFSA early and worked to notify students when the forms were accepted so that students would know they could count on that source of funding. So FAFSA delays may be less of an issue in this population due to the proactive work of CPS faculty and staff.
[18] However, even if CPS graduates enroll in a subsequent term, delayed enrollment is associated with lower rates of degree completion (Bozick and DeLuca 2005; Bradburn and Carroll 2002; Horn et al. 2005).

Thus, I can compare where students report they plan on attending and where they actually enroll in the fall after they graduate from high school.

Independent Variables

Following prior research (Roderick et al. 2008; Stephan 2010), I draw on a variety of independent variables that capture students' demographic characteristics, school structure and status, academic attendance and achievement, and assistance with completing the key college actions. Each set of variables are included because of their relationship to college enrollment patterns among students. Each variable included is described in more detail below:

1. Gender: This variable is included in analyses as an indicator for being female. Males are the omitted category.
2. Race and Ethnicity: There are four main racial categories represented in CPS: African American and Black, Hispanic, White, and Asian. For comparison purposes, I use whites as the reference category, and the other three racial and ethnic groups are included in the models as dummy variables.
3. Free or Reduced-Price Lunch Status: Along with mother's level of education, these variables serve as a proxy for students' socioeconomic status. Students who receive reduced price lunch come from families whose household income falls below 185 percent of the federal poverty level, and students who receive free lunch come from households who fall below 130 percent of the federal poverty level. As described previously, in 2008-2009, students who came from a household of four would have a household income of less than $40,000 to qualify for reduced price lunch. Because the majority of students in CPS qualify for free or reduced lunch, I use that as the omitted category. In these analyses, I include an indicator for students who pay full price for lunch at school.

4. Mother's Education: Mother's level of education is asked of students on the senior exit questionnaire.[19] This variable is informative both as a proxy for students' socioeconomic status but also of their family experience with college and the college application process. This is included as a series of binary variables with the reference category as students whose mothers have less than a high school diploma.
5. Coach School: As previously described, some CPS schools have a postsecondary coach, a staff member whose sole responsibility it is to guide students through the college application and enrollment processes (Stephan and Rosenbaum 2012). In the 2008-2009 school year, 11 of the 117 high schools in the district had postsecondary coaches. At other high schools, counselors are responsible for guiding students through the postsecondary process. However, counselors have many responsibilities other than college counseling, such as advising students on academic requirements and course schedules, serving as a liaison between students and faculty or administrators, assisting students with social and emotional issues, referring students to other sources of support, and sometimes helping administrators with disciplinary issues. As a result, the time they can specifically spend on college counseling is necessarily limited (Johnson et al. 2010; Radford and Ifill 2013). In the analyses, I include a binary variable for the presence of a postsecondary coach.
6. Magnet School: Because magnet schools are selective and offer admission to students through testing and applications, their students are different than those who attend neighborhood schools. Because their students on average are higher academic achievers,

[19] Father's level of education is only asked of students on the senior survey, which has a low return rate. As a result, it is not included in these analyses.

they often have stronger college-going cultures and structures for promoting completion of the three key college actions. This is a binary variable in the analyses with non-magnet schools serving as the reference category.

7. Excessive Absences: I created a binary variable by defining excessive absences as having more than ten absences in the fall semester of the senior year. Absences may have a direct impact on the completion of the three key college actions; students who are absent are less likely to know or be reminded of the three key college actions. Thus, regardless of their engagement in school, they may be less likely to complete the key college actions.
8. Cumulative GPA: Students' cumulative GPA is included in the models as a metric of their academic success. It is included as a continuous variable, and a squared term is also included in the analyses to account for a non-linear relationship.
9. Composite ACT Score: In the state of Illinois, all students are required to take the ACT in the spring of their junior year as part of the state-mandated standardized testing (Klasik 2013). Thus, scores are available for virtually all students. I include this score in the regression models as well as a squared term to account for a non-linear relationship between the variables.
10. Parental Help with FAFSA, College Applications, and Scholarship Applications: Parental help can be crucial because many of the steps in the transition to college are complex (Lareau and Weininger 2008). On the senior survey, which students complete in the fall of their senior year, students are asked about the level of parental help they have received in completing the three key college actions. In the survey, students are given four response options: not at all, a little, some, a lot. From this variable, I created a binary

variable where students who report at least "a little" parental assistance are indicated by a 1 and students who receive no parental help in that area are indicated by a 0. Because the senior survey has a relatively low return rate (54.9 percent among students in this sample), I also include an indicator for whether the data was missing. This prevents the loss of cases in the analyses.

11. Teacher/Counselor Help with FAFSA, College Applications, and Scholarship Applications: Similar to the set of questions about parental help, the senior survey asked students to report on the level of help they received from teachers or counselors in completing the three key college actions. The response options were the same as those for the question about parental assistance: not at all, a little, some, a lot. Students who indicated that they received at least "a little" help are listed as receiving help from a teacher or counselor in that area. The reference group is those students who did not receive help. Because the same problem exists with missing data on this survey, I also include a set of variables indicating that the student does not have data on that item to retain cases in the analyses.
12. Completing the FAFSA, Three or More Scholarship Applications, and Three or More College Applications: In the final sets of regressions on the college enrollment outcomes, I include a dummy variable for completing each of the key college actions. These are included to understand the relationship between completing these key college actions and college enrollment outcomes.

Descriptive statistics for all independent and dependent variables can be found in Table 3.1.

Analytic Strategy

To complete the analyses, I utilize multivariate logistic regressions. In each set of models, I add variables in stepwise succession to understand how the relationship between dependent and independent variables change as new dependent variables are added to the models.

Results

To start, I wanted to better understand who completes each of the key college actions. The majority of students completed the FAFSA (85.6 percent) and three or more college applications (62.6 percent). However, a significantly lower proportion of students completed three or more scholarship applications (36.6 percent, see Table 3.1). Only 27.5 percent of students completed all three key college actions. An additional 29.4 percent of students completed the FAFSA and three or more college applications. Given that scholarship applications have the least documented research on their benefits, a full 56.9 percent of students are completing at least the FAFSA and three or more college applications.

The descriptive statistics also show that some CPS students are completing other, sometimes problematic, combinations of the three college actions. In particular, some students are completing a limited number of applications. Almost 24 percent of students complete the FAFSA and one to two applications instead of the three required by CPS policy (see Table 3.2). This may reflect that some students are planning to attend their local community college. Because those institutions are open admission and low cost, they may decide that they are not going to consider other options. However, this is not ideal because of the low completion rates at the two-year colleges that most CPS students attend (Roderick et al. 2008).

Similarly, a smaller proportion of students seem to be favoring completing scholarships without completing the other, more beneficial key college actions. Of students who do not complete FAFSA, 41.6 percent complete at least one scholarship application (see Figure 3.2). Furthermore, of students who do not complete any college applications, 36.8 percent of students complete at least one scholarship application (see Figure 3.3).

Additional descriptive statistics presented in Table 3.3 show that students complete the three tasks at different rates based on their demographic characteristics. Across all demographic characteristics, students have the highest likelihood of completing the FAFSA among the three key college actions. However, there are differences in completion rates. In particular, Hispanic students are the least likely of all of the racial groups to complete the FAFSA. As discussed previously, students who are not United States citizens or permanent residents are not eligible to apply for federal financial aid. Roderick, Coca and Nagaoka (2011) estimate that 14.5 to 17.2 percent of Hispanic students in CPS are undocumented, which may partially explain differences in their FAFSA completion rates from their non-Hispanic peers. Students who attend schools with a postsecondary coach or magnet schools are also more likely to complete the FAFSA than their peers at other types of high schools, and students who have a GPA of 3.0 or higher are more likely to complete the FAFSA than their lower-achieving peers. In fact, they have the highest rate of FAFSA completion in Table 3.3.

For completing three or more scholarship applications, African American and Black students were more likely to complete that key action than other racial groups. There are also differences in scholarship application rates among students depending on their mother's level of education. It is not surprising that students who have high GPAs and high ACT scores are more likely to apply to three or more scholarships, but it is interesting to note that another group that is likely to apply to three or more scholarships are those who do not receive help from their parents, teachers, or counselors on the three key college actions. In each of those cases, students are more likely to complete scholarship applications if they are not receiving help in the college process than if they are.

Regarding applying to three or more colleges, males are less likely to do so than females. Hispanic students are also much less likely than their counterparts in other racial and ethnic groups. When it comes to completing three or more college applications, parental help and school help are related to increased rates of completing three or more. Even students who did not report whether or not they had parental or school help had higher rates of completing three or more college applications than those who reported that they had no help.

The logistic regression results in Table 3.4 and Table 3.5 look at the associations between completing each of the key college actions and student characteristics, academic achievement, and support at school and home. Models 1 through 3 present regression models for FAFSA completion. Across models, it is interesting that African American and Black students have higher odds of completing each of the key college actions compared to white students, net of the other variables in the models. In particular, Model 3 in Table 3.4 the odds of completing the FAFSA are increased by a factor of 4.5 for students who are African American or Black. To a smaller extent, being Asian is also associated with increased odds of completing the FAFSA compared to their white counterparts.

Other variables that are positively associated with FAFSA completion are being at a school with a postsecondary coach and cumulative GPA. A one-point increase in GPA (for example from a C-average to a B-average) is associated with an increase in odds of completing the FAFSA by a factor of 4.1. Parental and teacher or counselor assistance in completing the FAFSA is also associated with completing the FAFSA. Because the FAFSA is a complicated form that requires parental tax information, it is no surprise that there are strong associations between these variables net of the other variables in the model.

Models 4 through 6 look at the relationship between the same variables and completing three or more scholarship applications. Similar to the findings for the FAFSA, being black is associated with higher odds of completing three or more college applications. Further, being Hispanic is associated with increased odds of completing three or more scholarship applications (Models 5 and 6).[20]

A few other variables are positively associated with completing three or more scholarship applications. Compared to students whose mothers did not complete high school, students whose mothers have at least some college experience (two-year degree, four-year degree, or graduate degree) are more likely to complete three or more scholarship applications. Student GPA is positively associated with higher odds of completing scholarship applications, and in this case, ACT score is also positively associated with scholarship application completion.

Interestingly, parental help with scholarship applications is not associated with increased odds of completing three or more scholarship applications, net of the other variables in the model (See Model 6). In contrast, teacher or counselor help with scholarships is positively associated with completing three or more scholarship applications.

Regarding completing three or more college applications (Models 1 through 3 in Table 3.5), being female is associated with higher odds of completing three or more college

[20] The increased likelihood of completing scholarship applications may be due to the number of Hispanic students in CPS who are undocumented and therefore ineligible for other forms of financial aid. To test this, I ran this set of regressions for only students who were born in the U.S. The question of nativity is asked on the senior survey that has a much lower return rate (approximately 50 percent, so this changes the sample dramatically (N=3,141). This restriction also eliminates students who are naturalized U.S. citizens and permanent residents and therefore eligible for federal and state financial aid. However, in these regressions, the relationship between being Hispanic and completing three or more scholarship application is not statistically significant.

applications. Further, being black is associated with higher odds of completing three or more college applications compared to being white. This finding is consistent across all three key college actions net of the other variables in the models.

Having a mother with a four-year college degree or graduate degree is associated with completing three or more college applications in Model 1; however, those associations are no longer statistically significant once variables about students' academic achievement and attendance are included in the model (see Model 2). Similarly, student GPA is positively associated with the completion of three or more key college actions in Model 2, but once the variables accounting for parental and teacher or counselor help are included, the relationship between student GPA and completing three or more college applications is not statistically significant.

Regarding completing three or more college applications, parental help is not associated with increased odds of completing three or more college applications. In contrast, teacher or counselor help with application is associated with completing three or more college applications. Across all three key college actions, teacher or counselor help in each area is positively associated with completing that particular pre-college action.

Prior research has noted that two of CPS' key college actions, completing the FAFSA and completing at least three key college actions, are important for promoting college attendance. Table 3.6 shows the results of the multivariate logistic regressions on completing both of those key college actions in Model 1 through Model 3. Net of other variables in the model, being female and being black are associated with completing both of those college actions. Student cumulative GPA is also positively associated with completing those two key college actions. Both parental and teacher or counselor help completing the FAFSA is positively associated with completing those two key college actions. However, net of all the other variables in the model, parental help with college applications decreases the odds of completing the two key college actions by a factor of 0.6, net of the other variables in the model.

The additional models in Table 3.6 show the logistic regressions on completing all three key college actions. The results here are similar to those for the two college actions that have evidence of being associated with college enrollment; however there are some differences. In particular, being female is no longer associated with higher odds of completing the college actions than their male counterparts. In Model 4, Hispanic students have lower odds of completing the three key college actions than their white peers, but once variables on academic achievement are included in the model (particularly GPA and ACT score), the Hispanic students have greater odds of completing the three key college actions than their white peers.

Because CPS has focused on pushing these three policies, it is important to know if completion of these three key college actions is associated with college enrollment choices, in particular choices associated with improved rates of persistence and degree completion. Table 3.7 and Table 3.8 investigate the relationship between students' participation in the key college actions and their college enrollment. The first outcome of interest is whether or not students attend a postsecondary institution. Net of the other variables in the full model (Model 3 in Table 3.7), applying to three or more colleges is associated with greater odds of being enrolled at a postsecondary institution by a factor of 1.2. Similarly, FAFSA completion has a large impact on postsecondary enrollment; completion of the FAFSA is associated with greater odds of enrolling at a postsecondary institution by a factor of 4.2, net of the other variables in the full model. In contrast, completing three or more scholarship applications is associated with greater odds of college enrollment but not at a level that reaches statistical significance.

For the regression models on college enrollment, it is interesting to note that the inclusion of new independent variables does not change the relationship between the demographic or academic variables and the outcome. Regardless of the set of variables in the model, female students, students whose mothers have greater levels of education, those who pay full-price or qualify for reduced-price for lunch (compared to those who receive free lunch), those attending magnet schools, those with higher ACT scores, and those who had parental help with the FAFSA had higher odds of enrolling in a postsecondary institution. A few variables were negatively associated with the odds of postsecondary enrollment including being Hispanic and parental help with college applications.

The second outcome of interest is enrollment at a four-year institution compared to a two-year institution (see Models 4 through 6 in Table 3.7). All three key college actions are associated with attending a four-year institution compared to a two-year institution; specifically, completing the FAFSA has a very large impact on four-year college enrollment. Completing the FAFSA increases the odds of attending a four-year institution by a factor of 2.3 compared to those who do not complete the FAFSA. Both applying to three or more colleges and applying to three or more scholarships is associated with an increase in odds of attending a four-year institution by a factor of just over 1.5.

Other variables also have a statistically significant impact on four-year college attendance in models that include the three key college actions (see Model 6 of Table 3.7). In particular, being African American or Black is associated with higher odds of attending a four-year institution compared to being white. Students whose mothers have a graduate degree have higher odds compared to students whose mothers do not have a high school diploma. Both having a postsecondary coach and attending a magnet school are positively associated with attending a four-year institution. In contrast, students who are absent ten or more days in the prior semester have lower odds of attending a four-year institution.

Students with better academic qualifications (GPA and ACT score) are more likely to attend four-year institutions. This association remains statistically significant even when controlling for the three key college actions likely because four-year institutions on-average are more selective and most have minimum academic qualifications that students must meet in order to be admitted. For predicting attendance at a four-year institution, parental help and help from school (teachers or counselors) is not statistically significant in the models net of the other variables included.

Table 3.8 shows the regressions on following through on college plans. As described previously, many students make college plans by May of their senior year but are unable to follow through on their plans and enroll in a college or university in the fall (Arnold et al. 2009; Castleman, Arnold and Wartman 2012; Castleman and Page 2014). Of the three key college actions, only completing the FAFSA has a significant association with following through on college plans. It has a particularly large impact; completing the FAFSA is associated with an increase in odds of following through on college plans by a factor of 4.8.

Hispanic students are associated with lower odds of following through on their college plans. Students whose mothers have at least some college experience (with the exception of those whose mothers have graduate degrees) and those who pay full-price for lunch are more likely to follow through on their college plans compared to students whose mothers do not have a high school diploma or those who receive free lunch (the primary indicator for students from low socioeconomic backgrounds).

Attending a magnet high school is associated with increased odds of following through on their college plans by a factor of 2.0 net of the other variables in the full model. ACT scores are also positively associated with the odds of following through on college plans as is cumulative GPA, but not at a level that is statistically significant. Finally, parental help with FAFSA is positively associated with following through on college plans while parental help with applications is negatively associated.

Overall, the three key college actions improve college outcomes. In particular, completing the FAFSA is positively associated with all college outcomes of interest, and completing three or more college applications is associated with attending college and attending a four-year institution (compared to two-year institutions). Completing three or more scholarship applications is associated with attending a four-year institution (compared to a two-year institution), but not either of the other college outcomes.

Discussion

Chicago Public Schools has made completing these three key college actions district policy and has created initiatives to encourage these particular actions to promote postsecondary enrollment. School counselors and postsecondary coaches are responsible for ensuring that students meet these goals. It is such an important initiative that principal performance ratings and salary raises are linked to these metrics. As such, understanding if these key college actions have their intended impact is so crucial.

Among the three key college actions, completing scholarship applications is the least studied and understood (Institute for Higher Education Policy 2005). The regression analyses show that it is the least effective of the three key college actions in promoting positive college enrollment patterns, only impacting four-year enrollment compared to two-year enrollment. By comparison, FAFSA completion and completing three or more college applications have positive associations with attending college and attending a four-year institution. Further, FAFSA completion has a positive association with students following through on their college plans. While completing scholarship applications has a positive effect on four-year attendance, the other key college actions are more widely effective in promoting positive college enrollment patterns.

Although the key college actions are not uniformly effective, CPS does not differentiate among the actions to students. Thus, students may not understand the need to prioritize certain actions over others. Descriptive results show that some students complete seemingly odd combinations of the three key college actions such as applying to scholarships and not completing college applications. Some students also complete scholarship applications without completing FAFSA even though CPS students are likely eligible for Pell Grants, which are sizeable compared to the median amount won through scholarship applications.

The analyses also show that students need assistance in completing these key college items. In particular, parents provide crucial assistance in completing the FAFSA, and being at a high school with a postsecondary coach, a person dedicated to helping students with the college process, is associated with an increased likelihood of completing the FAFSA. Similarly, teachers or counselors are crucial for completing college applications and scholarship applications.

From these analyses, it is also important to point out the power of ascription. In Table 3.4, gender, being African American or Black, and mother's level of education have statistically significant associations with completing the three key college actions, often regardless of the variables added to the models. Similarly when considering college enrollment outcomes (Table 3.7 and Table 3.8), many student demographic characteristics remain strongly associated with college outcomes even when controlling for key college actions and other sources of help. The strength of these variables, even when controlling for other important factors, may be a finding that is particular to this population.

A limitation of this work is the lack of information on the timing of completion of each of the key college actions. It is important that students complete four-year college applications and the FAFSA within a particular timeline (Klasik 2012), and the timeline starts earlier than many students realize. Many four-year institutions have application deadlines in the fall. Even at postsecondary with rolling admissions or with no firm application deadlines, students benefit from applying early in their senior year because generally, more financial aid and scholarship aid is available and students may have a better chance for admission because more spaces are available in the class.[21]

Further, the timing of a student's FAFSA submission can impact the amount of aid, if any, they are awarded from institutional, state, and federal sources. In the state of Illinois, students often must file the FAFSA by late February or early March in order to receive a Monetary Award Program (MAP) grant, a grant worth up to $4,968 awarded to low-income students. MAP grants are awarded as FAFSA applications are received, and students who apply after funds run out do not receive the grant regardless of their eligibility. Thus, information on when students complete these key college actions would be useful in better understanding how

[21] CPS graduates in this cohort could not submit their FAFSA until after January 1, 2009 and were required to submit 2008 tax information which typically was not available to families until after February or March. More recently the timing for submitting FAFSA has changed. Starting with those enrolling in college in the 2017-2018 school year, students could begin applying in October of their senior year – a full three months earlier than was previously possible. Because they could complete the form in Fall 2016, families were able to submit tax information from 2015, and financial aid would be determined based on prior-prior year financial information (accessed February 27, 2018, https://financialaidtoolkit.ed.gov/resources/fafsa-changes-17-18-faq.pdf). It will be interesting to see what impact these changes have on completion of the key college actions, if any.

the completion, and specifically timely completion, impacts students' postsecondary enrollment choices.

Although it has limitations, this research illuminates the utility of each of the three key college actions in promoting improved college outcomes for low-income, first-generation students. It also highlights the need for schools to provide support in these endeavors and to encourage parental support in these efforts. Assistance in completing the tasks improves the likelihood that students will complete the FAFSA and three or more college applications, the actions with the greatest impact on various kinds of positive outcomes. This research also points to ways that other schools and districts can inform and encourage students who are attempting to fulfill their postsecondary goals but may face barriers and lack the "college knowledge" to make those dreams a reality. As sociological research is often concerned with stratification, this research contributes to our understanding of how to the high-school-to-college transition can be improved for disadvantaged students who often have worse postsecondary outcomes than their more advantaged peers.

CHAPTER 4: CHOOSING A COLLEGE: WHAT INSTIUTIONAL CHARACTERISTICS DO CHICAGO PUBLIC SCHOOL STUDENTS PREFER?

Introduction

Although the benefits of a college education abound, Brand and Xie (2010) find that those who may benefit most from a college education are the least likely to attend or complete college. Students who are underrepresented in higher education, particularly low-income, minority, and first-generation college students are systematically less likely to enroll in college, to attend four-year colleges or highly-selective colleges, and to persist in college (Bailey and Dynarski 2011; Ellwood and Kane 2000; Goldrick-Rab 2006; McDonough 1997; Perna 2000a; Perna 2000b; Roderick et al. 2008). Low-income students are less likely to meet admission requirements or take a college prep curriculum, which account for some of their poorer college outcomes. But even controlling for academic achievement, disadvantaged students are less likely to enroll in college, more likely to enroll in a community colleges (which typically have poor completion rates), and are less likely to enroll in selective colleges or colleges that match their academic achievement (Roderick et al. 2008).

Because college enrollment and completion have important impacts on later life outcomes, additional investigation into the college process and the factors that influence college enrollment and completion for disadvantaged students is warranted. The literature on low-income students' college choices[22] has focused on their propensity to "undermatch." This term was coined by Roderick et al. (2008), and it is widely used to describe students who attend colleges that are less selective than those they are likely qualified to attend. While

[22] For simplicity, in this chapter, I refer to students' application choices and enrollment choices even though in reality, parents and other family members may be the actual "choosers" or hold great sway over the choices being made.

undermatching occurs across the socioeconomic spectrum, Smith, Pender, and Howell (2013) find that almost half of low-SES students undermatch. More selective institutions have higher graduation rates and, in the case of elite colleges, they confer occupational advantages that are not rivaled by less prestigious institutions (Bowen, Chingos and McPherson 2009; Smart 1988; Zhang 2005). Holding constant student achievement, undermatching has negative impacts on students' chances of persistence and degree completion particularly for those qualified to attend selective institutions (Bowen, Chingos and McPherson 2009). In addition, the impact of attending a more selective school may have larger effects on persistence and economic payoff for low-income students compared to their more affluent peers (Brand and Halaby 2006; Dale and Krueger 2002; Hoxby 1998).

"Undermatch" research focuses on only academic dimensions to describe the fit between the student and the postsecondary institution chosen, but we know less about other factors that influence their application and enrollment decisions. College choices are impacted by more than academic match; for example, cost and distance from home are known to play a role in how students choose colleges (Perna 2004a; Turley 2009). Smith, Pender and Howell (2012: 261) note that making an academic match may not be desirable for some students because it "may result in a poor 'fit' for the student for a variety of reasons that are not purely academic (e.g. financial factors, geography, field of study, extracurricular activities, student support systems, etc.)." Thus, other attributes of the college should be factored into understanding how and why students make their college enrollment choices.

This chapter will first discuss a conceptual framework for college choices and the many factors that impact college choices. To address the limitations of "undermatch" research, which only considers one dimension on which students may choose a postsecondary institution, these analyses utilize conditional logit models (described in further detail below) to estimate how a variety of college attributes (e.g., location, cost, and demographics of the student body) impact low-income students' college application and enrollment decisions. These analyses help illuminate the relative weight that various institutional factors have in influencing student choices. Sociologists have focused much theoretical and empirical work on the continuation of inequity within educational systems; these findings help to clarify some factors at play in the undermatch phenomenon among low-income high school students.

Conceptual Model of College Choices

The process of choosing a college has multiple steps as reflected in the conceptual models offered by educational researchers, sociologists, and economists (Jackson 1982; Kotler and Fox 1995; Lewis and Morrison 1975). Most popular among them, Hossler and Gallagher's (1987) framework describes three distinct phases in the college choice process: predisposition, search, and choice.[23] This model (see Figure 4.4) shows a simple linear process through which students proceed in order to arrive at a college enrollment choice.

During the predisposition phase, students develop educational aspirations, plans, and expectations that may be closely related to occupational goals (Cabrera and La Nasa 2000c; Perna 2006a). Typically occurring in middle school or early high school (Cabrera and La Nasa 2000c), parents are highly influential in students' predispositions to attend college (Hossler, Schmit and Vesper 1999), so much so that some students do not make a conscious decision to attend college but rather assume from a young age that college will be their next step after high school (Grodsky and Riegle-Crumb 2010). Researchers have found that the development of

[23] A number of other researchers use similar labels (for examples: Jackson, 1982; Perna, 2006), but Hossler and Gallagher's (1987) model is the most widely utilized.

college plans are important predictors of taking college preparatory classes and greater effort in high school courses (Domina, Conley and Farkas 2011); in addition, if students have college plans, their parents are more likely to save money for college expenses (Hossler, Schmit and Vesper 1999; McDonough 1997).

In the search phase, students explore various college alternatives, determine preferences, and narrow down the set of possible options (Cabrera and La Nasa 2000c) from the over 6,000 postsecondary institutions in the United States (Education 2009). Through the process of considering and eliminating options (Jackson 1982), students move towards determining a set of colleges to which they will ultimately apply. Most researchers consider the timing of this phase to start in tenth grade and extend through the beginning of twelfth grade (Hossler and Gallagher 1987). Like the predisposition phase, this phase is also highly influenced by parents (Hossler, Schmit and Vesper 1999), but in this phase students are also more likely to seek other sources of information such as guidance counselors, friends, and web-based resources. Many students also begin to interact with postsecondary institutions through campus visits, meeting with college representatives, college fairs, and mailing materials (Attinasi 1989; Clinedinst, Hurley and Hawkins 2011; Hossler 1999; Hossler, Braxton and Coopersmith 1989). Research on the search phase has primarily focused on the number, variety, and quality of information sources that students access while trying to learn about college options; not surprisingly, low-socioeconomic status students have access to fewer sources of information and consider a narrower range of institutions than their more advantaged peers (McDonough 1994; McDonough 1997; Perna, Rowan-Kenyon and Thomas 2008; Tierney 1980).

Hossler and Gallagher’s (1987) framework culminates with the third phase where students apply to colleges and select a college to attend during their senior year of high school.

While Hossler and Gallagher (1987) were more concerned with the process by which students enrolled in college, broadly defined, Radford (2013) argues that the model should be refined to a "college destination" model to better explain how students matriculate to particular colleges or types of colleges. To achieve a more nuanced model, Radford (2013)[24] conceptualizes the choice phase as three distinct components (see Figure 4.5).[25] Rather than a singular choice, three separate decisions are made which determine a student's college destination: (1) students decide where they will apply,[26] (2) colleges and universities decide which students they will admit, and (3) students choose which school to enroll in from among the institutions to which they were admitted (Nurnberg, Schapiro and Zimmerman 2012; Radford 2013).

In contrast to much research that focuses on the admission decisions of colleges, particularly elite and highly selective colleges (Attewell 2001; Espenshade, Hale and Chung 2005; Karabel 2005; Stevens 2009), this research focuses on students' decisions in the college selection process. The majority of colleges and universities are not very selective; across all four-year colleges and universities, the average acceptance rate is approximately 66 percent (Clinedinst, Hurley and Hawkins 2011). Because the majority of institutions accept more than half of their applicants (Clinedinst, Hurley and Hawkins 2011), most students are admitted to and enroll in their first-choice institutions (Radford and Tasoff 2009).

As a result, the student decisions in the process such as where to apply and where to enroll are more important in the determination of where a student attends rather than the

[24] Other researchers, such as Litten (1982), also use this more nuanced framework.
[25] Radford (2013) also introduces a phase that she calls "preparation" as separate from Hossler and Gallagher's "predisposition" phase. Further, she renames the "search" phase as "exploration," but they are substantively the same in both models. However, neither of these changes is particularly relevant for the focus of this research.
[26] The application process in particular has not been clearly situated in conceptual models of college choice as some make it part of the choice phase (Cabrera and LaNasa 2000) while others include it in the search phase (DesJardins, Ahlburg, and McCall 2006; Holland 2014). In this work, I consider the process of applying to colleges as part of the typical "choice" phase following both Hossler and Gallagher (1987) and Radford (2013).

admission decisions of colleges and universities (Bowen, Chingos and McPherson 2009; Manski and Wise 1983; McDonough 1997; Roderick et al. 2008). For these reasons, these analyses focus on students' application decisions and their enrollment choices in order to better understand how student preferences impact their postsecondary destinations. By focusing on a variety of possible institutional factors that might be attractive to low-income, first-generation college students, it may provide insight into the undermatch phenomenon (Roderick et al. 2008; Smith, Pender and Howell 2013).

Considering the choice phase as three distinct decisions points to a methodological issue in most college choice research. Although not an explicit part of Radford's (2013) model, each choice is constrained by prior decisions (Manski and Wise 1983).[27] Students cannot apply to institutions that they have not heard of or researched (at least enough to know application processes and deadlines). Students cannot be admitted to institutions to which they have not applied, and they cannot choose to enroll at institutions to which they have not been admitted. Thus, the decisions that determine students' college destinations may be more aptly thought of as a funnel, with each decision narrowing down the set of college options (see Figure 4.6).[28] This "funnel" model necessitates a different methodological approach to analyses of college decisions.

A major limitation of much college choice research is that the analytic strategies employed assume that enrollment decisions are made from the universe of postsecondary

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[27] Others have noted the ways in which the three stages interact with one another (Alexander and Eckland 1977; Sewell and Shah 1968; Sewell, Haller, and Portes 1969); however, this has not been the focus of newer conceptual models.

[28] From the postsecondary perspective, admissions and enrollment management professionals also use the funnel metaphor to describe their process of enrolling a freshman class. They need a large pool of prospective applicants at the beginning of the process that becomes smaller as some choose to apply while others do not. A smaller group is admitted to the institution (if the institution is at all selective), and finally a smaller group ultimately enrolls in the institution (Litten 1982).

institutions available in the United States (e.g., Long 2004; Niu, Tienda and Cortes 2006) or a simulated subset of institutions that would likely grant the student admission (Montgomery 2002), rather than from the much smaller subset of schools to which the student has applied and been admitted. How research defines the choice set alters the estimated impacts of institutional attributes on choice (Niu and Tienda 2008). As a result, estimations of the how the attracted students are to various college attributes may be skewed due to the choice sets used in most research. Utilizing Radford's more nuanced "destination" model and more nuanced data, these analyses better identify the varying factors that drive each decision.

Influences on College Choice

There is a considerable amount of research in the area of college choice and the college choice process. I choose to focus on two broad areas that impact postsecondary enrollment choices – personal attributes and postsecondary attributes.

The majority of research on college choice focuses on the role of personal attributes such as race, gender, parental education, academic preparation, and socioeconomic status in determining college choices (Ellwood and Kane 2000; Engberg and Wolniak 2009; Kane 1999; Manski and Wise 1983; Perna 2004b). Focusing on gender differences in college enrollment, women now outpace men in college attendance (Buchmann 2009). This is in part because women tend to perform better academically in high school – including taking more college preparatory and advanced courses (Bae et al. 2000; Freeman 2004). In addition, women have higher participation rates in extracurricular activities (excluding athletics) and fewer disciplinary issues in high school; all of these factors lead to a higher likelihood of entering college (Buchmann 2009; Buchmann and DiPrete 2006). However, in choosing among institutions, women are slightly more likely to attend less prestigious schools, which often cost less and have fewer resources (Davies and Guppy 1997; Jacobs 1996; Jacobs 1999). Referring to the hierarchy of rigor and social status among institutions of higher education, Charles and Bradley (2002) describe the lower enrollment rates of women at more prestigious institutions as the "vertical dimension of gender segregation in higher education."

Another personal characteristic that impacts enrollment is socioeconomic status. Low-income students have different college enrollment patterns than their more advantaged peers. Students from low-income backgrounds are more likely to choose pathways that are associated with lower levels of degree completion, such as attending a two-year institutions (Dougherty 1994; Karen 2002), delaying college enrollment (Bozick and DeLuca 2005), and moving between institutions of postsecondary education (Goldrick-Rab 2006). Students from low income backgrounds are also less likely to apply to four-year institutions, even among those students qualified to attend one (Cabrera and La Nasa 2000b; Roderick, Coca and Nagaoka 2011). Some of the difference in enrollment patterns is because disadvantaged students have relatively lower academic achievement (Plank and Jordan 2001), and high school achievement is a strong predictor of college enrollment, specifically selective college enrollment (Dougherty 1994; Perna 2000b; Plank and Jordan 2001; Stephan, Rosenbaum and Person 2009).

In a similar vein, much research in the status attainment tradition (Blau & Duncan 1967; Jencks 1972; Sewell, Haller, and Portes 1969) notes that parents are influential in the college selection process (Horn, Chen and Chapman 2003; Tierney and Auerbach 2005). In particular, having parents with a college education confers benefits in multiple areas, including increased family income, higher educational aspirations, access to role models, and greater levels of assistance in the college search and selection process (Choy 2001; Choy et al. 2000). Gandara and Bial (1999: 30) note that "students with equal ability make very different decisions about their postsecondary education based on the guidance—or lack thereof—that they receive from home.” Students whose parents have not attended college often struggle to gain “college knowledge” even when their parents have aspirations for them to attend college (Tornatzky, Cutler and Lee 2002).

These differences in college enrollment patterns based on socioeconomic status are the result of a complicated and difficult application process that lacks transparency (Klasik 2012; Stephan and Rosenbaum 2009). In particular, low-income, minority, and first-generation students often lack information about various types of college and the application process, struggle to complete key college actions, and face the obstacles of rising college costs and complicated financial aid processes (Klasik 2012; McDonough 1997; Perna 2006b; Spies 2001; Stephan 2010). Even students from families with a history of college attendance who attend high schools with lots of supports for college seek out additional information and guidance to successfully navigate the process (McDonough 1994; McDonough 1997; McDonough, Korn and Yamasaki 1997). These processes are even more of a struggle for disadvantaged students who have less access to “college knowledge” through home and school (Choy et al. 2000; McDonough 2005; Radford 2013; Tornatzky, Cutler and Lee 2002).

Independent of its relationship to socioeconomic status, race shapes academic experiences (Mickelson 2001; Oakes, 2005) and impacts patterns of college attendance. Latinos are more likely to attend two-year colleges than members of other racial and ethnic groups (Kurlaender 2006). Controlling for differences in income and wealth, African American and second-generation Latino and Asian students are more likely to attend four-year colleges than whites (Charles, Roscigno and Torres 2007; Perna and Titus 2005).

Institutional characteristics also impact student enrollment. Students can choose from over 6,000 postsecondary institutions that vary in mission, size, location, student composition, and selectivity (National Center for Education Statistics 2009). This diversity of postsecondary options has increased significantly over the last thirty years, particularly with the rise of for-profit institutions (Kinser 2006; National Center for Education Statistics 2013).

Primary among the characteristics of colleges and universities is institutional status or quality. Broadly, institutional status or quality is typically composed of measures of selectivity (Karabel 2005; Stevens 2009) and third-party evaluations such as rankings[29] (Espeland and Sauder 2007). Most often college quality and selectivity are used interchangeably in the literature (for an exception, see Black and Smith 2006) even though they have different meanings. College quality, broadly defined, is an important reason prospective students enroll in particular institutions. McDonough and Antonio (1996) find that regardless of race, students often base their enrollment decisions on academic reputation.

Institutional location and the proximity of students to the institution also matter for college enrollment choices. Most students consider only a limited number of colleges, and this small set of institutions is largely determined by location. Proximity to postsecondary institutions is associated with increased odds of applying to college, particularly four-year institutions (Turley 2009). Parental preferences often play a role in where children apply to and attend college, especially concerning distance from home (Turley 2006). When asked where their children would likely attend college, over three-quarters parents of eighth graders named

[29] College rankings are controversial. Only relatively recently have they made public some of the formulas used to decide the rankings scheme, and there are many questions as to whether what U.S. News measures are actually reflections of the quality of education students enrolled there receive (Pascarella 2001; Pike 2004). Further, evidence suggests that postsecondary institutions provide inaccurate data to improve their rankings (Hossler 2000; Pollock 1992) or game the system so that their rankings improve (Espeland and Sauder 2007).

institutions in the state they live with an additional ten percent naming an institution in a neighboring state (Flint 1992).

Researchers have found that proximity to an institution affects both the application and enrollment choices of students. Regarding the application phase, research has suggested that students are more likely to apply to a particular institution if they live near it (Smith and Bers 1989; Weiler 1994), and subsequently, the proximity of the institution to their home plays a role in the enrollment decisions of accepted students (Leppel 1993).

Among the most important considerations in making a college choice, the ability to attend college close to home can often be driven by the desire or need for the student to live at home while attending college. Turley (2006) found that about 54 percent of the parents of high school students believed it was important for their child to live at home while attending college. This option is increasingly important for low-income families so that they can save on rent, food, and travel (Mulder and Clark 2002). In contrast, higher achieving students and students from more advantaged backgrounds are more likely to choose postsecondary institutions that are further from home than their less advantaged peers (Matthew & Wyatt 2009). In a similar vein, Avery and Hoxby (2004) find that distance from home was not a concern among the high-achieving and generally high-SES students in their study.

Given the high price of college tuition, it is not surprising that students' college enrollment choices are sensitive to the price of attendance. Empirical research has shown a negative association between tuition prices and enrollment (Heller 1996b). In particular, it indicates (at high levels of statistical significance) that college list prices influence college-going rates – increasing rates by roughly three to five percentage points per $1,000 in price reduction (Heller 1996a; Kane and Spitzman 1994; Manski and Wise 1983). Studies of college tuition decreases, which show that they result in increases in enrollment particularly for low-income students (Heller 1996b; Kane 1999; Mundel 2008), provide evidence that college costs are a barrier to enrollment for some students.

While some research finds that all students are sensitive to tuition costs, low-income prospective students are the most sensitive to tuition increases and are more likely to alter their enrollment patterns as a result (McPherson and Schapiro 1998). Many studies indicate that list prices have a larger impact on the college enrollment rates and college choices of lower-income and minority youth, while the enrollment patterns of higher-income students are relatively insensitive to changes in list prices (Dynarski 2000; Kane 1999; Long 2004). Several studies indicate that students enrolled in lower price schools – particularly public two-year colleges – are students who are more price sensitive (Attewell and Lavin 2012; Heller 2002a; Kane and Spizman 1994).

On a similar note, students' enrollment decisions are impacted by institutional financial aid. Increases in institutional grant aid increase the likelihood that a student will choose that college (Avery and Hoxby 2004; Hurwitz 2012), and students are likely to change their enrollment decisions even for marginally small amounts of aid (Cohodes and Goodman 2013). While increased financial aid has been found to impact enrollment choices, these increased efforts do not always raise the enrollment rates of disadvantaged students (Hansen 1983; Kane 1999; Mundel 2008).

Applications and Enrollment Decisions as Multidimensional Processes

As the previous section demonstrates, institutions of higher education are multidimensional and student choices are influenced by their personal backgrounds as well as the college's features. However, much research on college choices fails to take into account the complex nature of the decision making process. Instead, prior research on college choices has focused on outcomes that represent broad categories: postsecondary enrollment versus no enrollment, two-year versus four-year enrollment, enrollment in highly-selective versus less-selective institutions, or public versus private institutions. It is important to acknowledge that these categorical college outcomes do represent important distinctions. Degree attainment and occupational outcomes vary for those attending four-year and two-year institutions (Goldrick-Rab and Pfeffer 2009; Long and Kurlaender 2009), and students attending more selective and elite institutions are more likely to persist and earn a degree, even after controlling for prior academic achievement (Alon and Tienda 2005; Bowen, Chingos and McPherson 2009; Brand and Halaby 2006; Gerber and Cheung 2008; Zhang 2005). While providing useful information, these types of analyses only focus on one dimension of college (e.g., the chosen college's sector or level of selectivity), thereby neglecting the multitude of institutional characteristics that vary tremendously and play into students' enrollment decisions.

Students and families simultaneously care about a number of institutional characteristics such as location, cost, academic offerings, and prestige (among other college attributes). Further, a multitude of individual and institutional factors shape students' postsecondary decisions, and students must weigh different combinations of characteristics as few colleges will meet all of their desired criteria (Bozick & DeLuca 2011). To model this complex process and address the limitations of much prior research in this area, this research utilizes conditional logistic models. In doing so, this research fills an empirical gap to understand how a variety of institutional factors, as well as the match between students' attributes and institutional characteristics, impacts the college application and college enrollment choices of low-income students.

Prior Uses of Conditional Logit Models in College Choice Research

Discrete choice models are the preferred technique for modeling a choice among a discrete group of alternatives where the researcher wants to assess how characteristics of each alternative impact the decision (Train 2009). The conditional logit model is the most straightforward discrete choice model. More specific to this case, variations in the attributes of universities within each student's choice set drive the estimates (DesJardins, Ahlburg and McCall 2006). Although utilized in a number of other domains, conditional logit models have only rarely been used to understand college choices even though Manski and Wise (1983) suggested their utility in this domain. This section will describe the prior use of these models in college choice research and describe how these analyses build upon the strengths and limitations of this prior research.

Conditional logit models have become more popular recently; for example, Long (2004) uses data on three cohorts of high school graduates students to analyze changes over time in the importance of tuition prices, college quality, and distance for the college choices of high school students. She finds that the importance of college quality has grown over time while distance has become a less important factor. For all three cohorts of students, tuition prices were important influences in choosing among college options, especially for low-income students.

While providing insight into time trends, Long's work has two major limitations that this research will address. First, Long's analytic samples consist of high school graduates in 1972, 1982, and 1992, and the demographics of college-going students have changed as has the college landscape (National Center for Education Statistics 2013). In contrast, this research provides insights into the preferences of a more recent cohort of high school graduates, specifically students who graduated high school in 2009.

Second, Long's (2004) models include the thousands of colleges and universities where students could possibly enroll as alternate college choices – even though students are unlikely to be aware of most of them. As described in the conceptual model, research has shown that students consider more institutions than they apply to, typically are admitted to, and enroll in. In particular, disadvantaged students typically are aware of fewer institutions and apply to a smaller range of institutions, so Long's (2004) findings are less likely to be applicable to these students. Long (2004) likely includes the wide range of alternate college enrollment options because most data do not include detailed information on students' college applications and admissions (Rodriguez 2015).

In contrast, the data that I utilize contains information about the colleges and universities to which students have been admitted (see Data section). In modeling students' enrollment choices, the alternative institutions considered are limited to the set of institutions to which each individual student has been admitted. By utilizing a narrower set of alternatives, the proposed models more clearly illuminate how these students weigh alternatives and make college selections, which leads to more accurate results (Niu and Tienda 2008).

In contrast to Long's work, Avery and Hoxby (2004) utilize conditional logistic models with choice sets consisting solely of institutions to which students had been admitted. Although more similar to these analyses, their study is focused on a sample of high-achieving students who are predominantly white and from high-income families.[30] For this distinctive sample, they find that lower net cost and higher institutional quality are associated with increased chances of enrollment. In contrast to most prior research (Turley 2009), they find that distance between the

[30] The mean SAT score for the sample is in the 90th percentile while the CPS mean ACT score is 17.6 (author's calculations), which is approximately the 30th percentile (http://www.actstudent.org/scores/norms1.html). Further, Avery and Hoxby's (2004) sample was 73 percent white and had an average family income of $119,929.

institution's location and the student's home is not a factor that determines choice likely because affluent families are more able to easily absorb travel costs (Radford 2013). Although completing similar analyses, the students studied by Avery and Hoxby (2004) are a very unique sample. Given the differences in the application and enrollment processes for disadvantaged students, their sample provides very limited insight into the college choice process for low-income students and those with moderate or low-achievement.

Research Questions

1. For disadvantaged students, what institutional factors influence students' college enrollment decisions from among the schools they were admitted to?
2. How do the effects of these institutional factors change when taking into consideration students' race, gender or socioeconomic status?

Data

One benefit to utilizing CPS student data is the richness of the data collected by the school district. Very few school districts, and none of the large, education-related datasets collect detailed information about the postsecondary institutions to which students apply, where they are admitted, and where they ultimately enroll (Rodriguez 2015). By utilizing this rich information regarding the set of institutions where students have been admitted, this research does not make assumptions about where students would likely be admitted based on academic characteristics such as GPAs and ACT scores and does not assume that students' choice sets are unlimited.

The richness of these data allow for a departure from most "undermatch" research, which must make assumptions about the selectivity of institutions to which a student would likely be admitted. These assumptions are problematic because researchers are not able to test how well these assumptions of admissions hold (Rodriguez 2015) especially given that college admission is an inexact and "messy sorting process" (Bastedo and Flaster 2014: 96). Assuming that students would be admitted to colleges and universities where their qualifications "match" the institutional averages may be incorrect. As a result, researchers may misinterpret possible college alternatives available to students and by comparison, their ultimate college enrollment outcomes.

To be clear, students may undermatch at two different points in the college choice process. First, they may undermatch through their choice of where to submit applications. If students apply entirely to schools for which they exceed the academic qualifications, they will not have the opportunity to be admitted to an institution that is an academic match. Alternatively, students may choose to attend an institution that is below their academic qualifications from among those to which they've been admitted. Because these data have detailed information on student applications, admissions, and enrollment patterns, I focus on students' enrollment decisions (rather than their application decisions) as a potential instance of undermatch.

A great deal of prior research in the high school to college transition has depended upon student self-report of enrollment plans rather than actual enrollment data; however, more recent research has found that enrollment plans, particularly those of disadvantaged students, often change over the summer (Castleman, Arnold and Wartman 2012; Castleman and Page 2011; Roderick et al. 2008; Stephan 2010). Specifically in CPS, Stephan (2010) finds that 30 percent of CPS students do not enroll in the institution they list on their senior exit survey. Access to National Student Clearinghouse (NSC) data provides more accurate information as to the postsecondary enrollment outcomes, particularly for this population of students.

Sample

These analyses require that students have a postsecondary choice to make, so they must be admitted to at least two colleges or universities in order to be included in the analyses. This requirement limits the sample of CPS students used in the analyses. Compared to the larger student population, students in this sample are only slightly less likely to receive free or reduced lunch, the primary indicator of coming from a low-income household. The racial demographics between students in the sample and the student population are quite similar, and females are slightly overrepresented in the analytic sample. Not surprisingly, the students who are accepted to two or more postsecondary institutions have better academic credentials. In particular, the mean GPA of students in the sample is 3.165 compared to 2.878 for the larger population, and average ACT score of students in the sample are a full point higher than the larger population (see Table 4.1).

Dependent Variables & Choice Sets

The dependent variable of interest is the college where the student chooses to enroll. Enrollment choices are determined by the enrollment data from the National Student Clearinghouse. A binary variable indicates the college option each student chose. This variable equals 1 for the college where the student enrolled and 0 for all non-chosen alternatives in the choice set.

The institution in which the student enrolls and the other colleges and universities where students were admitted form each student's choice set. The list of colleges and universities to which each student gained admission is collected through the senior exit survey completed by virtually all students prior to graduation.[31] This list serves as his or her set of college options. It allows for each students' set of options to vary depending on the set of colleges to which the students has applied and been admitted.

[31] Response rate for the senior exit survey is over 90% (author's calculations).

As noted previously, some research that considers much larger choice sets because they lack information regarding which colleges students were admitted to. In contrast, these analyses follow Niu, Tienda and Cortes (2006) and Avery and Hoxby (2004) in utilizing a smaller set of alternatives. This choice set more accurately represents the “funnel” process through which students move and acknowledges that students are unable to enroll in colleges to which they have not been admitted (let alone those that they have not applied to or even heard of).

Institutional Variables

College variables included in the analyses come from IPEDS data and Barron’s Admissions Competitiveness Index. They cover an array of attributes about each postsecondary institution that impact students’ enrollment decisions.

1. Four-year institution: This binary variable indicates whether the institution is a four-year with two-year institutions serving as the reference category.
2. Institutional control: These binary variables indicate whether the institution is private and religiously affiliated or private and not religiously affiliated. Public institutions serve as the comparison group.
3. Urbanicity: IPEDS classifies urbanicity into twelve categories. For ease of interpretation, I collapsed the IPEDS categories into three categories: urban, suburban (which includes the IPEDS classifications of suburban and town) and rural. Urban institutions are the comparison group in the models.
4. Location: Using information on the city and state in which the institution is located, I generated four categories: institutions in Chicago, Illinois; institutions in Illinois but not located in Chicago; institutions located in the Great Lakes region but not in Illinois (includes Indiana Michigan, Ohio, Wisconsin); and institutions located in other regions of

the United States (not including the Great Lakes region). Institutions located in Chicago, Illinois serve as the reference category.

5. Institutional size: Derived from IPEDS data, I categorize institutions into four categories: small (less than 4,999 students), medium (5,000 – 9,999 students), large (10,000 – 19,999 students) and very large (more than 20,000 students). Very large institutions are the omitted category and serve as the reference group.
6. Selectivity: An institution's selectivity refers to the percent of applicants who are denied admission to the institution. Higher percentages of denied students indicate that the institution is more selective. Using this continuous variable, I generated selectivity quantiles. Quantile 1 consists of community colleges and other institutions that are open admission and admit all students. By contrast, quantile 5 consists of institutions that on average deny 64 percent of their applicants. In the analyses, I omit quantile 3.
7. Tuition: IPEDS provides multiple measures of tuition depending on the institution. For institutions that have in-district or out-of-district tuition policies (namely public community colleges), I used the in-district tuition figure for the City Colleges of Chicago institutions. I use the out-of-district tuition for other public two-year institutions. Similarly, public institutions within the state of Illinois charge a different rate for state residents than for non-residents. I assume that CPS students qualify for the in-state tuition. I use the out-of-state tuition figure for all public institutions located outside of the state of Illinois. Private institutions have one tuition rate, and this is the rate used regardless of the institution's location. For tuition, I also created quantiles with the first

quantile including institutions with the lowest tuition costs and fifth quantile including institutions with the highest tuition costs.[32]

8. Historically Black Colleges and University (HBCU) Status: HBCUs are institutions established prior to 1964 with the specific mission to educate African Americans (Betsey 2008). There are 107 HBCUs in the United States, most are located in the south. (See Appendix A). This variable and the variables on institutional racial composition are included because most African American and Black students in CPS attend schools where the majority of students are also African American or Black, and as a result, they may prefer postsecondary institutions with similarly large proportions of students like them, particularly HBCUs (Braddock 1980).
9. Percent of Undergraduate Student Population who are Black/African American: Although correlated with being an HBCU, there are institutions whose student bodies are predominantly Black or African American that are not HBCUs. And, conversely, some HBCUs have student bodies that are not predominantly African American or Black (Baez, Gasman and Sotello Viernes Turner 2008; Jackson Mercer and Stedman 2008). Institutions are categorized into the following five groups based on the percentage of their student body that is Black or African American: 0 to 10 percent, 11 to 20 percent, 21 to 40 percent, 41 to 80 percent, and 81 to 100 percent.

[32] In another set of models (not presented here), I also included a variable for the average amount of institutional aid provided to enrolled students to get a better sense of net costs for students. However, average aid is not the most accurate measure for this group of students. Because most qualify for free or reduced lunch, their level of aid will typically exceed the average amount and sometimes by substantial margins. Furthermore, tuition costs and average aid are highly correlated (the quantile variables are correlated at 0.79), and including them both in the model does not improve model fit, per the BIC.

10. Percent of Undergraduate Student Population who are Hispanic: This variable measures the proportion of the undergraduate student population that identifies as Hispanic. Similar to African American and Black students, prior research has shown that Hispanic students are drawn to institutions with a presence of Hispanic students, particularly institutions where family or friends have attended (Person and Rosenbaum 2006).[33] Institutions are categorized into the following four groups based on the percentage of their student body that is Hispanic: 0 to 10 percent, 11 to 20 percent, 21 to 40 percent, and 41 to 100 percent.

Table 4.2 contains the descriptive statistics for the institutions in students' choice sets.

Student Variables

As described previously, research indicates that students may approach college attributes differently depending on their own demographic characteristics and background. For example, low-income students may be more responsive to loans in a financial aid package than a student from a higher-income family, who may have other financing options such as home equity loans. Even though individual student attributes are constant regardless of the choice set, individual student attributes may affect choices through their impact on preferences for various attributes. In conditional logit models, main effects of student variables are not estimated, but these variables can interact with college-level variables to better understand how individual student attributes respond to various college attributes. Based on the research discussed previously, a

[33] Hispanic Service Institutions (HSIs) are also a type of federally-recognized minority serving institution. In contrast to HBCUs which are designated as such based on the historical mission of the institution, HSIs receive this designation if at least 25 percent of enrolled students are Hispanic. Because the HSI label is relatively new and based on percentages, I chose instead to only use the percent of students who are Hispanic in models. Asian American and Pacific Islander Service Institutions (AAPIs) and Tribal Colleges and Universities are also a federally-recognized minority serving institutions, but they are not discussed here in depth because very few or no students enrolled in such institutions.

number of student attributes will be considered. The descriptive statistics for these variables are presented in Table 4.3.

1. Race: Two binary variables, one for African American and Black students and one for Hispanic students, are included in some interactions in the model.[34]
2. Socioeconomic Status: As a proxy for socioeconomic status, I use mother's education. More specifically, I created a binary variable indicating if the student's mother has a postsecondary degree (including a postsecondary certificate, associate's degree, bachelor's degree or post-graduate degrees).
3. Students' Academic Achievement: Utilizing students' GPA and ACT score, I created a binary variable for high-achieving students. I defined high-achieving students as those who have access to a "selective" institution, defined by Barron's Selectivity Rating. Following Roderick et al. (2008), I determine students' access to "selective" institutions using the GPAs and ACT score patterns shown in Figure 4.7.

Student-College Match Variables

The institutional characteristics described are the same for all students who apply or are admitted, but a unique attribute of conditional logistic regressions is their ability to take into consideration institutional attributes that are unique to each student. Derived from IPEDS and student-level variables, the following student-college match variable is used in the analyses:

1. Academic Match: First analyzed by researchers at the University of Chicago Consortium on Chicago School Research (Roderick et al. 2008) and broadened to other contexts

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[34] Although gender is a relevant variable in the literature, it does not yield significant results in the models when interacted with the institutional variables. Similarly, I ran models that interacted students' free and reduced lunch status with tuition costs. These too were not significant. In both cases, the BIC did not improve when adding these variables. As a result, these models are not presented.

beyond Chicago school students (e.g., Bowen, Chingos and McPherson 2009), the term "matching" describes two components that make up an academic "match." The first component is the selectivity of the institution. This rating is based on the average academic qualifications of students who gain and are denied admission. The second component is the academic performance of the student from which it is determined the level of institution to which they should have access. Each component of the variable is described in more depth below.

a. Barron's Selectivity Rating: Barron's Profiles of American Colleges provides categorical ratings of selectivity ranging from "most competitive" to "non-competitive." Barron's assessment takes into consideration average ACT or SAT scores, GPAs, and class ranks of admitted students as well as the percentage of students who are admitted; all are typical measures of institutional selectivity (Dale and Krueger 1999; Brewer et al. 1999). Following Roderick et al. (2008), I categorize Barron's ratings into slightly fewer categories that are more relevant to the CPS population. In particular, I combine the categories of "most competitive" and "highly competitive" into "very selective." Similarly, the lowest levels of Barron's selectivity scale are combined into a "nonselective" category. Figure 2.1 provides additional details about the five selectivity categories: very selective, selective, somewhat selective, nonselective, and two-year colleges/other 4-year colleges.[35]

[35] The "other" category represents the small proportion of four-year institutions are not rated by Barron's. Predominantly, these institutions are proprietary schools and those with specialized fields of study such as art or music.

b. Student Selectivity Access: Following Roderick et al. (2008), students are grouped based on their likelihood of being admitted to institutions of varying selectivity based on their GPAs and ACT scores. For example, student with an ACT score of 24 or higher and a GPA of 3.0 or higher are determined to have access to "very selective" colleges and universities. At the other end of the spectrum, students with an ACT score of 17 or lower and less than a 2.0 GPA only have access to open admission institutions, namely 2-year colleges. The access that students have is based on a sliding scale of GPA and ACT scores. Figure 4.7 provides details on how students' access to institutions of varying selectivity is determined.

Academic match is then determined using the two variables in conjunction with one another.[36] The institution is an academic match for a student if the institution is the same level of selectivity as the student has access to or if the institution is one of greater selectivity than the student has access to. For example, the students with a 19 ACT score and 2.9 GPA would have access to a "somewhat selective" college or university. Therefore, institutions that are in the students' choice set that are "somewhat selective," "selective," or "very selective" would be "match" institutions[37] for the example student. Any institution in the students' choice set that is "nonselective" or a two-year college would be an "undermatch." Thus, the determination of match or undermatch is dependent

[36] As other research has noted, it is difficult to predict which students will be admitted to which institutions, which is what academic match attempts to do (Bastedo and Flaster 2014).
[37] Alternatively, we could consider that the "selective" and "very selective" institutions are "overmatches" for the student, but for these purposes, I consider them "match" institutions.

upon both the students' own academic qualifications as well as the institution's selectivity.

Analytic Approach

To address the research questions, I employ conditional logit models.[38] Discrete choice models are the preferred technique for modeling a choice among a discrete group of alternatives (Train 2009). The conditional logit model is the most straightforward discrete choice model. The method is similar to multinomial logit in that it is used to model polychotomous outcomes; however, these models differ in a key way. While multinomial models asses how characteristics of the chooser impact the choice made, conditional logit models are used when the researcher wants to assess how characteristics of each alternative, in addition to the characteristics of the individual, impact the decision. Thus, in conditional logit models, the variation that drives the estimates is based on the variation in the attributes of the choice alternatives.

Conditional logit models have been frequently used in transportation studies (Ben-Akiva and Lerman 1993; Louviere et al. 2000), and more recently, researchers interested in understanding friendship choices (Zeng and Xie 2008) and housing and neighborhood choice have employed them (Bruch and Mare 2012; Quillian 2015), but they remain an underutilized analytic strategy in other domains. Manski and Wise (1983) were the first to describe the utility of conditional logit models in understanding college choice, but few studies have utilized the method in this area (for exceptions see the above descriptions of: Avery and Hoxby 2004; Long 2004).

[38] Other research calls these models random utility models (DesJardins, Ahlburg and McCall 2006), but this language assumes utility maximizing behavior which is not a necessary for decisions in a discrete choice framework (Train 2009).

The conditional logit model is particularly appropriate for college choice research for a number of reasons. First, the method exploits extensive detailed information on the college choice set. Colleges vary on many dimensions that impact student decisions such as location, tuition costs, and academic selectivity, and these attributes influence the choices students make in enrollment. Conditional logit exploits the differences between institutions in a choice set to model the factors that influence students' choices. Secondly, conditional logit models consider multiple alternative options and a varying number of alternatives for each student; both are important attributes given that students apply to and often are admitted to more than one postsecondary institution but not a set number of them (such that one student may be admitted to two colleges while another is admitted to six colleges).

Finally, conditional logit models are a particularly well-suited method to answer these research questions because they can account for match-specific details. Most college attributes are fixed regardless of the student making the choice. For example, whether a college is public or private does not vary based on the student; however, other college attributes may vary depending on the student. For example, whether or not a college is an academic match is dependent upon the level of academic achievement of the student. For all colleges that are at least somewhat selective, some students will have academic qualifications that match the institutional averages while other students will fall above or below those standards. The college attribute of being an academic match thus varies by student, and conditional logit models can account for these college attributes that vary from student to student. As a result, these models can better estimate the choices that students are making because they can estimate how the attributes vary by student.

Conditional logit models do not include students' own characteristics because student characteristics are the same regardless of the choices made and thus cannot be the reason that a student chooses one college over another. However, as noted in the prior literature, student attributes such as socioeconomic status and academic achievement influence students' college choices. In particular, they influence the way that students respond to particular college attributes or matches. For example, students who have higher academic achievement might be more influenced by colleges' average academic achievement or selectivity than their lower-achieving peers. These individual influences are characterized in the model as either match-specific variables (described above) or interaction terms between an individual characteristic and an institutional attribute. All models include standard errors adjusted for the clustering of students within schools.

Results

Table 4.4 provides the findings from the conditional logit models. Model 1 includes variables related to institutional control, sector, size, location, and selectivity. Model 2 also takes into consideration academic match and related interaction terms. Model 3 includes tuition quantiles. Finally, Model 4 adds in the final set of variables, institutional racial demographics.

Given the focus of prior research on "undermatch" (Bastedo and Flaster 2014; Bowen, Chingos and McPherson 2009; Dillon and Smith 2013; Fosnacht 2014; Roderick et al. 2008; Rodriguez 2015; Smith, Pender and Howell 2013), it is interesting to see how institutional selectivity and college match play into CPS students' college choices.

Regarding institutional selectivity, the odds of a student choosing a particular institution increases if the institution is very unselective (quantile 1) or very selective (quantile 5) by comparison to the middle quantile of selectivity. This holds throughout the models, regardless of other controls added. In Model 4, the odds of a student choosing an institution increase by a factor of almost 6.7 if the school is in the least selective category compared to quantile 3. By comparison, the odds of a student choosing an institution increase by a factor of 1.6 if the institution is in the quantile of highest selectivity (quantile 5). Additionally, the odds of a student choosing an institution if it is in quantile 2 are also higher than choosing an institution in quantile 3, but differences are only statistically significant in Model 4. Thus, net of other variables in the model, institutional selectivity has a strong influence on the odds of a student choosing an institution. These findings, particularly for the highest and lowest selectivity quantiles, hold true across all four models, net of the additional variables included in the subsequent models. In the case of the lowest quantile, the change in odds compared to quantile 3 is actually the largest in the full model (Model 4) compared to the other models.

Results from models that include an interaction term between selectivity and race tell a slightly different story. In particular, Hispanic students have decreased odds of selecting an institution in the least selective quantile (compared to an institution in quantile 3) than white students. Similarly, African Americans are less likely to select an institution in the least selective quantile. Both of these populations are also less likely to select an institution in the highest quantile. Although there is a u-shaped relationship between the odds of choosing a college and college selectivity, the shape is more muted for Hispanic and African American students compared to White and Asian students.

These findings by themselves may not reflect a propensity for students to undermatch, or to choose an institution that is below what they are qualified to attend. Institutional selectivity only accounts for one part of that term, and CPS students' propensity for choosing institutions that are unselective or less selective may reflect that CPS students have low GPAs and ACT scores on average. Thus, most CPS students are only qualified to attend relatively unselective schools. Including the variable for academic match (see Models 3 and 4 of Table 4.4) shows that CPS students are more inclined to choose institutions that are an academic match to their qualifications (or more selective than the student's qualifications). Net of the other variables in the full model, institutions that are an academic match have greater odds of being chosen by a factor of 1.4 in the full model.

Further, for high-achieving students, the odds of choosing an institution increase if it is an academic match to the student's qualifications. High-achieving students are defined as those who have access to "selective" institutions, as defined by Barron's Admissions Competitive Index (see Figure 4.7). Model 4 estimates the odds of a student choosing a match institution increase by a factor of 1.2 if the student is high-achieving; however this difference is not statistically significant. This finding is particularly important given CPS' focus on match particularly for students who have access to more selective institutions. In contrast, students whose mothers have college degrees are slightly less likely to choose an institution if it is an academic match. Again, these differences are not statistically significant. The impact of the academic match variables does not change substantially if I remove the selectivity variables (those models are not shown here).

It is no surprise that that tuition is also an important factor influencing their college choices for this population of students who are predominantly from low-income families.[39] In Model 3, CPS students are more likely to choose institutions in the lowest quantiles of tuition

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[39] I also did not include average financial aid in the models because it correlates highly with tuition – institutions with high tuition are also more likely to discount that tuition with aid – and it is somewhat deceiving for this population who is more likely to qualify for larger amounts of aid than the average given by institutions.

compared to the middle quantile, net of the other variables in the model. However, once the demographic variables are included in Model 4, there are no longer significant differences in odds between tuition quantile 1 and tuition quantile 3. Although not included in the models presented in Table 4.4, this finding does not change when including interaction terms for those students who receive free or reduced lunch (the primary indicator for low-income students). Because the large majority of students qualify for free or reduced lunch, the analysis may be underpowered to detect small differences between middle or high-income students and low-income students. Additionally, the inclusion of interaction terms between race and tuition levels does not substantially change the results or yield any statistically significant findings. Previous research suggests that students and families are highly influenced by sticker price (Dynarski 2003; Heller 1996a; Kane and Spizman 1994; Manski and Wise 1983), and my analyses show a similar result although the influence is not as strong as might have been predicted especially when taking into consideration the breadth of institutional factors that students consider when they make their college choices.

Racial demographics of higher education institutions also influence where students choose to attend, net of the other variables in the full model. Historically black colleges and universities (HBCUs) have lower odds of being chosen by students by a factor of 0.5. Similarly, higher percentages of black or African American students are generally associated with lower odds of enrolling in that institution. However, the effect is very different for black and African American students; they have higher odds of choosing a particular institution if that institution is in a higher category with regards to the percentage of students who are black or African American. In particular, for black or African American students in CPS the odds of choosing an institution where 81 to 100 percent of the student population is black or African American increases by a factor of 6.7 compared to institutions where zero to ten percent of the student population is black or African American.

In contrast, the percent of students who are Hispanic associated with significantly higher odds of students choosing the institution. Institutions with 20 to 40 percent Hispanic students as well as those with 40 to 100 percent Hispanic students have increased odds of being chosen by the student by a factor of 1.5 compared to the omitted category of institutions with zero to 10 percent Hispanic student population. Similar to the finding among black and African American students, Hispanic students within CPS have higher odds of choosing institutions where larger fractions of the student body are Hispanic compared to institutions in the lowest category.

This finding for African American and Black students tends to follow what is in the literature (Braddock 1980; Butler 2010). However, there isn't as much information on Hispanic students or how the percentage of Hispanic students at a college or university impacts enrollment choices. What does exist seems to indicate that Hispanic students are more attracted to institutions with more Hispanic students.

Among the other variables, it is evident that institutional size matters. Students are less likely to choose smaller schools compared to those that are "very large" (more than 20,000 students). In the full model, this only holds true for the differences between "very large" versus "large" categories. In the partial models, there are also significant differences between the other categories and "very large."

Location is also influential in students' choices. Suburban institutions have lower odds of being chosen than urban institutions by a factor of 0.8. Rural institutions also have lower odds of being chosen by a factor of 0.6 compared to urban institutions. These impacts are statistically significant throughout the four models. Beyond the level of urbanicity, CPS students are generally more attracted to institutions close to home in most models. In Models 1 through 3, institutions that outside of Chicago have lower odds of being chosen; however, the differences in odds are no longer statistically significant in the full model, which includes the racial demographic variables.

Discussion

In the senior exit questionnaire conducted in May of students' senior year, students were asked their top two reasons for choosing the institution they chose. The highest proportions of students indicated that they chose their institution because it was close to home (32 percent), it had a specific academic program (25 percent), and cost (23 percent). Although data is not available for the particular academic programs students are interested in, the conditional logit models do show that students are attracted to institutions that are more urban in nature and closer to home – particularly those in the city of Chicago (prior to controlling for institutional racial demographics). CPS students are also attracted to institutions that are in the lower quantiles of tuition cost compared to the middle quantile.

In contrast, only nine percent of students indicated that they chose their postsecondary institution because "it was the best school I got into." Although this may not be the best measure of institutional selectivity or institutional quality, it does coincide with the findings of the conditional logit models. Net of all the other variables in the model, the odds of a student choosing the school in the lowest quantile of selectivity are much higher than they are for an institution in the middle quantile. The change in odds of being chosen if an institution is in the lowest quantile compared to the middle quantile is the largest compared to other variables in the full model by a substantial amount. To a smaller extent, we also see that the opposite holds true though. For students who have an institution in the most selective quantile in their choice set, the odds of them choosing that institution also increases. The results show a u-shaped relationship with students most likely to choose institutions that are in the least selective or most selective categories, but much more likely to choose the least selective over any others.

It is interesting to see that CPS students seem to be attracted to the extremes with regards to selectivity. With the interaction terms, I find that this relationship between selectivity and odds of an institution being chosen is strongest for White and Asian students and somewhat less strong for African American, Black and Hispanic students. Regardless, these findings provide solid evidence that students are undermatching given the higher odds of them choosing the most unselective institutions. Further, these findings are robust to considering a number of other institutional variables that are known to influence students' college enrollment choices.

When looking at the academic match variables specifically, students have increased odds of choosing an institution that is an academic match (where the average qualifications of admitted students matches the qualifications of the admitted student) over others in their choice set, net of other variables in the model. Further, these odds are slightly higher for high-achieving students who have access to selective institutions but slightly lower for students whose mothers have college degrees, net of the other variables in the model. Overall, this finding corroborates what we learned through the selectivity variables; CPS students have increased odds of attending institutions that are unselective (fall into the lowest quantile of selectivity) compared to the middle quantile. Although students are likely to choose academic matches, this likely reflects that unselective institutions are where a substantial portion of CPS students academically match.

Conditional logit models have rarely been used to understand the college attendance decisions, and they have never been used to specifically analyze the postsecondary choices of a predominantly disadvantaged student population. One contribution of this chapter is to utilize these models to better understand which institutional attributes these students are attracted to and how institutional factors are compare to one another and interact with individual attributes. A second contribution is to provide nuance to previous work on “undermatch.” Considering academic match and institutional selectivity in addition to other factors such as tuition costs and the demographics of the student body, the models show that although a myriad of factors play into students’ college choices, institutional selectivity has a strong role in shaping students’ choices and contributing to “undermatch.” By utilizing a refined model of college choice and more specific data that contains the institutions to which a student has been admitted, we can better model and understand how these various dimensions of colleges and universities impact the college choices of this particular population.

CHAPTER 5: CONCLUDING DISCUSSION

While college attendance, persistence, and completion has consistently increased since the 1970s, students from high-income families experienced larger increases in attainment compared to students from low-income families (Bailey and Dynarski 2011). Today, a student from the highest economic quartile is four times more likely to graduate from college than a student from the lowest quartile (Haveman and Wilson 2007). As a result, those who have the most to gain from college in terms of economic opportunities and social mobility are the least likely to attend or complete college (Brand and Xie 2010).

Prior research has documented that low-income, minority, and first-generation students face additional struggles in their transition to college. They are have weaker high school preparation and lower academic achievement relative to their more advantaged peers, leaving them at a disadvantage especially in gaining admission to more selective colleges and universities. Disadvantaged students also typically have fewer resources to pay for college which can limit their college searches or derail the process entirely because the process of applying for aid is complicated.

However, differences in academic achievement cannot totally account for differences in enrollments. Even among students of the same achievement level, low-socioeconomic students enroll in college at lower rates (Ellwood & Kane, 2000; Kane, 2004; Plank & Jordan, 2001). And although financial constraints are a factor in the college enrollment choices of low-income students, this is not the sole reason students choose not to pursue postsecondary education. Prior research has found that increases in financial aid and decreases in tuition are not consistently associated with an increase in enrollment of disadvantaged students (Hansen 1983; Kane 1999; Mundel 2008).

Further, students and families possess different amounts of "college knowledge," and these differences in information are most drastic between those of different socioeconomic status, racial backgrounds, and first-generation college status (Kirst and Venezia 2004; McDonough, Korn and Yamasaki 1997). The broad goal of this dissertation was to better understand some of the factors that impact the high-school-to-college transition for low-income and minority students in a large, urban school district. The remainder of this chapter will summarize the findings of each chapter, describe the implications of the findings for research as well as directions for future research, and provide implications for policy and practice.

Summary of Findings

Chapter 2 considers how high-school context and peer composition influence math course taking, educational aspirations, and college application choices. The findings indicate that within the CPS context, students benefit from having higher-achieving peers; across all outcomes and model variations, school-level mean ACT score is positively associated with desired outcomes. While prior research found that there are "hidden risks" of having more advantaged classmates, these analyses largely do not bear this out except in educational aspirations and applying to selective institutions. Additionally, in these few models where relative class rank is associated with some possible "frog pond" effects, these associations are only present when controlling for school-level mean ACT scores.

Chapter 3 investigated procedures that CPS had designed to improve college attendance, particularly at four-year institutions. It finds that completing three or more applications and completing the FAFSA are associated with higher odds of attending college and attending a four-year institution; and completing the FAFSA is positively associated with students' ability to follow through on their college plans. Completing three or more scholarship applications has a less consistent influence on the college enrollment outcomes analyzed.

Chapter 4 utilized conditional logistic models to better understand the institutional characteristics that are attractive to CPS students when making the choice of which institution to attend from among those to which they were admitted. While prior research has focused on academic “match” as a singular dimension, these analyses aim to better understand how students weigh various institutional characteristics in their decisions. The analyses show that CPS students are more likely to choose institutions that are an academic match to their own level of academic achievement, in contrast to prior research that shows the propensity for these students to “undermatch.” The models also show the importance of other institutional attributes such as location, cost, and institutional racial demographics – particularly for black and Hispanic students.

Implications for Research

This dissertation contributes to the literature on the high-school-to-college transition in a number of ways. First, this research demonstrates the importance of focusing on a disadvantaged population, particularly when studying the high-school-to-college transition. As argued previously, low-income and first-generation college students face additional barriers and challenges in navigating the transition, and they are likely to have different school experiences and priorities that influence their approaches and choices regarding postsecondary education. Because disadvantaged students make up relatively small proportions of nationally-representative datasets, studying a school district that predominantly serves disadvantaged students is crucial to understanding more nuance in their experiences.

Because most prior research draws on nationally-representative samples or samples of more advantaged students, the findings here – particularly in Chapter 2 and Chapter 4 – differ from previous work. Previous work documenting the existence of a “frog pond” effect in college admissions decisions was conducted using data from elite colleges and universities (Attewell 2001; Espenshade, Hale and Chung 2005), which predominantly receive applications from high-achieving and high-income students. Although prior work documents the “hidden risk” of attending a high school with other high-achieving peers, Chapter 2 finds benefits to attending a high school with a higher mean ACT score across a number of curricular, aspirational, and college-related outcomes. While the “frog pond” theory holds true for elite, high-achieving contexts where scarcity is an issue, the theory did not hold in the Chicago Public Schools context. While the outcomes tested were slightly different than those examined in previous research, the findings resoundingly showed that the CPS students benefit from having higher-achieving peers.

Testing theory across context and populations is important, especially regarding the transition to postsecondary education. As two-year and four-year institutions increasingly serve populations that would not have enrolled in college in the past, the theories and models of college choice and the strategies used to assist students may need to be expanded to include the different experiences and preferences of students like those in CPS.

Regarding college enrollment choices, prior research using conditional logit models had found that students’ preferences for college quality have increased over time (Avery and Hoxby 2004; Long 2004). While the research in Chapter 4 finds that students are attracted to the most selective institutions, they are also attracted to institutions in the least selective quantiles. This finding is unique to this population, and something that has not been found in other similar research.

Further, Avery and Hoxby (2004) and Long (2004) both found that student preferences for staying close to home were insignificant or were declining over time. In contrast, this research finds a strong association between college location and the likelihood of choosing that institution. Net of the many other variables in the models, CPS students were more likely to enroll in an institution if it was in Chicago or in Illinois. Because affluent families are likely to be less concerned about travel costs, including airfare, than low-income families, this finding might not be surprising. However, it has been overlooked in data using nationally representative or affluent samples.

Additionally, because these analyses focused on low-income, minority, and first-generation college students, other variables were included in Chapter 4's analyses that were not in other studies. In particular, the concern around "undermatch" is unique to disadvantaged students. Because a variable measuring academic match was included, we are able to see that these students do prefer institutions that are an academic match to their own qualifications, controlling for other variables in the model. Similarly, the racial demographics of the college or university are an important attribute to students, particularly Hispanic and African American or Black students. None of the prior studies using conditional logit models to understand college choice have included similar variables, likely because national samples of college attendees and more affluent samples are predominantly made up of white students. Thus, the focus on this population in particular allowed for new insights into their choices and the attributes that attract them to colleges and universities.

Furthermore, this research has implications for the theoretical models of college choice. Chapter 4 makes a revised model of college choice explicit. Building off of models by Hossler and Gallagher (1987) and Radford (2013), this model makes it clear that students must apply and be admitted to institutions before the enrollment choice occurs (see Figure 4.6). And each subsequent step, narrows the pool of choices available to a student because students cannot choose to enroll in an institution to which they have not applied and been admitted. In particular, this model of college choice informed the conditional logit models in Chapter 4. Rather than choosing from a universe of institutions like prior research (Long 2004), this chapter used a more refined choice set based on institutions where students were admitted. Future research should continue to utilize more nuanced models of college choice to more accurately reflect the college choice process for students.

Chapter 3 shows that the application phase does not only include college applications but should also include applying for various forms of financial aid. This is particularly important for low-income students. Prior research has found that FAFSA completion is a crucial step in enrolling in college, and this research reiterates its particular importance for this population of students. Other work on private scholarships show little explanatory power in choosing among colleges (Avery and Hoxby 2004), but no prior research has examined scholarship applications and their impact on college enrollment. Chapter 3 then provides novel findings that scholarship applications are not associated with higher odds of college attendance or following through on college plans. As college costs continue to rise, access to aid will only continue to grow in importance. Research should continue to think of the college application process and steps taken to receive various financial aid as simultaneous efforts for disadvantaged students.

Implications for Policy and Practice

The findings from this dissertation also point to some practical applications. Chapter 2 points to the benefits of attending a high school with peers who are higher achieving. For parents living in this district, the practical implication is that they should aim to get their children into the best schools possible, namely those with the highest mean test scores. In this context, students at high schools with higher achieving peers have better outcomes. This is something that parents intuitively understand as there is only increasing competition within CPS for spaces in magnet schools and other selective enrollment programs.

Similarly, the results from Chapter 3 provide practical implications. Broadly, it provides evidence that simple procedures and guidelines are helpful to students and families and can be effective. The college process can feel complicated and daunting, especially for students and parents with no family history of going to college. Even so, relatively high proportions of students completed at least two of the three key college actions. The results from this chapter point to an opportunity for CPS to further streamline their advice to just two key college actions because applying to three or more scholarships is not consistently associated with improved college enrollment outcomes. Alternatively, they could provide more nuanced advice pointing to college applications and completing the FAFSA as priorities before students spend time completing private scholarship applications.

If a goal is to reduce “undermatch” among CPS students and similar populations, Chapter 4 provides insight into the institutional characteristics that influence college enrollment decisions and ways that counselors might leverage that information to promote “matches.” While advising students on their college choices, high school counselors could explicitly name some of the attractive factors that are available at academic “match” institutions or could help them think about possible solutions for problems such as cost and longer distance from home. Also, counselors could use this information earlier in the college choice process. Helping students to generate a list of schools to apply to that includes institutions that “match” student preferences on multiple dimensions – including academically – could improve odds that students have multiple “match” options.

Directions for Future Research

Future research could build on this work in a couple of key areas. A next step could be utilizing conditional logit models on where students apply from a larger universe of possible institutions to which students could apply. Modeling both levels of student choice (the application choice and the enrollment choice) would be a useful and interesting endeavor. It would be particularly interesting to see if the institutional characteristics that influence choices vary depending on the stage of the college selection process. Future models could also benefit from using more refined variables such as including distance in terms of mileage and taking into consideration various modes of transportation available between students’ homes and particular institutions. Finally, it would be interesting to see conditional logistic regression models that are able to utilize a better measure of cost for particular students to attend. Although overall cost has an impact, net cost to students and families would be even more useful given that these students tend to qualify for relatively large amounts of federal, state, and institutional aid.

Another direction for future research is to consider the timing of completing key college actions. Some college actions are time sensitive. Many colleges and universities set application deadlines, and states and postsecondary institutions sometimes run out of financial aid to award to students. Thus, it is not just about completing an action or not, it is also important when a student completes the action. Recently, the timing for completing the FAFSA has changed, allowing students and families to complete the form earlier than before. This change could give students a longer window to complete the form, which may benefit students like those in CPS. But it also may exacerbate inequalities as disadvantaged students tend to start their college processes later and on average, have less “college knowledge.” Future research could investigate how this policy change impacts FAFSA completion and college outcomes.

The research in this dissertation also highlights the strengths of the data collected by the Consortium on Chicago School Research (CCSR) on CPS students, and opportunities to collect and utilize similar kinds of data. As mentioned previously, the value in these data lies in the detailed information collected on the high-school-to-college transition for disadvantaged students. They offer unique insight into how disadvantaged students navigate, or fail to complete, the transition to college. Because of the large amounts of administrative data included, this research does not rely on student self-reports of courses taken, grades, or college enrollment. As a result, we can feel more confident in the results. It highlights best practices for how other school districts could collect data and opportunities for large-scale survey collection to tap into similar kinds of administrative resources. Future research can continue to benefit from these kinds of data sources. Without the richness of the data, these analyses would not have been possible.

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TABLES

Table 2.1: Descriptive Statistics for Chapter 2

	Mean	SD	Min	Max
Peer Context Variables				
School-Level Mean ACT	17.876	3.44	14.17	28.68
Top 10% of high school class	0.113	0.32	0	1
11 to 20th percentiles of high school class	0.114	0.32	0	1
21 to 30th percentiles of high school class	0.112	0.32	0	1
31 to 40th percentiles of high school class	0.109	0.31	0	1
41 to 50th percentiles of high school class	0.105	0.31	0	1
Lower 50th percentiles of high school class	0.447	0.50	0	1
Individual Achievement Variables				
27+ ACT Composite Score	0.115	0.32	0	1
23-26 ACT Composite Score	0.095	0.29	0	1
20-22 ACT Composite Score	0.138	0.35	0	1
17-19 ACT Composite Score	0.226	0.22	0	1
16 and Lower ACT Composite Score	0.426	0.49	0	1
A/B-average or higher	0.230	0.42	0	1
B-average	0.160	0.37	0	1
B/C-average	0.190	0.39	0	1
C-average	0.209	0.41	0	1
C/D-average	0.155	0.36	0	1
D-average	0.053	0.22	0	1
D/F-average and below	0.003	0.05	0	1
Other Independent Variables				
Female	0.582	0.49	0	1
Black	0.491	0.50	0	1
Hispanic	0.337	0.47	0	1
Asian	0.055	0.23	0	1
Full-Pay Lunch	0.233	0.42	0	1
Mother's Education - HS Degree	0.302	0.46	0	1
Mother's Education - Some College	0.152	0.36	0	1
Mother's Education - 2 Year Degree	0.112	0.31	0	1
Mother's Education - 4 Year Degree	0.135	0.34	0	1
Mother's Education - Graduate Degree	0.056	0.23	0	1
Coach School	0.193	0.39	0	1
Excessive Absences	0.533	0.45	0	1

	Mean	SD	Min	Max
Outcome Variables				
Math Level	2.753	2.70	0	7
Took Advanced Math Course	0.339	0.47	0	1
Educational Aspirations	3.919	1.25	1	5
BA Aspirations	0.787	0.41	0	1
Graduate Degree Aspirations	0.385	0.49	0	1
Applied to a 4-Year Institution	0.884	0.32	0	1
Applied to a Selective Institution	0.542	0.50	0	1

Table 2.2: Linear Regressions on Math Level Achieved (N=13004)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)
School-Level Mean ACT	0.216 ***	0.120 ***	0.081 ***			0.106 ***
	(0.06)	(0.06)	(0.06)	(0.07)	(0.06)	(0.06)
ACT Score Category (Less than 17 omitted)						
27+ ACT Composite Score			0.524 ***	1.186 ***	0.768 ***	0.493 ***
			(0.12)	(0.24)	(0.16)	(0.12)
23-26 ACT Composite Score			0.941 ***	1.845 ***	1.191 ***	0.916 ***
			(0.16)	(0.21)	(0.15)	(0.17)
20-22 ACT Composite Score			0.923 ***	1.400 ***	1.036 ***	0.881 ***
			(0.12)	(0.14)	(0.14)	(0.12)
17-19 ACT Composite Score			0.487 ***	0.660 ***	0.517 ***	0.458 ***
			(0.09)	(0.09)	(0.09)	(0.09)
Class Rank Deciles (lower 50% omitted)						
Top 10%				1.511 ***	-0.096	0.636
				(0.17)	(0.28)	(0.34)
11 to 20th percentiles				0.910 ***	-0.334	0.214
				(0.12)	(0.21)	(0.26)
21 to 30th percentiles				0.452 ***	-0.406 *	0.001
				(0.11)	(0.18)	(0.21)
31 to 40th percentiles				0.228 *	-0.341 *	-0.048
				(0.09)	(0.14)	(0.13)
41 to 50th percentiles				0.130	-0.255 *	-0.604
				(0.08)	(0.11)	(0.13)

	Model 1 Math Level Coefficient (SE)		Model 2 Math Level Coefficient (SE)		Model 3 Math Level Coefficient (SE)		Model 4 Math Level Coefficient (SE)		Model 5 Math Level Coefficient (SE)		Model 6 Math Level Coefficient (SE)	
GPA (C-average omitted)												
A/B and above average GPA			2.072	***	1.821	***			2.037	***	1.411	***
			(0.17)		(0.15)				(0.31)		(0.34)	
B-average GPA			0.997	***	0.821	***			1.057	***	0.708	***
			(0.10)		(0.10)				(0.19)		(0.22)	
B/C-average GPA			0.284	***	0.212	**			0.397	***	0.207	
			(0.07)		(0.07)				(0.11)		(0.13)	
C/D-average GPA			-0.217	**	-0.152	*			-0.240	**	-0.163	
			(0.08)		(0.08)				(0.09)		(0.09)	
D-average GPA			-0.210		-0.150				-0.535		-0.403	
			(0.12)		(0.11)				(0.12)		(0.12)	
D/F and lower average GPA			-0.421		-0.392				-0.535		-0.403	
			(0.33)		(0.33)				(0.32)		(0.33	
Gender (Males omitted)												
Female	0.161	**	-0.105	*	-0.062		0.045		-0.049		-0.074	
	(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)	
Race (white omitted)												
Black	-0.062		0.359	*	0.399	*	0.078		0.274		0.409	*
	(0.19)		(0.17)		(0.18)		(0.20)		(0.18)		(0.18)	
Hispanic	-0.012		0.174		0.174		0.036		0.095		0.198	
	(0.15)		(0.14)		(0.15)		(0.16)		(0.15)		(0.15)	
Asian	1.175	***	0.858	***	0.883	***	1.037	***	0.925	***	0.885	***
	(0.18)		(0.15)		(0.14)		(0.12)		(0.13)		(0.14)	

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)	Math Level Coefficient (SE)
Lunch Status (F/R Lunch omitted)						
No Free/Reduced Lunch	-0.164	-0.129	-0.159	0.020	-0.063	-0.155
	(0.09)	(0.09)	(0.09)	(0.10)	(0.10)	(0.09)
Mother's Education (Less than HS omitted)						
Mother's Education – HS Degree	-0.018	-0.059	-0.159	0.020	-0.063	-0.155
	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Mother's Education - Some College	0.010	-0.029	-0.068	0.035	-0.021	-0.070
	(0.10)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Mother's Education - 2 Year Degree	0.035	-0.012	-0.033	0.063	0.008	-0.029
	(0.11)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Mother's Education - 4 Year Degree	0.056	-0.046	-0.044	0.170	0.041	-0.038
	(0.14)	(0.10)	(0.12)	(0.12)	(0.12)	(0.12)
Mother's Education - Graduate Degree	0.352 *	0.081	0.104	0.424 ***	0.229	0.100
	(0.14)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Coach School	-0.059	-0.002	-0.031	-0.047	-0.015	-0.038
	(0.23)	(0.19)	(0.19)	(0.23)	(0.20)	(0.20)
Excessive Absences (10+ days)		-0.284 *	-0.292 *	-0.559 ***	-0.337 **	-0.272 *
		(0.12)	(0.12)	(0.11)	(0.12)	(0.23)
Constant	-1.202 *	-0.046	0.319	1.850 ***	1.793 ***	-0.090
	(0.48)	(0.48)	(0.47)	(0.22)	(0.21)	(0.56)

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 2.3: Logistic Regressions on Advanced Math Course Taking (Taking Higher Level Math than Algebra II) (N=13,004)

	Model 1	Model 2	Model 3	Model 4	Model 5
	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)
School-Level Mean ACT	1.140 ***	1.108 **			1.127 ***
	(0.04)	(0.04)			(0.04)
ACT Score Category (Less than 17 omitted)					
27+ ACT Composite Score		1.313	2.695 ***	1.815 **	1.281
		(0.25)	(0.67)	(0.34)	(0.23)
23-26 ACT Composite Score		1.980 ***	5.096 ***	2.657 ***	1.932 ***
		(0.27)	(1.00)	(0.43)	(0.26)
20-22 ACT Composite Score		1.768 ***	3.092 ***	1.353 **	1.257 *
		(0.24)	(0.61)	(0.40)	(0.22)
17-19 ACT Composite Score		1.283 **	1.634 ***	1.353 **	1.257 *
		(0.12)	(0.16)	(0.14)	(0.12)
Class Rank Deciles (lower 50% omitted)					
Top 10%			3.493 ***	0.654	1.502
			(0.62)	(0.23)	(0.58)
11 to 20th percentiles			2.384 ***	0.610	1.153
			(0.28)	(0.18)	(0.36)
21 to 30th percentiles			1.797 ***	0.641	1.040
			(0.21)	(0.15)	(0.25)
31 to 40th percentiles			1.381 ***	0.644 **	0.919
			(0.12)	(0.11)	(0.16)
41 to 50th percentiles			1.275 **	0.723 *	0.917
			(0.10)	(0.10)	(0.13)

	Model 1	Model 2	Model 3	Model 4	Model 5
	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)
GPA (C-average omitted)					
A/B and above average GPA	5.623 ***	4.828 ***		7.220 ***	3.675 ***
	(0.89)	(0.73)		(2.65)	(1.41)
B-average GPA	2.556 ***	2.308 ***		3.164 ***	2.132 **
	(0.22)	(0.21)		(0.73)	(0.52)
B/C-average GPA	1.428 ***	1.367 ***		1.711 ***	1.374 *
	(0.09)	(0.09)		(0.23)	(0.19)
C/D-average GPA	0.629 ***	0.656 ***		0.591 ***	0.645 ***
	(0.07)	(0.07)		(0.07)	(0.08)
D-average GPA	0.468 ***	0.490 ***		0.420 ***	0.483 ***
	(0.08)	(0.09)		(0.08)	(0.09)
D/F and lower average GPA	0.258	0.265		0.217 *	0.262
	(0.20)	(0.20)		(0.17)	(0.20)
Gender (Males omitted)					
Female	0.879 *	0.907	1.055	0.928	0.898 *
	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)
Race (white omitted)					
Black	1.724 *	1.751 *	1.202	1.511	1.753
	(0.42)	(0.45)	(0.32)	(0.39)	(0.45)
Hispanic	1.267	1.254	1.079	1.138	1.272
	(0.23)	(0.24)	(0.32)	(0.39)	(0.45)
Asian	1.975 **	1.980 **	2.182 ***	2.020 ***	1.987 **
	(0.41)	(0.42)	(0.46)	(0.42)	(0.42)

	Model 1	Model 2	Model 3	Model 4	Model 5
	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)	Adv Math Exp(B) (SE)
Free/Reduced Lunch Status (F/R Lunch omitted)					
No Free/Reduced Lunch	0.923	0.906	1.103	1.010	0.910
	(0.08)	(0.08)	(0.11)	(0.10)	(0.08)
Mother's Education (Less than HS omitted)					
Mother's Education – HS Degree	0.900	0.896	0.946	0.916	0.894
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Mother's Education - Some College	0.837	0.814 *	0.936	0.863	0.814 *
	(0.08)	(0.08)	(0.10)	(0.09)	(0.08)
Mother's Education - 2 Year Degree	0.862	0.849	0.953	0.888	0.853
	(0.10)	(0.10)	(0.11)	(0.11)	(0.10)
Mother's Education - 4 Year Degree	0.911	0.912	1.170	1.004	0.917
	(0.08)	(0.09)	(0.13)	(0.10)	(0.12)
Mother's Education - Graduate Degree	0.915	0.930	1.316 *	1.071	0.927
	(0.12)	(0.12)	(0.15)	(0.13)	(0.12)
Coach School	0.691	0.678	0.663	0.685	0.678
	(0.21)	(0.20)	(0.20)	(0.20)	(0.21)
Excessive Absences (10+ days)	0.744 *	0.739 *	0.544 ***	0.696 **	0.749 *
	(0.09)	(0.09)	(0.06)	(0.09)	(0.09)
Constant	0.027 **	0.037 ***	0.222 ***	0.235 ***	0.028 ***
	(0.02)	(0.03)	(0.06)	(0.07)	(0.02)

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 2.4: Ordinal Regression on Ordered Measure of Educational Aspirations (N=4,893)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Aspirations Exp(B) (SE)		Aspirations Exp(B) (SE)		Aspirations Exp(B) (SE)		Aspirations Exp(B) (SE)		Aspirations Exp(B) (SE)	
School-Level Mean ACT	1.096	***	1.062	***					1.081	***
	(0.02)		(0.02)						(0.01)	
ACT Score Category (Less than 17 omitted)										
27+ ACT Composite Score			1.727	***	2.432	***	2.010	***	1.691	***
			(0.21)		(0.42)		(0.25)		(0.20)	
23-26 ACT Composite Score			1.945	***	2.432	***	2.328	***	1.897	***
			(0.21)		(0.36)		(0.25)		(0.21)	
20-22 ACT Composite Score			1.628	***	2.136	***	1.763	***	1.591	***
			(0.14)		(0.19)		(0.15)		(0.13)	
17-19 ACT Composite Score			1.598	***	1.794	***	1.644	***	1.581	***
			(0.11)		(0.12)		(0.11)		(0.10)	
Class Rank Deciles (lower 50% omitted)										
Top 10%					2.725	***	0.957		1.561	*
					(0.32)		(0.18)		(0.33)	
11 to 20th percentiles					1.595	***	0.720	*	1.039	
					(0.16)		(0.11)		(0.18)	
21 to 30th percentiles					1.748	***	1.019		1.323	
					(0.14)		(0.14)		(0.20)	
31 to 40th percentiles					1.247	*	0.826		0.983	
					(0.11)		(0.09)		(0.11)	
41 to 50th percentiles					1.258	*	0.914		1.027	
					(0.12)		(0.11)		(0.12)	

	Model 1 Aspirations Exp(B) (SE)		Model 2 Aspirations Exp(B) (SE)		Model 3 Aspirations Exp(B) (SE)		Model 4 Aspirations Exp(B) (SE)		Model 5 Aspirations Exp(B) (SE)	
GPA (C-average omitted)										
A/B and above average GPA	3.293	***	2.792	***			3.200	***	2.078	***
	(0.31)		(0.25)				(0.46)		(0.39)	
B-average GPA	1.668	***	1.510	***			1.682	***	1.324	
	(0.13)		(0.12)				(0.22)		(0.19)	
B/C-average GPA	1.269	**	1.222	*			1.314	**	1.157	
	(0.11)		(0.10)				(0.13)		(0.13)	
C/D-average GPA	0.727	***	0.768	***			0.753	**	0.770	**
	(0.06)		(0.07)				(0.07)		(0.07)	
D-average GPA	0.584	***	0.605	***			0.582	***	0.610	***
	(0.07)		(0.07)				(0.07)		(0.07)	
D/F and lower average GPA	0.220		0.204				0.189	*	0.205	
	(0.20)		(0.17)				(0.15)		(0.17)	
Gender (Males omitted)										
Female	1.388	***	1.425	***	1.547	***	1.446	***	1.420	***
	(0.09)		(0.09)		(0.09)		(0.09)		(0.09)	
Race (white omitted)										
Black	1.135		1.195		0.994		1.101		1.201	
	(0.16)		(0.17)		(0.11)		(0.14)		(0.16)	
Hispanic	0.990		1.020		0.971		0.983		1.036	
	(0.13)		(0.13)		(0.11)		(0.12)		(0.13)	
Asian	1.269		1.020		0.971		0.983		1.036	
	(0.13)		(0.13)		(0.11)		(0.12)		(0.13)	

	Model 1	Model 2	Model 3	Model 4	Model 5
	Aspirations Exp(B) (SE)	Aspirations Exp(B) (SE)	Aspirations Exp(B) (SE)	Aspirations Exp(B) (SE)	Aspirations Exp(B) (SE)
Free/Reduced Lunch Status (F/R Lunch omitted)					
No Free/Reduced Lunch	0.977	0.938	1.022	1.000	0.936
	(0.08)	(0.08)	(0.09)	(0.08)	(0.08)
Mother’s Education (Less than HS omitted)					
Mother’s Education – HS Degree	1.018	1.007	1.022	1.007	0.998
	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)
Mother's Education - Some College	1.414 ***	1.369 **	1.445 ***	1.418 ***	1.372 **
	(0.13)	(0.13)	(0.14)	(0.14)	(0.13)
Mother's Education - 2 Year Degree	1.171	1.146	1.193	1.174	1.146
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Mother's Education - 4 Year Degree	1.512 ***	1.499 ***	1.698 ***	1.572 ***	1.504 ***
	(0.15)	(0.15)	(0.17)	(0.16)	(0.15)
Mother's Education - Graduate Degree	3.020 ***	3.030 ***	3.433 ***	3.211 ***	3.012 ***
	(0.49)	(0.48)	(0.51)	(0.49)	(0.48)
Coach School	1.017	0.986	0.897	0.974	0.978
	(0.05)	(0.04)	(0.06)	(0.05)	(0.05)
Excessive Absences (10+ days)	1.184 ***	1.163 **	0.975	1.122 *	1.168 **
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Cut 1	1.184 ***	1.163 **	0.975	1.122 *	1.168 **
	(0.42)	(0.06)	(0.06)	(0.06)	(0.06)
Cut 2	1.591	1.157	0.439 ***	0.405 ***	1.550
	(0.54)	(0.34)	(0.53)	(0.63)	(0.44)

	Model 1 Aspirations Exp(B) (SE)	Model 2 Aspirations Exp(B) (SE)	Model 3 Aspirations Exp(B) (SE)	Model 4 Aspirations Exp(B) (SE)	Model 5 Aspirations Exp(B) (SE)
Cut 3	2.760 **	2.017 *	0.762 *	0.707 *	2.703 *
	(0.93)	(0.59)	(0.09)	(0.11)	(0.78)
Cut 4	20.31 ***	15.19 ***	5.567 ***	5.313 ***	20.46 ***
	(7.01)	(4.49)	(0.73)	(0.86)	(6.00)

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 2.5: Logistic Regression on BA Aspirations (N=4,893)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	BA Plans Exp(B) (SE)		BA Plans Exp(B) (SE)		BA Plans Exp(B) (SE)		BA Plans Exp(B) (SE)		BA Plans Exp(B) (SE)	
School-Level Mean ACT	1.124	***	1.077	**					1.103	***
	(0.03)		(0.03)						(0.03)	
ACT Score Category (Less than 17 omitted)										
27+ ACT Composite Score			1.689	**	2.206	***	1.925	***	1.674	**
			(0.28)		(0.42)		(0.32)		(0.27)	
23-26 ACT Composite Score			1.937	**	3.362	***	2.501	***	1.902	**
			(0.40)		(0.60)		(0.44)		(0.39)	
20-22 ACT Composite Score			1.857	***	2.478	***	2.107	***	1.822	***
			(0.24)		(0.34)		(0.28)		(0.24)	
17-19 ACT Composite Score			1.653	***	1.888	***	1.740	***	1.640	***
			(0.15)		(0.16)		(0.15)		(0.14)	
Class Rank Deciles (lower 50% omitted)										
Top 10%					2.983	***	1.070		1.860	*
					(0.47)		(0.29)		(0.57)	
11 to 20th percentiles					1.816	***	0.901		1.349	
					(0.24)		(0.20)		(0.33)	
21 to 30th percentiles					1.850	***	1.166		1.561	
					(0.23)		(0.25)		(0.36)	
31 to 40th percentiles					1.375	*	0.961		1.161	
					(0.19)		(0.17)		(0.21)	
41 to 50th percentiles					1.194		0.888		1.014	
					(0.15)		(0.15)		(0.17)	

	Model 1	Model 2	Model 3	Model 4	Model 5
	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)
GPA (C-average omitted)					
A/B and above average GPA	3.604 ***	2.934 ***		2.887 ***	1.794 ***
	(0.47)	(0.39)		(0.72)	(0.51)
B-average GPA	1.699 ***	1.509 ***		1.453	1.114
	(0.20)	(0.18)		(0.30)	(0.24)
B/C-average GPA	1.272	1.220		1.222	1.063
	(0.17)	(0.16)		(0.20)	(0.18)
C/D-average GPA	0.693 **	0.726 **		0.715 **	0.737 *
	(0.08)	(0.08)		(0.09)	(0.09)
D-average GPA	0.618 **	0.645 **		0.628 **	0.658 *
	(0.10)	(0.10)		(0.10)	(0.11)
D/F and lower average GPA	0.197	0.205		0.198	0.205
	(0.19)	(0.19)		(0.18)	(0.19)
Gender (Males omitted)					
Female	1.475 ***	1.526 ***	1.650 ***	1.550 ***	1.521 ***
	(0.10)	(0.11)	(0.11)	(0.11)	(0.11)
Race (white omitted)					
Black	1.019	1.070	0.875	0.955	1.074
	(0.18)	(0.19)	(0.14)	(0.16)	(0.18)
Hispanic	0.949	0.978	0.923	0.934	1.007
	(0.16)	(0.16)	(0.14)	(0.16)	(0.17)
Asian	1.168	1.210	1.318	1.229	1.226
	(0.34)	(0.36)	(0.40)	(0.37)	(0.36)

	Model 1	Model 2	Model 3	Model 4	Model 5
	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)	BA Plans Exp(B) (SE)
Free/Reduced Lunch Status (F/R Lunch omitted)					
No Free/Reduced Lunch	1.066	1.013	1.106	1.086	1.016
	(0.10)	(0.10)	(0.11)	(0.11)	(0.10)
Mother's Education (Less than HS omitted)					
Mother's Education – HS Degree	0.935	0.931	0.956	0.936	0.927
	(0.09)	(0.09)	(0.09)	(0.09)	(0.08)
Mother's Education - Some College	1.147	1.109	1.178	1.147	1.103
	(0.15)	(0.14)	(0.15)	(0.15)	(0.14)
Mother's Education - 2 Year Degree	0.950	0.935	0.986	0.970	0.934
	(0.14)	(0.14)	(0.15)	(0.15)	(0.14)
Mother's Education - 4 Year Degree	1.917 ***	1.921 ***	2.132 ***	2.029 ***	1.928 ***
	(0.32)	(0.33)	(0.36)	(0.35)	(0.33)
Mother's Education - Graduate Degree	2.808 ***	2.835 ***	3.270 ***	3.047 ***	2.790 ***
	(0.85)	(0.85)	(0.92)	(0.88)	(0.83)
Coach School	0.875 *	0.847 *	0.788 **	0.841 *	0.832 *
	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)
Excessive Absences (10+ days)	1.169 *	1.143	0.972	1.097	1.142
	(0.09)	(0.09)	(0.08)	(0.09)	(0.09)
Constant	0.261 **	0.430	1.390	1.552 *	0.282 *
	(0.13)	(0.21)	(0.25)	(0.31)	(0.14)

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 2.6: Logistic Regression on Graduate Degree Aspirations (N=4,893)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)	
School-Level Mean ACT	1.094	***	1.063	***					1.078	***
	(0.02)		(0.02)						(0.02)	
ACT Score Category (Less than 17 omitted)										
27+ ACT Composite Score			1.698	***	2.530	***	2.000	***	1.655	***
			(0.23)		(0.47)		(0.27)		(0.22)	
23-26 ACT Composite Score			1.935	***	3.306	***	2.296	***	1.880	***
			(0.23)		(0.38)		(0.28)		(0.22)	
20-22 ACT Composite Score			1.489	***	2.002	***	1.603	***	1.453	***
			(0.14)		(0.20)		(0.16)		(0.14)	
17-19 ACT Composite Score			1.536	***	1.759	***	1.582	***	1.523	***
			(0.13)		(0.15)		(0.16)		(0.14)	
Class Rank Deciles (lower 50% omitted)										
Top 10%					2.721	***	0.880		1.440	
					(0.34)		(0.17)		(0.33)	
11 to 20^{th} percentiles					1.549	***	0.648	**	0.944	
					(0.17)		(0.11)		(0.18)	
21 to 30^{th} percentiles					1.759	***	0.985		1.291	
					(0.15)		(0.14)		(0.20)	
31 to 40^{th} percentiles					1.198		0.770	*	0.922	
					(0.12)		(0.09)		(0.12)	
41 to 50^{th} percentiles					1.317	**	0.948		1.075	
					(0.13)		(0.11)		(0.13)	

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)		Grad Plans Exp(B) (SE)	
GPA (C-average omitted)										
A/B and above average GPA	3.374	***	2.889	***			3.588	***	2.333	***
	(0.37)		(0.30)				(0.52)		(0.47)	
B-average GPA	1.684	***	1.532	***			1.799	***	1.411	*
	(0.15)		(0.14)				(0.22)		(0.21)	
B/C-average GPA	1.258	**	1.218	*			1.332	**	1.168	
	(0.11)		(0.10)				(0.13)		(0.12)	
C/D-average GPA	0.751	*	0.787	*			0.768	*	0.791	
	(0.09)		(0.10)				(0.09)		(0.10)	
D-average GPA	0.425	***	0.435	***			0.413	***	0.440	***
	(0.08)		(0.09)				(0.09)		(0.09)	
D/F and lower average GPA	0.567		0.576				0.540		0.582	
	(0.61)		(0.65)				(0.63)		(0.66)	
Gender (Males omitted)										
Female	1.296	***	1.328	***	1.462	***	1.353	***	1.324	***
	(0.10)		(0.11)		(0.12)		(0.11)		(0.11)	
Race (white omitted)										
Black	1.252		1.320		1.093		1.228		1.330	
	(0.18)		(0.19)		(0.14)		(0.17)		(0.20)	
Hispanic	0.971		1.000		0.956		0.965		1.015	
	(0.13)		(0.13)		(0.10)		(0.12)		(0.13)	
Asian	1.287		1.327		1.499	*	1.393		1.34	
	(0.33)		(0.24)		(0.25)		(0.25)		(0.24)	

	Model 1	Model 2	Model 3	Model 4	Model 5
	Grad Plans Exp(B) (SE)	Grad Plans Exp(B) (SE)	Grad Plans Exp(B) (SE)	Grad Plans Exp(B) (SE)	Grad Plans Exp(B) (SE)
Free/Reduced Lunch Status (F/R Lunch omitted)					
No Free/Reduced Lunch	0.940	0.906	0.995	0.969	0.906
	(0.09)	(0.09)	(0.11)	(0.10)	(0.09)
Mother's Education (Less than HS omitted)					
Mother's Education – HS Degree	1.063	1.050	1.079	1.056	1.043
	(0.09)	(0.09)	(0.09)	(0.08)	(0.08)
Mother's Education - Some College	1.545 ***	1.494 ***	1.598 ***	1.550 ***	1.505 ***
	(0.17)	(0.17)	(0.18)	(0.18)	(0.18)
Mother's Education - 2 Year Degree	1.239 *	1.228 *	1.288 *	1.258 *	1.229 *
	(0.13)	(0.13)	(0.13)	(0.13)	(0.29)
Mother's Education - 4 Year Degree	1.438 **	1.421 **	1.630 ***	1.490 **	1.428 **
	(0.17)	(0.18)	(0.21)	(0.19)	(0.18)
Mother's Education - Graduate Degree	3.087 ***	3.091 ***	3.543 ***	3.300 ***	3.081 ***
	(0.54)	(0.53)	(0.58)	(0.55)	(0.53)
Coach School	1.070	1.039	0.929	1.025	1.031
	(0.07)	(0.07)	(0.08)	(0.08)	(0.07)
Excessive Absences (10+ days)	1.219 ***	1.201 **	0.985	1.161 *	1.209 **
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Constant	0.050 ***	0.644 ***	0.175 ***	0.184 ***	0.050 ***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)

Exponentiated coefficients; Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table 2.7: Logistic Regression on Applying to a Four-Year Institution (N=9,877)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)	
School-Level Mean ACT	1.199	***	1.148	***					1.149	***
	(0.03)		(0.03)						(0.03)	
ACT Score Category (Less than 17 omitted)										
27+ ACT Composite Score			1.185		2.076	**	1.424	*	1.180	
			(0.19)		(0.55)		(0.24)		(0.19)	
23-26 ACT Composite Score			2.226	***	6.691	***	3.167	***	2.192	***
			(0.43)		(1.50)		(0.55)		(0.43)	
20-22 ACT Composite Score			2.089	***	3.858	***	2.609	***	2.072	***
			(0.25)		(0.60)		(0.34)		(0.25)	
17-19 ACT Composite Score			1.599	***	2.052	***	1.765	***	1.600	***
			(0.14)		(0.19)		(0.15)		(0.14)	
Class Rank Deciles (lower 50% omitted)										
Top 10%					6.656	***	0.541	*	1.146	
					(1.25)		(0.15)		(0.35)	
11 to 20th percentiles					2.928	***	0.469	***	0.799	
					(0.40)		(0.11)		(0.18)	
21 to 30th percentiles					2.355	***	0.622	*	0.938	
					(0.30)		(0.13)		(0.19)	
31 to 40th percentiles					2.367	***	0.888		1.206	
					(0.31)		(0.14)		(0.19)	
41 to 50th percentiles					2.112	***	1.025		1.259	
					(0.22)		(0.14)		(0.17)	

	Model 1	Model 2	Model 3	Model 4	Model 5
	Apply 4-Yr Exp(B) (SE)	Apply 4-Yr Exp(B) (SE)	Apply 4-Yr Exp(B) (SE)	Apply 4-Yr Exp(B) (SE)	Apply 4-Yr Exp(B) (SE)
GPA (C-average omitted)					
A/B and above average GPA	9.624 ***	8.026 ***		16.440 ***	8.413 ***
	(1.68)	(1.58)		(5.03)	(2.71)
B-average GPA	2.805 ***	2.476 ***		3.872 ***	2.770 ***
	(0.40)	(0.36)		(0.77)	(0.56)
B/C-average GPA	1.790 ***	1.697 ***		1.979 ***	1.639 ***
	(0.19)	(0.17)		(0.26)	(0.23)
C/D-average GPA	0.529 ***	0.552 ***		0.534 ***	0.580 ***
	(0.06)	(0.06)		(0.06)	(0.07)
D-average GPA	0.319 ***	0.340 ***		0.323 ***	0.358 ***
	(0.05)	(0.05)		(0.05)	(0.05)
D/F and lower average GPA	0.213 *	0.241 *		0.250 *	0.254 *
	(0.14)	(0.16)		(0.15)	(0.17)
Gender (Males omitted)					
Female	0.869	0.906	1.041	0.915	0.909
	(0.07)	(0.07)	(0.08)	(0.07)	(0.07)
Race (white omitted)					
Black	5.320 ***	5.663 ***	3.067 ***	4.639 ***	5.676 ***
	(1.12)	(1.25)	(0.67)	(0.96)	(1.26)
Hispanic	1.441 *	1.476 *	1.105	1.271	1.475 *
	(0.27)	(0.29)	(0.23)	(0.24)	(0.29)
Asian	2.025 **	2.107 **	2.249 **	2.066 **	2.115 **
	(0.50)	(0.51)	(0.61)	(0.51)	(0.51)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)		Apply 4-Yr Exp(B) (SE)	
Free/Reduced Lunch Status (F/R Lunch omitted)										
No Free/Reduced Lunch	1.140		1.099		1.339	*	1.222		1.100	
	(0.13)		(0.13)		(0.17)		(0.14)		(0.13)	
Mother's Education (Less than HS omitted)										
Mother's Education – HS Degree	1.021		1.026		1.092		1.048		1.030	
	(0.07)		(0.07)		(0.07)		(0.07)		(0.07)	
Mother's Education - Some College	1.234		1.201		1.355	**	1.264	*	1.205	
	(0.13)		(0.13)		(0.15)		(0.14)		(0.13)	
Mother's Education - 2 Year Degree	0.949		0.932		1.044		0.991		0.937	
	(0.11)		(0.11)		(0.12)		(0.11)		(0.11)	
Mother's Education - 4 Year Degree	1.206		1.233		1.613	***	1.363	**	1.230	
	(0.13		(0.14)		(0.20)		(0.16)		(0.14)	
Mother's Education - Graduate Degree	1.286		1.324		1.908	***	1.556	**	1.324	
	(0.21)		(0.22)		(0.32)		(0.26)		(0.22)	
Coach School	0.967		0.968		0.955		1.018		0.964	
	(0.12)		(0.12)		(0.16)		(0.14)		(0.12)	
Excessive Absences (10+ days)	0.974		0.946		0.662	***	0.884		0.950	
	(0.07)		(0.07)		(0.06)		(0.07)		(0.07)	
Constant	0.084	***	0.139	***	1.482		1.536		0.129	***
	(0.04)		(0.08)		(0.32)		(0.34)		(0.07)	

Exponentiated coefficients; Standard errors in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 2.8: Logistic Regression on Applications to a Selective Institution (N=9,877)

	Model 1 Apply Selective Exp(B) (SE)	Model 2 Apply Selective Exp(B) (SE)	Model 3 Apply Selective Exp(B) (SE)	Model 4 Apply Selective Exp(B) (SE)	Model 5 Apply Selective Exp(B) (SE)
School-Level Mean ACT	1.157 ***	1.096 ***			1.127 ***
	(0.02)	(0.02)			(0.02)
ACT Score Category (Less than 17 omitted)					
27+ ACT Composite Score		1.988 ***	3.841 ***	2.511 ***	1.943 ***
		(0.27	(0.94)	(0.41)	(0.26)
23-26 ACT Composite Score		2.669 ***	7.093 ***	3.641 ***	2.634 ***
		(035)	(0.81)	(0.41)	(0.34)
20-22 ACT Composite Score		2.209 ***	3.853 ***	2.669 ***	2.183 ***
		(0.22)	(0.41)	(0.29)	(0.22)
17-19 ACT Composite Score		1.434 ***	1.788 ***	1.533 ***	1.418 ***
		(0.10)	(0.14)	(0.11)	(0.11)
Class Rank Deciles (lower 50% omitted)					
Top 10%			5.574 ***	0.840	1.852 ***
			(0.59)	(0.14)	(0.33)
11 to 20th percentiles			2.846 ***	0.756 *	1.374 *
			(0.26)	(0.10)	(0.20)
21 to 30th percentiles			2.209 ***	0.893	1.425 **
			(0.17)	(0.11)	(0.19)
31 to 40th percentiles			1.854 ***	0.983	1.401 **
			(0.16)	(0.09)	(0.15)

	Model 1 Apply Selective Exp(B) (SE)	Model 2 Apply Selective Exp(B) (SE)	Model 3 Apply Selective Exp(B) (SE)	Model 4 Apply Selective Exp(B) (SE)	Model 5 Apply Selective Exp(B) (SE)
41 to 50th percentiles			1.637 ***	1.050	1.333 ***
			(0.14)	(0.11)	(0.14)
GPA (C-average omitted)					
A/B and above average GPA	9.727 ***	7.756 ***		9.564 ***	5.095 ***
	(1.03)	(0.87)		(1.79)	(0.99)
B-average GPA	2.863 ***	2.540 ***		2.890 ***	1.991 ***
	(0.23)	(0.21)		(0.36)	(0.27)
B/C-average GPA	1.667 ***	1.592 ***		1.658 ***	1.344 ***
	(0.13)	(0.12)		(0.15)	(0.14)
C/D-average GPA	0.751 **	0.783 **		0.778 **	0.859
	(0.07)	(0.07)		(0.07)	(0.09)
D-average GPA	0.457 ***	0.458 ***		0.438 ***	0.507 ***
	(0.07)	(0.07)		(0.07)	(0.09)
D/F and lower average GPA	0.474	0.491		0.503	0.532
	(0.33)	(0.36)		(0.35)	(0.40)
Gender (Males omitted)					
Female	0.910	0.960	1.081	0.970	0.955
	(0.06)	(0.06)	(0.07)	(0.07)	(0.06)
Race (white omitted)					
Black	1.274	1.361 *	0.887	1.175	1.365 *
	(0.18)	(0.21)	(0.14)	(0.17)	(0.21)

	Model 1 Apply Selective Exp(B) (SE)	Model 2 Apply Selective Exp(B) (SE)	Model 3 Apply Selective Exp(B) (SE)	Model 4 Apply Selective Exp(B) (SE)	Model 5 Apply Selective Exp(B) (SE)
Hispanic	1.045	1.080	0.908	0.981	1.106
	(0.14)	(0.15)	(0.14)	(0.14)	(0.15)
Asian	2.394 ***	2.454 ***	2.572 ***	2.439 ***	2.467 ***
	(0.57)	(0.59)	(0.66)	(0.61)	(0.59)
Free/Reduced Lunch Status (F/R Lunch omitted)					
No Free/Reduced Lunch	1.034	0.992	1.173 *	1.085	0.988
	(0.07)	(0.07)	(0.08)	(0.07)	(0.06)
Mother's Education (Less than HS omitted)					
Mother's Education – HS Degree	1.062	1.068	1.120	1.089	1.067
	(0.07)	(0.07)	(0.08)	(0.07)	(0.07)
Mother's Education - Some College	1.225 *	1.184 *	1.318 **	1.241 **	1.182 *
	(0.10)	(0.10)	(0.11)	(0.10)	(0.10)
Mother's Education - 2 Year Degree	1.163	1.158	1.282 **	1.212 *	1.158
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Mother's Education - 4 Year Degree	1.357 ***	1.369 ***	1.721 ***	1.493 ***	1.368 ***
	(0.11)	(0.11)	(0.15)	(0.12)	(0.11)
Mother's Education - Graduate Degree	1.318 *	1.313 *	1.808 ***	1.484 ***	1.301 *
	(0.16)	(0.16)	(0.20)	(0.17)	(0.16)
Coach School	1.024	1.018	1.011	1.048	1.000
	(0.14)	(0.14)	(0.18)	(0.16)	(0.14)
Excessive Absences (10+ days)	0.849 **	0.826 **	0.617 ***	0.778 ***	0.834 **
	(0.05)	(0.05)	(0.04)	(0.05)	(0.08)

	Model 1 Apply Selective Exp(B) (SE)	Model 2 Apply Selective Exp(B) (SE)	Model 3 Apply Selective Exp(B) (SE)	Model 4 Apply Selective Exp(B) (SE)	Model 5 Apply Selective Exp(B) (SE)
Constant	0.034 ***	0.064 ***	0.337 ***	0.309 ***	0.036 ***
	(0.01)	(0.02)	(0.06)	(0.06)	(0.02)

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 3.1: Descriptive Statistics for Chapter 3

	Mean	SD	Min	Max
Independent Variables				
Female	0.609	0.49	0	1
Black	0.498	0.50	0	1
Hispanic	0.330	0.47	0	1
Asian	0.059	0.24	0	1
Reduced-Price Lunch	0.128	0.33	0	1
Full-Pay Lunch	0.306	0.46	0	1
Excessive Absences	0.510	0.50	0	1
Mother's Education - HS Degree	0.306	0.46	0	1
Mother's Education - Some College	0.155	0.36	0	1
Mother's Education - 2 Year Degree	0.115	0.32	0	1
Mother's Education - 4 Year Degree	0.132	0.34	0	1
Mother's Education - Graduate Degree	0.052	0.22	0	1
Coach School	0.197	0.40	0	1
Magnet School	0.192	0.39	0	1
Cumulative GPA	2.882	0.88	0.78	5.26
Cumulative GPA Squared	9.084	5.37	0.61	27.71
Composite ACT	18.200	4.51	9	36
Composite ACT Squared	351.541	185.49	81	1296
Parental Help – FAFSA	0.311	0.46	0	1
Parental Help – FAFSA Missing	0.650	0.48	0	1
Teacher/Counselor Help – FAFSA	0.315	0.46	0	1
Teacher/Counselor Help – FAFSA Missing	0.648	0.48	0	1
Parental Help – Scholarship Applications	0.302	0.46	0	1
Parental Help – Scholarship Applications Missing	0.647	0.48	0	1
Teacher/Counselor Help – Scholarship Applications	0.327	0.47	0	1
Teacher/Counselor Help – Scholarship Apps Missing	0.643	0.48	0	1
Parental Help – College Applications	0.304	0.46	0	1
Parental Help – College Applications Missing	0.647	0.48	0	1
Teacher/Counselor Help – College Applications	0.326	0.47	0	1
Teacher/Counselor Help – College Apps Missing	0.643	0.48	0	1
Key College Actions				
Applied to 3 or more Colleges	0.626	0.48	0	1
Completed the FAFSA	0.856	0.35	0	1
Completed 3 or more Scholarships	0.366	0.48	0	1

	Mean	SD	Min	Max
Combinations of Key College Actions				
Completed All 3 Key College Actions	0.275	0.45	0	1
Completed FAFSA & 3+ College Applications	0.569	0.50	0	1
College Outcomes				
Attended College	0.818	0.39	0	1
Attended a 4-Year Institution	0.625	0.48	0	1
Followed through on College Plans	0.859	0.35	0	1

Table 3.2: Completion of the 3 Key College Actions (N=10,029)

		Zero Scholarship Applications	1-2 Scholarship Applications	3+ Scholarship Applications
No FAFSA	Zero College Applications	244 (2.4%)	47 (0.5%)	6 (<0.1%)
	1-2 College Applications	337 (3.4%)	183 (1.8%)	63 (0.6%)
	3+ College Applications	264 (2.6%)	159 (1.6%)	144 (1.4%)
Completed FAFSA	Zero College Applications	260 (2.6%)	138 (1.4%)	102 (1.0%)
	1-2 College Applications	1038 (10.3%)	744 (7.4%)	599 (6.0%)
	3+ College Applications	1382 (13.8%)	1570 (15.7%)	2759 (27.5%)

Table 3.3: Completion of the Three Key College Actions by Student Characteristics (N=10,029)

	Completed the FAFSA	Applied to 3+ Scholarships	Applied to 3+ Colleges	Completed All 3 Actions
Male	0.832	0.330	0.571	0.233
Female	0.871	0.389	0.662	0.302
White	0.811	0.314	0.584	0.234
Black	0.915	0.433	0.677	0.337
Hispanic	0.777	0.292	0.556	0.201
Asian	0.888	0.317	0.669	0.250
Full-Pay Lunch	0.856	0.396	0.653	0.298
Reduced-Price Lunch	0.855	0.375	0.617	0.279
Free Lunch	0.856	0.357	0.621	0.269
Mother’s Education - Less than HS	0.856	0.296	0.581	0.210
Mother’s Education - HS Degree	0.858	0.343	0.606	0.255
Mother’s Education - Some College	0.895	0.422	0.654	0.328
Mother’s Education - 2 Year Degree	0.885	0.401	0.649	0.302
Mother’s Education - 4 Year Degree	0.870	0.414	0.662	0.321
Mother’s Education - Graduate Degree	0.856	0.461	0.724	0.359
Non-Coach School	0.850	0.369	0.614	0.275
Coach School	0.881	0.354	0.674	0.274
Non-Magnet School	0.850	0.354	0.613	0.262
Magnet School	0.880	0.418	0.680	0.330
No Excessive Absences	0.869	0.405	0.666	0.310
Excessive Absences	0.843	0.329	0.587	0.242
High Cumulative GPA (3.0 or higher)	0.903	0.496	0.726	0.391
Low Cumulative GPA (lower than 3.0)	0.820	0.268	0.550	0.187
High ACT (20 or higher)	0.888	0.440	0.702	0.346
Low ACT (lower than 20)	0.841	0.332	0.590	0.242
No Parental Help – FAFSA	0.843	0.478	0.485	0.265
Parental Help – FAFSA	0.883	0.392	0.633	0.299
Parental Help – FAFSA Missing	0.850	0.354	0.624	0.266
No Teacher/Counselor Help – FAFSA	0.846	0.479	0.485	0.269
Teacher/Counselor Help – FAFSA	0.875	0.386	0.626	0.289
Teacher/Counselor Help – FAFSA Missing	0.849	0.354	0.624	0.266

	Completed the FAFSA	Applied to 3+ Scholarships	Applied to 3+ Colleges	Completed All 3 Actions
No Parental Help - Scholarship	0.850	0.479	0.484	0.270
Parental Help – Scholarship Applications	0.868	0.385	0.624	0.288
Parental Help – Scholarship Applications Missing	0.850	0.354	0.623	0.265
No Teacher/Counselor Help – Scholarship	0.850	0.478	0.485	0.265
Teacher/Counselor Help – Scholarship Applications	0.867	0.390	0.636	0.297
Teacher/Counselor Help – Scholarship Applications Missing	0.850	0.354	0.623	0.264
No Parental Help – College Applications	0.851	0.479	0.484	0.264
Parental Help – College Applications	0.866	0.394	0.638	0.299
Parental Help – College Applications Missing	0.850	0.353	0.624	0.264
No Teacher/Counselor Help – College Applications	0.850	0.478	0.485	0.264
Teacher/Counselor Help – College Applications	0.867	0.394	0.637	0.297
Teacher/Counselor Help – College Applications Missing	0.849	0.352	0.623	0.264

Table 3.4: Logistic Regressions on the Three Key College Actions (N=10,029)

Predictor	Model 1 FAFSA exp(b) (SE)		Model 2 FAFSA exp(b) (SE)		Model 3 FAFSA exp(b) (SE)		Model 4 3+ Scholarship Applications exp(b) (SE)		Model 5 3+ Scholarship Applications exp(b) (SE)		Model 6 3+ Scholarship Applications exp(b) (SE)	
Gender (Males omitted)												
Female	1.336	***	1.133		1.133		1.276	***	0.955		0.950	
	(0.08)		(0.08)		(0.08)		(0.07)		(0.06)		(0.06)	
Race/Ethnicity (White omitted)												
Black	2.679	***	4.440	***	4.569	***	1.862	***	3.409	***	3.449	***
	(0.60)		(0.95)		(0.97)		(0.17)		(0.41)		(0.41)	
Hispanic	0.917		1.090		1.100		1.108		1.406	**	1.405	**
	(0.18)		(0.21)		(0.21)		(0.13)		(0.18)		(0.17)	
Asian	2.019	**	1.535	*	1.558	*	1.131		0.782		0.778	
	(0.45)		(0.30)		(0.33)		(0.16)		(0.12)		(0.11)	
Free/Reduced-Price Lunch Status (Free-lunch omitted)												
Reduced-Price Lunch	1.163		1.006		1.128		1.172	*	1.006		1.006	
	(0.11)		(0.10)		(0.10)		(0.09)		(0.06)		(0.06)	
Full-Pay Lunch	1.184		0.902		1.128		1.233	*	1.027		1.028	
	(0.13)		(0.08)		(0.10)		(0.10)		(0.07)		(0.07)	
Mother's Education (Less than HS degree omitted)												
Mother's Education - HS Degree	1.158		1.110		1.089		1.110		1.055		1.056	
	(0.09)		(0.08)		(0.08)		(0.06)		(0.06)		(0.06)	
Mother's Education - Some College	1.320	*	1.232		1.217		1.370	***	1.295	***	1.302	***
	(0.17)		(0.16)		(0.16)		(0.09)		(0.09)		(0.09)	

Predictor	Model 1 FAFSA exp(b) (SE)	Model 2 FAFSA exp(b) (SE)	Model 3 FAFSA exp(b) (SE)	Model 4 3+ Scholarship Applications exp(b) (SE)	Model 5 3+ Scholarship Applications exp(b) (SE)	Model 6 3+ Scholarship Applications exp(b) (SE)
Mother's Education - 2 Year Degree	1.289 *	1.239	1.217	1.326 ***	1.274 **	1.279 **
	(0.13)	(0.14)	(0.14)	(0.09)	(0.10)	(0.10)
Mother's Education - 4 Year Degree	1.130	0.976	0.961	1.421 ***	1.250 **	1.262 **
	(0.12)	(0.10)	(0.10)	(0.13)	(0.11)	(0.11)
Mother's Education - Graduate Degree	1.047	0.761	0.751 *	1.710 ***	1.298 *	1.312 *
	(0.14)	(0.11)	(0.11)	(0.21)	(0.15)	(0.16)
Coach School		1.357	1.351 *		0.864	0.870
		(0.21)	(0.21)		(0.17)	(0.16)
Magnet School		1.086	1.101		0.961	0.977
		(0.18)	(0.18)		(0.17)	(0.17)
Excessive Absences (10+ days)		0.882	0.901		0.961	0.975
		(0.07)	(0.07)		(0.06)	(0.06)
Cumulative GPA		4.341 ***	4.178 ***		1.755 **	1.738 *
		(1.10)	(1.03)		(0.38)	(0.37)
Cumulative GPA Squared		0.860 **	0.865 **		1.066	1.067
		(0.04)	(0.04)		(0.04)	(0.04)
Composite ACT Score		1.050	1.052		1.140 *	1.135 *
		(0.06)	(0.06)		(0.07)	(0.07)
Composite ACT Score Squared		0.999	1.000		0.996 *	0.996 *
		(0.00)	(0.00)		(0.00)	(0.00)

Predictor	Model 1 FAFSA exp(b) (SE)	Model 2 FAFSA exp(b) (SE)	Model 3 FAFSA exp(b) (SE)	Model 4 3+ Scholarship Applications exp(b) (SE)	Model 5 3+ Scholarship Applications exp(b) (SE)	Model 6 3+ Scholarship Applications exp(b) (SE)
Parent FAFSA Help			2.446 ***			
			(0.30)			
Parent FAFSA Help Missing			1.993 **			
			(0.46)			
Teacher/Counselor FAFSA Help			1.415 *			
			(0.22)			
Teacher/Counselor FAFSA Help Missing			1.185			
			(0.30)			
Parent Scholarship Help						0.917
						(0.11)
Parent Scholarship Help Missing						1.047
						(0.25)
Teacher/Counselor Scholarship Help						1.093
						(0.16)
Teacher/Counselor Scholarship Help Missing						0.818
						(0.21)
Constant	3.310 ***	0.075 ***	0.029 ***	0.333 ***	0.010 ***	0.011 ***
	(0.55)	(0.04)	(0.01)	(0.03)	(0.01)	(0.00)

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 3.5: Logistic Regressions on the Three Key College Actions - Continued (N=10,029)

	Model 1 3+ College Applications Exp(B) (SE)		Model 2 3+ College Applications Exp(B) (SE)		Model 3 3+ College Applications Exp(B) (SE)	
Gender (Males omitted)						
Female	1.468	***	1.298	***	1.298	***
	(0.07)		(0.07)		(0.07)	
Race/Ethnicity (White omitted)						
Black	1.614	**	2.753	***	2.747	***
	(0.27)		(0.43)		(0.42)	
Hispanic	1.024		1.306	*	1.303	
	(0.14)		(0.17)		(0.17)	
Asian	1.593	***	1.212		1.192	
	(0.24)		(0.15)		(0.15)	
Free/Reduced-Price Lunch Status (Free-lunch omitted)						
Reduced-Price Lunch	1.049		0.907		0.911	
	(0.06)		(0.06)		(0.06)	
Full-Pay Lunch	1.172		0.897		0.897	
	(0.13)		(0.08)		(0.08)	
Mother's Education (Less than HS degree omitted)						
Mother's Education - HS Degree	1.013		0.969		0.973	
	(0.06)		(0.06)		(0.06)	
Mother's Education - Some College	1.112		1.018		1.026	
	(0.07)		(0.06)		(0.06)	
Mother's Education - 2 Year Degree	1.146		1.087		1.099	
	(0.10)		(0.10)		(0.11)	
Mother's Education - 4 Year Degree	1.213	*	1.038		1.049	
	(0.11)		(0.09)		(0.11)	
Mother's Education - Graduate Degree	1.639	***	1.148		1.163	
	(0.23)		(0.18)		(0.18)	
Coach School			1.272		1.268	
			(0.27)		(0.27)	
Magnet School			0.909		0.914	
			(0.13)		(0.13)	
Excessive Absences (10+ days)			0.838	**	0.845	**
			(0.05)		(0.05)	
Cumulative GPA			1.438	*	1.435	
			(0.26)		(0.23)	

	Model 1 3+ College Applications Exp(B) (SE)		Model 2 3+ College Applications Exp(B) (SE)		Model 3 3+ College Applications Exp(B) (SE)	
Cumulative GPA Squared			1.029		1.029	
			(0.03)		(0.03)	
Composite ACT Score			0.971		0.967	
			(0.04)		(0.04)	
Composite ACT Score Squared			1.002		1.002	
			(0.00)		(0.00)	
Parent Application Help					0.828	
					(0.08)	
Parent Application Help Missing					0.807	
					(0.17)	
Teacher/Counselor Application Help					1.512	**
					(0.21)	
Teacher/Counselor Application Help Missing					1.481	
					(0.35)	
Constant	1.060		0.201	***	0.172	***
	(0.17)		(0.09)		(0.08)	

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 3.6: Logistic Regressions on Key College Action Completion Patterns (N=10,029)

	Model 1 Completed FAFSA & 3+ Applications Exp(B) (SE)		Model 2 Completed FAFSA & 3+ Applications Exp(B) (SE)		Model 3 Completed FAFSA & 3+ Applications Exp(B) (SE)		Model 4 Completed All 3 College Actions Exp(B) (SE)		Model 5 Completed All 3 College Actions Exp(B) (SE)		Model 6 Completed All 3 College Actions Exp(B) (SE)	
Gender (Males omitted)												
Female	1.431	***	1.249	***	1.246	***	1.414	***	1.082		1.073	
	(0.06)		(0.06)		(0.06)		(0.07)		(0.06)		(0.06)	
Race/Ethnicity (White omitted)												
Black	1.727	**	3.117	***	3.145	***	1.813	***	3.482	***	3.529	***
	(0.30)		(0.51)		(0.51)		(0.19)		(0.43)		(0.43)	
Hispanic	0.924		1.182		1.183		0.998	*	1.283	*	1.283	*
	(0.13)		(0.16)		(0.16)		(0.12)		(0.16)		(0.16)	
Asian	1.587	**	1.210		1.202		1.206		0.850		0.847	
	(0.26)		(0.17)		(0.17)		(0.20)		(0.14)		(0.13)	
Free/Reduced-Price Lunch Status (Free-lunch omitted)												
Reduced-Price Lunch	1.057		0.895		0.895		1.145		0.950		0.948	
	(0.06)		(0.05)		(0.06)		(0.09)		(0.07)		(0.07)	
Full-Pay Lunch	1.158		0.862		0.855		1.181		0.919		0.917	
	(0.12)		(0.07)		(0.07)		(0.11)		(0.07)		(0.07)	
Mother's Education (Less than HS degree omitted)												
Mother's Education - HS Degree	1.039		0.990		0.987		1.139		1.079		1.081	
	(0.06)		(0.06)		(0.06)		(0.08)		(0.08)		(0.08)	

	Model 1 Completed FAFSA & 3+ Applications Exp(B) (SE)	Model 2 Completed FAFSA & 3+ Applications Exp(B) (SE)	Model 3 Completed FAFSA & 3+ Applications Exp(B) (SE)	Model 4 Completed All 3 College Actions Exp(B) (SE)	Model 5 Completed All 3 College Actions Exp(B) (SE)	Model 6 Completed All 3 College Actions Exp(B) (SE)
Mother's Education - Some College	1.158 *	1.047	1.053	1.418 ***	1.301 ***	1.315 ***
	(0.07)	(0.07)	(0.07)	(0.11)	(0.10)	(0.10)
Mother's Education - 2 Year Degree	1.132	1.061	1.065	1.333 ***	1.251 *	1.262 *
	(0.09)	(0.09)	(0.09)	(0.11)	(0.11)	(0.11)
Mother's Education - 4 Year Degree	1.156	0.969	0.973	1.483 ***	1.263 *	1.280 *
	(0.10)	(0.08)	(0.08)	(0.16)	(0.13)	(0.14)
Mother's Education - Graduate Degree	1.429 **	0.974	0.982	1.757 ***	1.263	1.287 *
	(0.16)	(0.13)	(0.13)	(0.21)	(0.13)	(0.16)
Coach School		1.277	1.274		0.908	0.915
		(0.27)	(0.26)		(0.18)	(0.18)
Magnet School		0.916	0.920		0.951	0.961
		(0.12)	(0.12)		(0.17)	(0.18)
Excessive Absences (10+ days)		0.842 **	0.853 **		0.943	0.960
		(0.05)	(0.05)		(0.06)	(0.06)
Cumulative GPA		2.192 ***	2.120 ***		2.324 ***	2.261 ***
		(0.43)	(0.42)		(0.56)	(0.55)
Cumulative GPA Squared		0.962	1.967		1.009	1.013
		(0.03)	(0.03)		(0.04)	(0.04)
Composite ACT Score		1.008	1.006		1.164 *	1.161 *
		(0.05)	(0.05)		(0.07)	(0.08)

	Model 1 Completed FAFSA & 3+ Applications Exp(B) (SE)	Model 2 Completed FAFSA & 3+ Applications Exp(B) (SE)	Model 3 Completed FAFSA & 3+ Applications Exp(B) (SE)	Model 4 Completed All 3 College Actions Exp(B) (SE)	Model 5 Completed All 3 College Actions Exp(B) (SE)	Model 6 Completed All 3 College Actions Exp(B) (SE)
Composite ACT Score Squared		1.001	1.001		0.996 *	0.996 *
		(0.00)	(0.00)		(0.00)	(0.00)
Parental Counselor Help (No Help Omitted)						
Parental FAFSA Help			1.729 ***			1.579 *
			(0.27)			(0.29)
Parental FAFSA Help Missing			1.925 *			1.544
			(0.54)			(0.44)
Parental Application Help			0.651 ***			0.717 *
			(0.08)			(0.11)
Parental Application Help Missing			0.697			0.588 *
			(0.19)			(0.15)
Teacher/Counselor FAFSA Help			1.604 *			1.225
			(0.30)			(0.24)
Teacher/Counselor FAFSA Help Missing			1.208			0.863
			(0.33)			(0.23)
Teacher/Counselor Application Help			1.010			1.030
			(0.15)			(0.24)
Teacher/Counselor Application Help Missing						0.746
						(0.29)

	Model 1 Completed FAFSA & 3+ Applications Exp(B) (SE)		Model 2 Completed FAFSA & 3+ Applications Exp(B) (SE)		Model 3 Completed FAFSA & 3+ Applications Exp(B) (SE)		Model 4 Completed All 3 College Actions Exp(B) (SE)		Model 5 Completed All 3 College Actions Exp(B) (SE)		Model 6 Completed All 3 College Actions Exp(B) (SE)	
Parental Scholarship Help											0.880	
											(0.13)	
Parental Scholarship Help Missing											1.338	
											(0.37)	
Teacher/Counselor Scholarship Help											1.038	
											(0.20)	
Teacher/Counselor Scholarship Help Missing											1.400	
											(0.52)	
Constant	0.840		0.054	***	0.035	***	0.199	***	0.002	***	0.002	***
	(0.13)		(0.03)		(0.02)		(0.02)		(0.00)		(0.00)	

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 3.7: Logistic Regressions on College Outcomes – Attending College and Attending a Four-Year Institution (N=10,029)

	Model 1 Attended College Exp(B) (SE)		Model 2 Attended College Exp(B) (SE)		Model 3 Attended College Exp(B) (SE)		Model 4 Attended a Four-Year Institution Exp(B) (SE)		Model 5 Attended a Four-Year Institution Exp(B) (SE)		Model 6 Attended a Four-Year Institution Exp(B) (SE)	
Gender (Males omitted)												
Female	1.443	***	1.284	***	1.265	***	1.167	**	0.847	**	0.821	
	(0.09)		(0.08)		(0.08)		(0.06)		(0.05)		(0.05)	
Race/Ethnicity (White omitted)												
Black	0.933		1.779	***	1.170		0.793		3.357	***	2.498	***
	(0.16)		(0.24)		(0.16)		(0.15)		(0.57)		(0.39)	
Hispanic	0.540	***	0.678	**	0.607	***	0.776		1.307		1.167	
	(0.07)		(0.08)		(0.08)		(0.12)		(0.21)		(0.17)	
Asian	2.142	***	1.534	**	1.316		2.088	**	1.423		1.399	
	(0.43)		(0.24)		(0.19)		(0.53)		(0.35)		(0.35)	
Free/Reduced Price Lunch Status (Full pay omitted)												
Reduced Price Lunch	1.478	**	1.149		1.162		1.474	***	1.012		1.019	
	(0.17)		(0.13)		(0.14)		(0.12)		(0.08)		(0.77)	
Full-Pay Lunch	2.097	***	1.358	**	1.392	**	1.689	***	0.874		0.915	
	(0.28)		(0.13)		(0.15)		(0.18)		(0.13)		(0.11)	
Mother's Education (Less than HS degree omitted)												
High School Degree	1.147	*	1.091		1.079		1.146	*	1.041		1.042	
	(0.08)		(0.08)		(0.08)		(0.08)		(0.08)		(0.08)	

	Model 1 Attended College Exp(B) (SE)	Model 2 Attended College Exp(B) (SE)	Model 3 Attended College Exp(B) (SE)	Model 4 Attended a Four-Year Institution Exp(B) (SE)	Model 5 Attended a Four-Year Institution Exp(B) (SE)	Model 6 Attended a Four-Year Institution Exp(B) (SE)
Some College	1.772 ***	1.533 ***	1.512 ***	1.486 ***	1.208 *	1.179
	(0.18)	(0.15)	(0.16)	(0.13)	(0.11)	(0.11)
Two-Year Degree	1.746 ***	1.594 ***	1.572 ***	1.231 *	1.033 *	1.005
	(0.21)	(0.19)	(0.20)	(0.11)	(0.12)	(0.12)
Four-Year Degree	1.791 ***	1.498 ***	1.547 ***	1.577 **	1.131	1.140
	(0.21)	(0.16)	(0.19)	(0.22)	(0.15)	(0.14)
Graduate Degree	1.813 ***	1.255	1.374	2.795 ***	1.547 **	1.534 **
	(0.33)	(0.21)	(0.23)	(0.44)	(0.22)	(0.22)
College Coach at School		1.129	1.044		1.467 ***	1.424 ***
		(0.11)	(0.12)		(0.14)	(0.13)
Magnet School		1.749 ***	1.770 ***		1.414 ***	1.489 ***
		(0.21)	(0.23)		(0.14)	(0.13)
Excessive Absences		0.896	0.918		0.792 ***	0.808 ***
		(0.06)	(0.72)		(0.05)	(0.05)
Cumulative GPA		1.734 *	1.267		7.883 ***	7.164 ***
		(0.44)	(0.33)		(2.42)	(2.15)
Cumulative GPA Squared		0.979	1.008		0.880	0.871 *
		(0.04)	(0.05)		(0.05)	(0.05)
Composite ACT		1.437 ***	1.489 ***		1.524 ***	1.529 ***
		(0.08)	(0.08)		(0.10)	(0.10)

	Model 1 Attended College Exp(B) (SE)	Model 2 Attended College Exp(B) (SE)	Model 3 Attended College Exp(B) (SE)	Model 4 Attended a Four-Year Institution Exp(B) (SE)	Model 5 Attended a Four-Year Institution Exp(B) (SE)	Model 6 Attended a Four-Year Institution Exp(B) (SE)
Composite ACT Squared		0.993 ***	0.992 ***		0.993 ***	0.993 ***
		(0.00)	(0.00)		(0.00)	(0.00)
Parental/Counselor Help (No Help Omitted)						
Parental FAFSA Help		2.057 ***	1.489 ***		1.240	1.112
		(0.39)	(0.08)		(0.26)	(0.23)
Parental FAFSA Help Missing		1.734	1.548		1.003	0.838
		(0.59)	(0.48)		(0.30)	(0.26)
Parental Application Help		0.551 ***	0.629 **		1.251	1.316
		(0.09)	(0.11)		(0.26)	(0.29)
Parental Application Help Missing		0.750	0.875		1.342	1.494
		(0.33)	(0.31)		(0.59)	(0.68)
Parental Scholarship Help		1.080	1.290		1.003	0.923
		(0.23)	(0.25)		(0.18)	(0.18)
Parental Scholarship Help Missing		1.327	1.840		1.332	1.284
		(0.48)	(0.69)		(0.41)	(0.42)
Teacher/Counselor FAFSA Help		1.382	1.076		0.918	0.935
		(0.27)	(0.21)		(0.17)	(0.18)
Teacher/Counselor FAFSA Help Missing		1.350	1.205		1.322	1.416
		(0.42)	(0.35)		(0.53)	(0.58)
Teacher/Counselor Application Help		0.558 *	0.603		1.364	1.340
		(0.16)	(0.17)		(0.26)	(0.27)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
				Attended a	Attended a	Attended a
	Attended College	Attended College	Attended College	Four-Year Institution	Four-Year Institution	Four-Year Institution
	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
Teacher/Counselor Application Help Missing		0.352 *	0.445		0.967	1.078
		(0.16)	(0.19)		(0.37)	(0.44)
Teacher/Counselor Scholarship Help		1.142	1.278		0.677	0.722
		(0.29)	(0.31)		(0.14)	(0.14)
Teacher/Counselor Scholarship Help Missing		1.106	0.959		0.528	0.476 *
		(0.72)	(0.37)		(0.17)	(0.15)
Key College Actions						
Applied to 3+ Colleges			1.205 **			1.158 ***
			(0.08)			(0.09)
Completed FAFSA			4.225 ***			2.357 ***
			(0.38)			(0.27)
Applied to 3+ Scholarships			1.101			1.514 ***
			(0.08)			(0.11)
Constant	6.367 ***	0.017 ***	0.010 ***	2.036 ***	0.000 ***	0.000 ***
	(1.25)	(0.01)	(0.01)	(0.43)	(0.00)	(0.00)
N	10029	10029	10029	8204	8204	8204

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 3.8: Logistic Regressions on College Outcomes – Follow through on College Plans (N=7,536)

	Model 1 Follow Through on College Plans Exp(B) (SE)		Model 2 Follow Through on College Plans Exp(B) (SE)		Model 3 Follow Through on College Plans Exp(B) (SE)	
Gender (Males omitted)						
Female	1.274	**	1.137		1.137	
	(0.10)		(0.09)		(0.10)	
Race/Ethnicity (White omitted)						
Black	0.683	*	1.322		0.899	
	(0.13)		(0.24)		(0.20)	
Hispanic	0.410	***	0.507	***	0.441	***
	(0.06)		(0.08)		(0.09)	
Asian	1.285		0.882		0.734	
	(0.29)		(0.16)		(0.15)	
Free/Reduced Price Lunch Status (Full pay omitted)						
Reduced-Price Lunch	1.644	***	1.232		1.237	
	(0.24)		(0.19)		(0.20)	
Full-Pay Lunch	2.511	***	1.647	***	1.677	***
	(0.39)		(0.22)		(0.22)	
Mother's Education (Less than HS degree omitted)						
High School Degree	1.093		1.031		1.002	
	(0.09)		(0.09)		(0.09)	
Some College	1.935	***	1.683	***	1.643	***
	(0.22)		(0.20)		(0.21)	
Two-Year Degree	1.495	**	1.338	*	1.356	***
	(0.21)		(0.20)		(0.22)	
Four-Year Degree	1.458	**	1.227		1.287	***
	(0.21)		(0.18)		(0.20)	
Graduate Degree	1.378		0.963		1.025	
	(0.28)		(0.19)		(0.20)	
College Coach			1.102		1.020	
			(0.12)		(0.12)	
Magnet School			1.931	***	2.035	***
			(0.31)		(0.35)	

	Model 1 Follow Through on College Plans Exp(B) (SE)		Model 2 Follow Through on College Plans Exp(B) (SE)		Model 3 Follow Through on College Plans Exp(B) (SE)	
Excessive Absences			0.904		0.905	
			(0.08)		(0.08)	
Cumulative GPA			1.711		1.265	
			(0.51)		(0.39)	
Cumulative GPA Squared			0.988		1.025	
			(0.05)		(0.06)	
Composite ACT			1.517	***	1.568	***
			(0.10)		(0.10)	
Composite ACT Squared			0.991	***	0.990	***
			(0.00)		(0.00)	
Parental/Counselor Help (No Help Omitted)						
Parental FAFSA Help			2.152	***	1.524	*
			(0.45)		(0.31)	
Parental FAFSA Help Missing			3.014	*	2.151	
			(1.49)		(0.48)	
Parental Application Help			0.418	**	0.454	**
			(0.13)		(0.13)	
Parental Application Help Missing			0.385		0.345	*
			(0.33)		(0.18)	
Parental Scholarship Help			1.361		1.025	
			(0.33)		(0.24)	
Parental Scholarship Help Missing			1.132		0.956	
			(0.48)		(0.40)	
Teacher/Counselor FAFSA Help			1.154		1.392	
			(0.31)		(0.34)	
Teacher/Counselor FAFSA Help Missing			1.350		1.961	
			(0.74)		(1.20)	
Teacher/Counselor Application Help			0.729		0.722	
			(0.29)		(0.28)	
Teacher/Counselor Application Help Missing			0.781		0.861	
			(0.52)		(0.51)	
Teacher/Counselor Scholarship Help			0.767		0.957	
			(0.27)		(0.33)	

	Model 1 Follow Through on College Plans Exp(B) (SE)		Model 2 Follow Through on College Plans Exp(B) (SE)		Model 3 Follow Through on College Plans Exp(B) (SE)	
Teacher/Counselor Scholarship Help Missing			0.479		0.505	
			(0.23)		(0.22)	
Key College Actions						
Applied to 3+ Colleges					1.167	
					(0.08)	
Completed FAFSA					4.815	***
					(0.62)	
Applied to 3+ Scholarships					0.998	
					(0.08)	
Constant	14.61	***	0.031	***	0.015	***
	(2.82)		(0.02)		(0.01)	

Exponentiated coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 4.1: Descriptive Statistics of CPS Students and Chapter 4 Analytic Sample

	CPS Students (N=11769)	Analytic Sample (N=6496)
	Mean	Mean
Female	0.60	0.66
Non-Hispanic White	0.12	0.13
Black	0.50	0.51
Hispanic	0.31	0.29
Asian	0.07	0.08
Free/Reduced Lunch	0.75	0.74
Cumulative GPA	2.88	3.17
ACT Composite Score	18.57	19.55

Table 4.2: Descriptive Statistics, by Potential College Destinations (N=22443)

Variable	Mean	SD	Min	Max
Sector				
Two-Year Institution	0.19	0.39	0	1
Four-Year Institution	0.81	0.39	0	1
Public	0.64	0.48	0	1
Private/Non-religious	0.19	0.39	0	1
Private/Religious	0.18	0.38	0	1
Urbanicity				
Urban	0.68	0.47	0	1
Suburban	0.24	0.43	0	1
Rural	0.07	0.26	0	1
Location				
Chicago	0.41	0.49	0	1
Other Illinois	0.30	0.46	0	1
Other Midwest	0.08	0.27	0	1
Other US	0.21	0.41	0	1
Enrollment				
Small (Less than 5,000 students)	0.25	0.43	0	1
Medium (5,000 - 9,999 students)	0.21	0.41	0	1
Large (10,000 - 19,999 students)	0.24	0.43	0	1
Very Large (more than 20,000 students)	0.30	0.46	0	1
Academic Selectivity & Match				
Selectivity Quantile 1 (Least Selective)	0.19	0.39	0	1
Selectivity Quantile 2	0.10	0.29	0	1
Selectivity Quantile 3	0.30	0.46	0	1
Selectivity Quantile 4	0.27	0.44	0	1
Selectivity Quantile 5 (Most Selective)	0.14	0.34	0	1
Academic Match	0.48	0.50	0	1
Cost				
Tuition Quantile 1 (Low Tuition)	0.27	0.44	0	1
Tuition Quantile 2	0.30	0.46	0	1
Tuition Quantile 3	0.14	0.35	0	1
Tuition Quantile 4	0.13	0.33	0	1
Tuition Quantile 5 (High Tuition)	0.16	0.37	0	1
Student Body Demographics				
Historically Black College or University	0.11	0.31	0	1
0-10% of Student Body is Black/African American	0.51	0.50	0	1

Variable	Mean	SD	Min	Max
11-20% of Student Body is Black/African American	0.21	0.41	0	1
21-40% of Student Body is Black/African American	0.04	0.21	0	1
41-80% of Student Body is Black/African American	0.07	0.26	0	1
81-100% of Student Body is Black/African American	0.11	0.31	0	1
0-10% of Student Body is Hispanic	0.64	0.48	0	1
11-20% of Student Body is Hispanic	0.18	0.38	0	1
20-40% of Student Body is Hispanic	0.12	0.32	0	1
41-100% of Student Body is Hispanic	0.07	0.25	0	1

Table 4.3: Descriptive Statistics, Student-Level (N=6496)

	Mean	SD	Min	Max
Gender				
Male	0.34	0.47	0	1
Female	0.66	0.47	0	1
Race				
Black	0.51	0.50	0	1
Hispanic	0.29	0.45	0	1
Asian	0.08	0.27	0	1
White	0.13	0.33	0	1
Socioeconomic Status				
No Free/Reduced Lunch	0.26	0.44	0	1
Free/Reduced Lunch	0.74	0.44	0	1
Mother Has Postsecondary Degree	0.41	0.49	0	1
Academic Achievement				
GPA	3.17	0.88	0.90	5.27
ACT Composite Score	19.55	4.87	8	36
High Achieving	0.54	0.50	0	1

Table 4.4: Conditional Logit Models with Exponentiated Coefficients (N=22,443 college destinations)

Predictor	Model 1 exp(b) (SE)		Model 2 exp(b) (SE)		Model 3 exp(b) (SE)		Model 4 exp(b) (SE)	
Institutional Level (Two-Year Omitted)								
Four-Year Institution	0.881		0.817		0.787		0.961	
	(0.14)		(0.14)		(0.13)		(0.17)	
Institutional Control (Public omitted)								
Private/Non-Religious	0.904		0.862		1.122		1.014	
	(0.07)		(0.06)		(0.12)		(0.13)	
Private/Religiously Affiliated	0.706	***	0.645	***	0.795		0.858	
	(0.05)		(0.05)		(0.10)		(0.11)	
Institutional Size (Very Large Size omitted)								
Small Size	0.709	***	0.829	*	0.786	**	0.861	
	(0.05)		(0.06)		(0.06)		(0.08)	
Medium Size	0.721	***	0.802	***	0.759	***	0.939	
	(0.04)		(0.05)		(0.05)		(0.07)	
Large Size	0.696	***	0.736	***	0.692	***	0.765	**
	(0.06)		(0.05)		(0.05)		(0.06)	
Urbanicity (Urban omitted)								
Suburban	0.826	**	0.925		0.911		0.868	
	(0.06)		(0.07)		(0.06)		(0.07)	
Rural	0.600	***	0.659	***	0.640	***	0.673	***
	(0.06)		(0.07)		(0.07)		(0.08)	

Predictor	Model 1 exp(b) (SE)	Model 2 exp(b) (SE)	Model 3 exp(b) (SE)	Model 4 exp(b) (SE)
Location (Chicago, IL omitted)				
Other Illinois	0.854 *	0.793 ***	0.802 **	1.069
	(0.06)	(0.05)	(0.06)	(0.10)
Other Midwest	0.709 ***	0.655 ***	0.771 **	0.987
	(0.05)	(0.05)	(0.06)	(0.10)
Other US	0.582 ***	0.574 ***	0.628 ***	0.836
	(0.05)	(0.05)	(0.06)	(0.08)
Institutional Selectivity Quantiles (Quantile 3 Omitted)				
Selectivity Quantile 1 (Unselective/Least selective)	5.397 ***	5.924 ***	5.541 ***	6.692 ***
	(1.42)	(1.54)	(1.41)	(1.87)
Selectivity Quantile 2	1.021	1.145	1.261	1.351 *
	(0.12)	(0.14)	(0.16)	(0.16)
Selectivity Quantile 4	0.880	0.877	0.870	0.984
	(0.09)	(0.09)	(0.09)	(0.12)
Selectivity Quantile 5 (Most selective)	1.632 ***	1.465 **	1.461 **	1.596 ***
	(0.22)	(0.20)	(0.18)	(0.19)
Selectivity Quantile 1 x Hispanic (Unselective/Least selective)	0.464 ***	0.450 ***	0.435 ***	0.416 ***
	(0.11)	(0.10)	(0.10)	(0.10)
Selectivity Quantile 2 x Hispanic	0.946	0.917	0.895	1.091
	(0.22)	(0.21)	(0.20)	(0.23)
Selectivity Quantile 4 x Hispanic	1.050	1.000	0.994	1.182
	(0.18)	(0.18)	(0.18)	(0.22)

Predictor	Model 1 exp(b) (SE)	Model 2 exp(b) (SE)	Model 3 exp(b) (SE)	Model 4 exp(b) (SE)
Selectivity Quantile 5 x Hispanic (Most selective)	0.649 *	0.632 *	0.655 *	0.964
	(0.12)	(0.12)	(0.12)	(0.18)
Selectivity Quantile 1 x African American/Black (Unselective/Least selective)	0.548 *	0.517 **	0.494 **	0.464 ***
	(0.13)	(0.12)	(0.11)	(0.11)
Selectivity Quantile 2 x African American/Black	1.167	1.062	0.971	1.050
	(0.18)	(0.16)	(0.15)	(0.16)
Selectivity Quantile 4 x African American/Black	1.083	1.042	1.030	0.999
	(0.16)	(0.15)	(0.15)	(0.16)
Selectivity Quantile 5 x African American/Black (Most selective)	0.579 ***	0.614 **	0.616 ***	0.680 ***
	(0.08)	(0.09)	(0.09)	(0.09)
Academic Match				
Academic Match		1.381 ***	1.314 ***	1.430 ***
		(0.14)	(0.13)	(0.15)
Academic Match x Mom Has College Degree		0.896	0.891	0.866
		(0.08)	(0.08)	(0.08)
Academic Match x High Achieving		1.207	1.254	1.180
		(0.15)	(0.16)	(0.16)
Tuition Quantiles (Quantile 3 Omitted)				
Tuition Quantile 1 (Low tuition)			1.519 ***	1.250
			(0.19)	(0.15)
Tuition Quantile 2			1.402 ***	1.387 **
			(0.14)	(0.14)

Predictor	Model 1 exp(b) (SE)	Model 2 exp(b) (SE)	Model 3 exp(b) (SE)	Model 4 exp(b) (SE)
Tuition Quantile 4			1.030	0.954
			(0.08)	(0.08)
Tuition Quantile 5 (High tuition)			1.143	1.143
			(0.09)	(0.10)
Institutional Racial Demographics				
HBCU				0.516 ***
(0-10% of Student Body is Black/African American Omitted)				(0.09)
11-20% of Student Body is Black/African American				0.733 ***
				(0.07)
21-40% of Student Body is Black/African American				0.837
				(0.13)
41-80% of Student Body is Black/African American				0.544 ***
				(0.10)
81-100% of Student Body is Black/African American				0.217 ***
				(0.09)
11-20% of Student Body is Black/African American x Black				1.612 ***
				(0.18)
21-40% of Student Body is Black/African American x Black				1.779 ***
				(0.26)
41-80% of Student Body is Black/African American x Black				2.512 ***
				(0.51)
81-100% of Student Body is Black/African American x Black				6.673 ***
				(2.77)

Predictor	Model 1 exp(b) (SE)	Model 2 exp(b) (SE)	Model 3 exp(b) (SE)	Model 4 exp(b) (SE)
(0-10% of Student Body is Hispanic Omitted)				
11-20% of Student Body is Hispanic				1.073
				(0.07)
20-40% of Student Body is Hispanic				1.564 ***
				(0.13)
41-100% of Student Body is Hispanic				1.548 **
				(0.21)
11-20% of Student Body is Hispanic x Hispanic				1.662 ***
				(0.19)
20-40% of Student Body is Hispanic x Hispanic				1.940 ***
				(0.28)
41-100% of Student Body is Hispanic x Hispanic				1.533 *
				(0.29)

* $p < 0.05$, **$p<0.01$, ***$p<0.001$

FIGURES

Figure 2.1: Barron's Selectivity Ratings Information (Roderick et al. 2008)

Ratings Grouping Used in This Report	Barron's Ratings	Barron's Definition
Very Selective	Most Competitive	Admit fewer than $^1/_3$ of applicants. Average freshman: top 10%–20% of high school class; GPA of A or B+; median ACT of 29 or higher.
	Highly Competitive	Admit $^1/_3$ to $^1/_2$ of applicants. Average freshman: top 20%–35% of high school class; GPA of B+ or B; median ACT of 27 or 28.
Selective	Very Competitive	Admit $^1/_2$ to $^3/_4$ of applicants. Average freshman: top 35%–50% of high school class; GPA of no less than a B-; median ACT between 24 and 26.
Somewhat Selective	Competitive	Admit 75 to 85% of applicants. Average freshman: top 50%–65% of high school class; GPA mostly B-, with some C or C+; median ACT between 21 and 23.
Nonselective	Less Competitive	Admit 85% or more of applicants. Average freshman: top 65% of high school class; GPA below a C; median ACT below 21.
	Noncompetitive	Students must have graduated from an accredited high school with minimum high school requirements. Colleges with higher than a 98% admittance rate are automatically in this category. Some colleges have no requirements for state residents but some requirements for out-of-state residents. Some colleges require students to take placement examinations to place into college-level courses.
Other Four-Year College	Not Rated by Barron's	Some four-year colleges, often proprietary schools, were not rated by Barron's.
Two-Year College	Not Rated by Barron's	All have open enrollment. Students usually must take placement examination to place into credit-bearing courses. Most offer associate's degrees and certificate programs.
Special	Not Rated by Barron's	These colleges have specialized programs of study and/or are professional schools of art, music, nursing, and other disciplines. Admission usually requires evidence of talent or special interest. Colleges that serve working adults are also assigned to this level.

Figure 3.1: Distribution of Scholarship Award Amounts (Chicago Public Schools Scholarship Awards Book, 2007-2008)

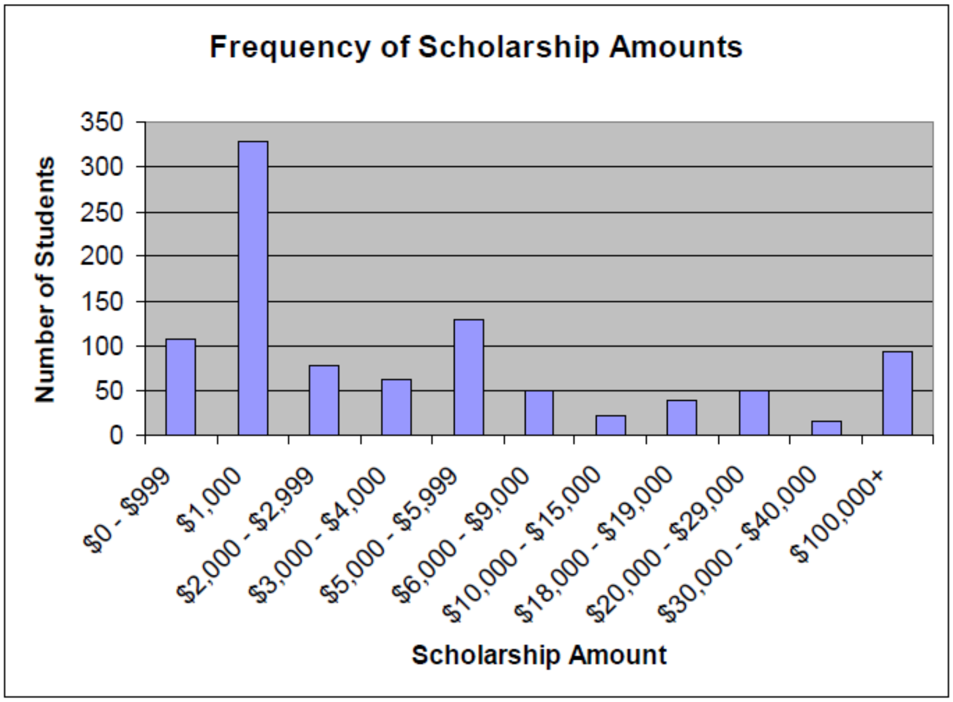

Figure 3.2: Percent of Students Completing Scholarship Applications by FAFSA Completion (N=10029)

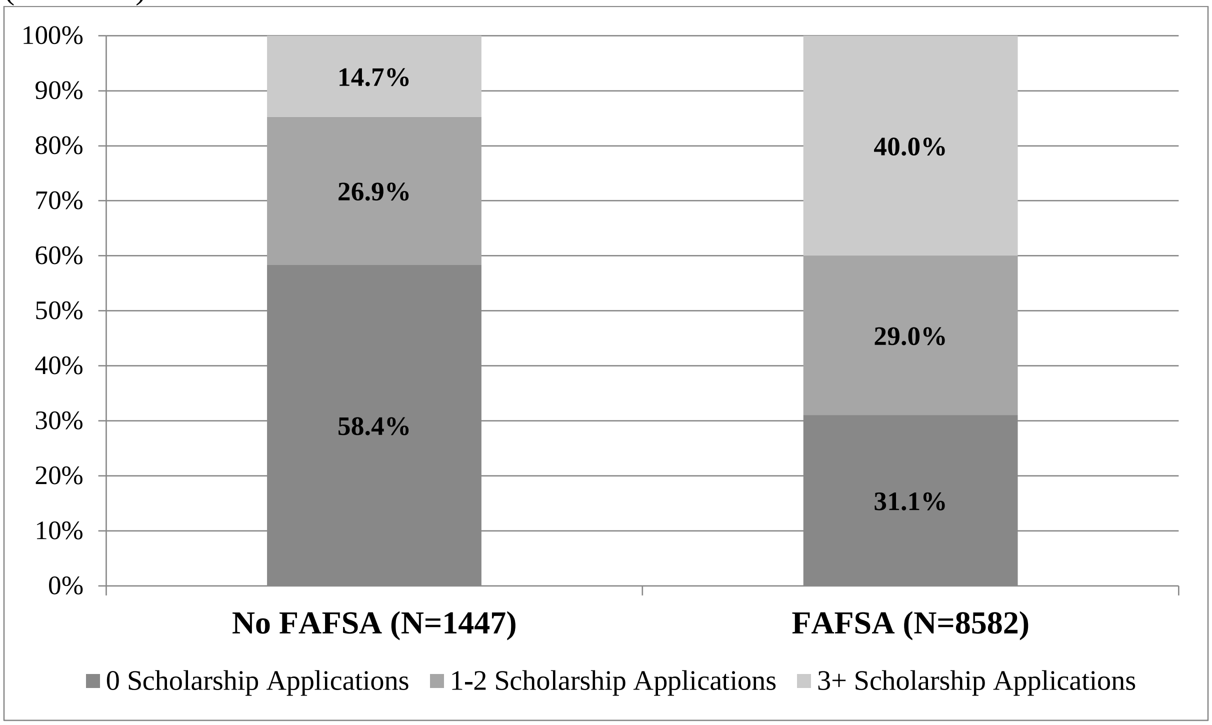

Figure 3.3: Percent of Students Completing Scholarship Applications by Applications Completed (N=10029)

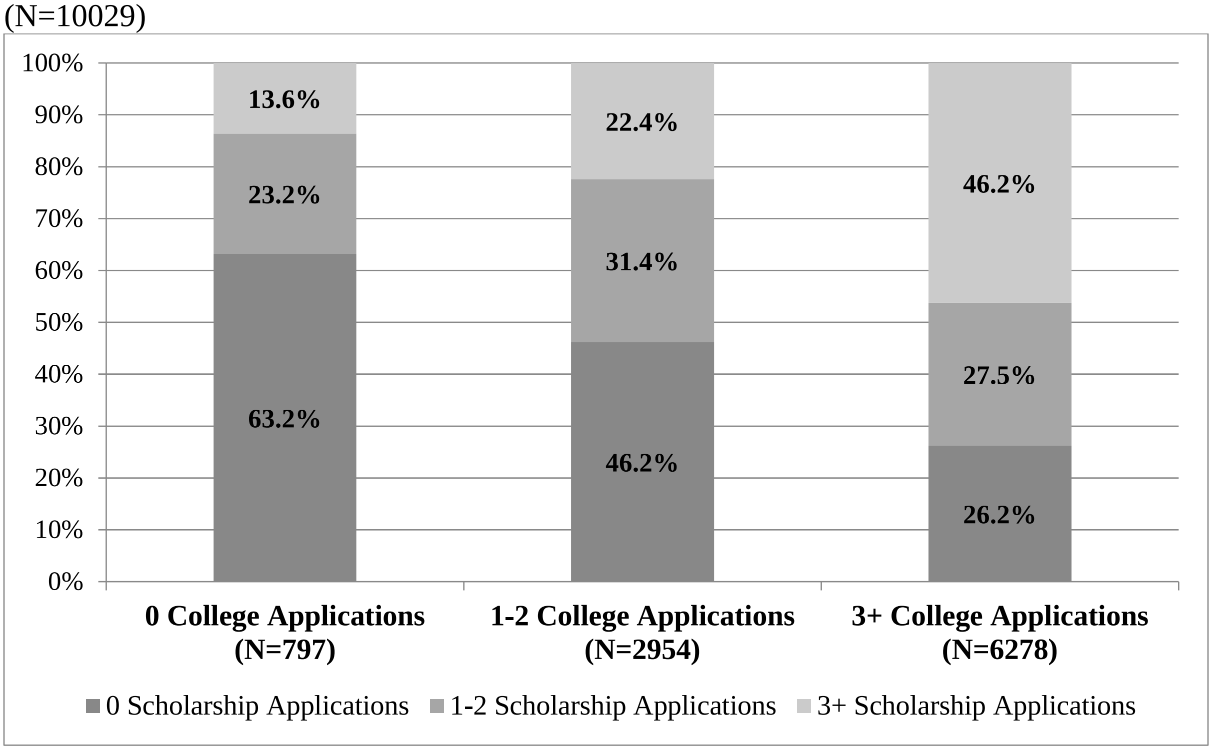

Figure 4.4: Hossler and Gallagher's (1987) Model of College Choice

Figure 4.5: Radford's (2013) Model of College Destinations

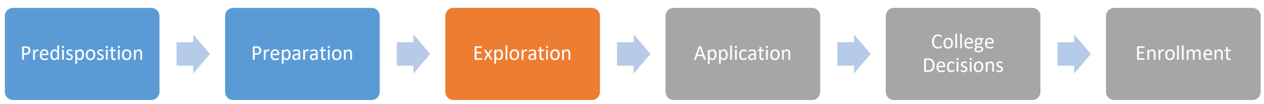

Figure 4.6: Proposed Model of College Choice

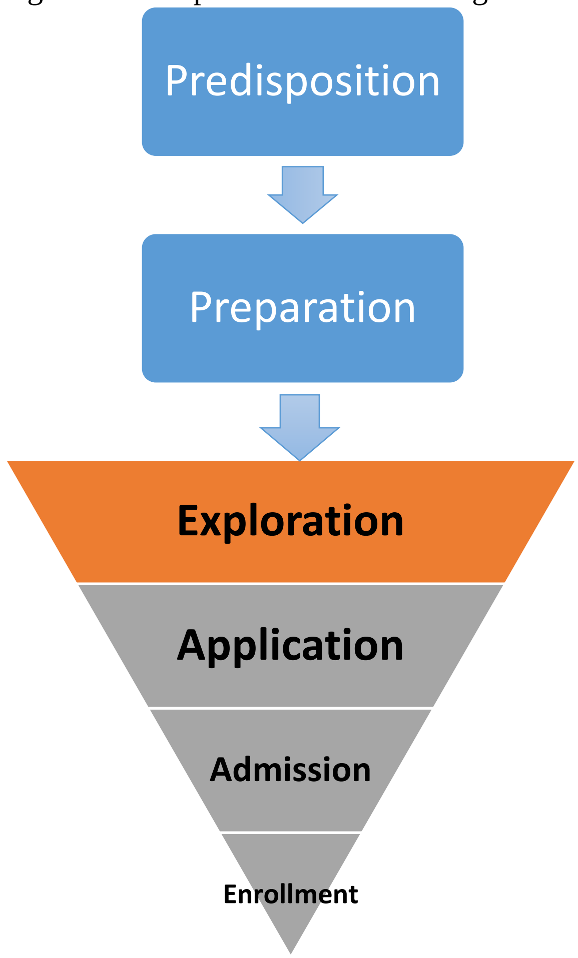

Figure 4.7: Categories for access to college types based on CPS graduates' GPAs and ACT scores and patterns of college enrollment (Roderick et al. 2008)

Unweighted GPA in Core Courses

Composite ACT Score	<2.0	2.0–2.4	2.5–2.9	3.0–3.4	3.5–4.0
Missing ACT	Two-Year Colleges	Nonselective Four-Year Colleges	Somewhat Selective Colleges	Selective Colleges	Selective Colleges
<18	Two-Year Colleges	Nonselective Four-Year Colleges	Somewhat Selective Colleges	Somewhat Selective Colleges	Selective Colleges
18-20	Nonselective Four-Year Colleges	Somewhat Selective Colleges	Somewhat Selective Colleges	Selective Colleges	Selective/Very Selective Colleges
21-23	Somewhat Selective Colleges	Somewhat Selective Colleges	Selective Colleges	Selective/Very Selective Colleges	Selective/Very Selective Colleges
24+	Somewhat Selective Colleges	Selective/Very Selective Colleges	Selective/Very Selective Colleges	Very Selective Colleges	Very Selective Colleges

Note: Students in the Selective category who are either in an IB program or have taken at least two AP and at least six honors courses are moved up to the Very Selective category.

APPENDICES

Appendix A: List of Historically Black Colleges and Universities and their Locations

Alabama Agricultural and Mechanical University – Normal, AL
Alabama State University – Montgomery, AL
Albany State University – Albany, GA
Alcorn State University – Alcorn State, MS
Allen University – Columbia, SC
Arkansas Baptist College – Little Rock, AR
Benedict College – Columbia, SC
Bennett College – Greensboro, NC
Bethune-Cookman University – Daytona Beach, FL
Bluefield State College – Bluefield, WV
Bowie State University – Bowie, MD
Central State University – Wilberforce, OH
Cheyney University of Pennsylvania – Cheyney, PA
Chaflin University – Orangeburg, SC
Clark Atlanta University – Atlanta, GA
Concordia College – Selma, AL
Coppin State University – Baltimore, MD
Delaware State University – Dover, DE
Dillard University – New Orleans, LA
Edward Waters College – Jacksonville, FL
Elizabeth City State University – Elizabeth City, NC
Fayetteville State University – Fayetteville, NC
Fisk University – Nashville, TN
Florida A&M – Tallahassee, FL
Florida Memorial University – Miami, FL
Fort Valley State University – Fort Valley, GA
Grambling State University – Grambling, LA
Hampton University – Hampton, VA
Harris-Stowe State University – St. Louis, MO
Howard University – Washington, DC
Huston-Tillotson University – Austin, TX
Jackson State University – Jackson, MS
Jarvis Christian College – Hawkins, TX
Johnson C. Smith University – Charlotte, NC
Kentucky State University – Frankfort, KY
Lane College – Jackson, TN
Langston University – Langston, OK
LeMoyne-Owen College – Memphis, TN
Lincoln University – Lincoln University, PA
Lincoln University – Jefferson City, MO

Livingstone College – Salisbury, NC
Miles College – Birmingham, AL
Mississippi Valley State University – Itta Bena, MS
Morehouse College – Atlanta, GA
Morgan State University – Baltimore, MD
Morris College – Sumter, SC
Norfolk State University – Norfolk, VA
North Carolina A&T State University – Greensboro, NC
North Carolina Central University – Durham, NC
Oakwood University – Huntsville, AL
Paine College – Augusta, GA
Philander Smith College – Little Rock, AR
Prairie View A&M University – Prairie View, TX
Rust College – Holly Springs, MS
Savannah State University – Savannah, GA
Shaw University – Raleigh, NC
South Carolina State University – Orangeburg, SC
Southern University and A&M College – Baton Rouge, LA
Southern University – New Orleans – New Orleans, LA
Southwestern Christian College – Terrell, TX
Spelman College – Atlanta, GA
St. Augustine's University – Raleigh, NC
Stillman College – Tuscaloosa, AL
Talladega College – Talladega, AL
Tennessee State University – Nashville, TN
Texas College – Tyler, TX
Texas Southern University – Houston, TX
Tougaloo College – Tougaloo, MS
Tuskegee University – Tuskegee, AL
University of Arkansas – Pine Bluff – Pine Bluff, AR
University of Maryland – Eastern Shore – Princess Anne, MD
University of the District of Columbia – Washington, DC
Virginia State University – Petersburg, VA
Virginia Union University – Richmond, VA
Voorhees College – Denmark, SC
West Virginia State University – Institute, WV
Wilberforce University – Wilberforce, OH
Wiley College – Marshall, TX
Winston-Salem State University – Winston-Salem, NC
Xavier University of Louisiana – New Orleans, LA