# DID MAGNET SCHOOLS IMPROVE STUDENT EDUCATIONAL OUTCOMES AS TOOLS OF DESEGREGATION?

by

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ABSTRACT

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Magnet schools were implemented in American school districts beginning in the 1970s as part of desegregation plans often required by court order. Magnet schools had three primary goals: provide innovative educational programming, attract students from across school districts, and assist with desegregation. Research evaluating the implementation of magnet schools found that they did effectively desegregate schools (Arcia 2006; Steel and Levine 1994). However, the educational outcomes of magnet schools have not been evaluated, particularly using longitudinal student data, to evaluate magnet school effectiveness. Popular press, the use of effective pedagogy, selection procedures, and exclusivity lead to expectations that magnet schools provide better educational outcomes. On the contrary, isomorphism in school management and the implementation of teaching practices lead to the expectations that magnet schools have similar outcomes to other public high schools. This study investigates the effect of attending a magnet high school in the tenth grade to find whether attendance impacted educational expectations or test scores in twelfth grade, prompt matriculation to postsecondary education, and educational attainment by age 26. Using propensity score weighting, magnet students are compared to comprehensive high school students. Magnet schools did not show an impact on the educational outcomes studied except for several findings among Asian students who experienced higher test scores and educational expectations than their non-magnet counterparts.

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| | |
|---|---|
| ATE | Average Treatment Effect |
| ATT | Average Treatment Effect on the Treated |
| NELS | National Educational Longitudinal Study of 1988 |
| PSE | Postsecondary Education |
| SD | Standard Deviation |
| SES | Socioeconomic Status |
| UW | Unweighted |

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Earning a doctorate is a goal I never considered for myself when I graduated from high school and entered college as an architecture major. When I took Introduction to Sociology at Long Beach City College with Prof. Roger Seifert in the summer of 1998 after having taken Architectural Theory: The Human Component the semester prior, I realized people were more interesting to me than buildings. In the fall of 1998, while sitting in a lecture about masonry, I knew my major needed to change to sociology and within days it was done. Soon after, through the encouragement of Prof. George Primov and later Prof. Tamela McNulty-Eitle, I saw that it was possible for me to earn a doctorate and a new goal was born. I have now achieved that goal and for that I am proud and thankful.

# CHAPTER 1: Introduction to Magnet Schools and Desegregation

Magnet schools are commonly understood to be public schools that offer special programs, thereby attracting students from beyond neighborhood attendance boundaries. However, magnet schools proliferated in the United States as a key component of the desegregation plans of many school districts (Arcia 2006; Kozol 1992; Varady 1995). The idea for magnet schools came from the success of schools such as Boston Latin and Lane Tech in Chicago, which offered advanced instruction in specific areas and were available to students from outside the neighborhood in which they were located (Blank 1989). In theory, by attracting students with similar interests but different backgrounds and ability levels from across a wide geographical area, schools would have a racially diverse student body (Blank 1989; Metz 1986). The specialized programs offered by magnet schools varied and included innovative pedagogy, college-preparatory-focused curriculum, vocational training, performing and visual arts, and schoolwide themes to unify learning. These programs were expected to have a positive impact on students who would stay in school and attain higher levels of education than students who did not benefit from special programs. Thus, the stated goal of magnet schools was to achieve integration while offering different curricular programs (West 1994). However this goal was in conflict with the realities of desegregation in the urban areas where magnet schools were most commonly located and knowledge about innovation in institutions which predict that magnet schools would not achieve the expected stellar results. This research evaluates whether magnet schools were able to improve educational achievement and attainment among students when compared to similar students who attended comprehensive high schools by concentrating on a time period when magnet schools were used for the purpose of desegregation.

Neither educational nor social research has addressed the long-term impact of magnet school attendance on the lives of students. Case studies have followed students for periods of three years or fewer and described the implementation and evolution of magnet schools in selected districts and specific schools (Duax 1988; Humes 2003; Metz 1986; Wincek 1995). Gamoran (1996) has compared the academic achievement of magnet school students to those in comprehensive high schools and Catholic schools in urban areas and found that magnet schools were beneficial in comparison to comprehensive high schools. Quantitative analysis of the implementation and success or lack of success of magnet programs in achieving racial desegregation in selected districts have also been undertaken (Arcia 2006; Gelber 2008; Rossell 1991). Additionally, data has been collected from magnet programs nationally on behalf of the Department of Education in order to better understand the schools (Steel and Levine 1994). The existing research tends to look at short-term outcomes and limited contexts, often qualitatively. The data largely fails to address the impact of magnet schools on students' academic achievement and long-term educational outcomes (Rossell 1991). This research aims to analyze student focused longitudinal data to evaluate the impact of magnet schools on educational outcomes beyond high school.

Research in the last twenty years has established that resegregation is occurring in schools since the requirements to monitor segregation have been lifted (Arcia 2006; Clotfelter 2004; GAO 2016; Lowe 2007; Reardon, Grewal, Kalogrides, and Greenberg 2011). If this research demonstrates that magnet schools resulted in better educational outcomes while simultaneously desegregating schools, then implementing similar desegregation efforts in the present is worth investigation. Recently the Stronger Together School Diversity Act of 2016 was proposed to provide fund to districts to implement plans that would promote integration in

schools (U.S. Department of Education 2016). Such efforts could target resegregation by race as well as economic segregation, which is increasingly being highlighted in research (Charles 2003; Jargowsky 1996; Reardon and Owens 2014; Williams 2010). In addition, magnet schools represent an early method of providing school choice to parents and students. An examination of the outcomes of similar students who do and do not attend schools they have elected to attend may inform understanding of the impact (or lack of impact) of making this decision. As schools of choice become more popular, it is important to understand whether going to specialized schools leads to better academic outcomes. As you will read, magnet schools and other efforts that have moved students away from neighborhood schools on a large scale have had implications for neighborhoods, schools, student experiences, and parent expectations for schools. While any damage that has been done through these moves cannot be undone, it is important to know if the efforts are worthwhile or in vain.

*Desegregation, School Choice, and Magnet Schools*

School choice emerged in the 1950s when Milton Friedman introduced the idea as a way to bring market-based economics to education (Fuller, Elmore, and Orfield 1996). Sometimes people use school choice to refer to the blurring of lines between public and private schooling through the use of vouchers that provide government funding that can be applied to private school tuition. Vouchers emerged during the Kennedy and Johnson era from the expectation that families are rational decision makers and from a rejection of the assumption that the government can provide the quality educational product (Fuller, Elmore, and Orfield 1996). Choice was embraced in the south for a time as a way to avoid and undermine desegregation (Reardon and Owens 2014), and in the 1980s, conservatives wanted to use school choice to provide educational opportunities that reflected their cultural and political values (Fuller, Elmore, and

Orfield 1996; Henig 1990). Choice was also championed by other groups as a way to empower the working class, as a vehicle for improving school quality, and as a positive tool to desegregate schools (Henig 1990; Moore and Davenport 1989). School choice has come to mean the opportunity for families to select among all available schools, sometimes including private schools but often meaning the option to enroll in any of the public schools in a particular district. As magnet schools are schools selected by families, they are a type of choice school, and findings about the efficacy and benefits of magnet school attendance may be applicable to choice schools.

*Brown v. Board of Education.*

The Supreme Court decided the pivotal *Brown v. Board of Education* in 1954 and required school districts to implement desegregation plans. Unfortunately, the justices did not prescribe a timeline or suggest any specific desegregation methods in the Court's written decision. As a result, most school districts took no meaningful action. Prior to the decision, there was an expectation among school district officials that the *Brown* verdict would affirm the "separate but equal" policy established by *Plessy v. Ferguson* in 1896. In anticipation of this type of verdict, they had been improving the facilities of the black schools in their districts to make them equal to those of the white schools (Cecelski 1994). Many districts, especially those in the South, were surprised by the *Brown* decision because they did not think the Supreme Court would cause drastic change in the daily life of the majority of Americans by overturning *Plessy* (Ravitch 1983).

Even after the *Brown* decision, it was not until 1964 that desegregation was taken seriously by school districts. This change in perspective was forced by Title VI of the Civil Rights Act of 1964, which banned racial discrimination in federally supported programs (Ravitch

1983). Since school districts were in need of federal funding, they had to comply with mandated plans to desegregate schools. These plans involved involuntary busing, schools of choice, and, in many districts, magnet schools (Gelber 2008; Ravitch 1983; Varady and Raffel 1995).

*Developing Desegregation Plans.*

In the early 1970s, several metropolitan areas developed desegregation plans that moved students between the largely white suburbs and urban schools in which the proportion of black students was increasing (Ryan 2010). Specifically, a bussing plan in Virginia essentially combined the largely black city of Richmond with surrounding counties inhabited mostly by whites to achieve desegregation. This plan was at the requirement of federal district court Judge Robert R. Merhige Jr., but was later overturned on appeal ("Congressional Anti-Busing Sentiment Mounts in 1972"). This was an important event that prompted a speech to the nation by President Richard Nixon (1972), who called the movement of students across district lines, and particularly from the city to the suburbs, "massive busing," and condemned the separation of children from their neighborhood schools for the purpose of desegregation. He also encouraged Congress to pass legislation that would bar this type of desegregation plan from being enacted and would instead provide additional financial assistance to improve urban schools. This sentiment set a precedent that desegregation efforts could and should be limited in scope. Ryan (2010) argues that this separated urban and suburban schools and has created conflict in school funding, governance, and testing since Nixon's speech.

Rossell's (1991) review of desegregation plans found that there were more mandatory than voluntary plans implemented, and plans in large districts tended to involve both mandatory and voluntary components, which often included magnet schools. Rossell also found that plans that involved magnet schools were implemented later in the desegregation process than those

that did not. Overall, the burden of desegregation plans was felt mostly by black families who were expected to leave their neighborhood schools and integrate the white schools, rather than there being a two-way movement of students between traditionally white and black schools (Cecelski 1994; Gelber 2008; Metz 1986; Ravitch 1983; Varady and Raffel 1995). In the South, in school districts where a two-way flow was possible, blacks enrolled in formerly white schools but whites did not enroll in formerly black schools (Fuller, Elmore, and Orfield 1996). School officials, being mostly white elite members of society, were displeased with the mandate to desegregate and expected that other whites did not want to desegregate the schools (in many areas their concerns were substantiated) (Ravitch 1983). They feared middle class whites would leave desegregating school districts either by moving or enrolling their children in private schools (Arcia 2006; Fuller, Elmore, and Orfield 1996; Gelber 2008; Ravitch 1983; Ryan 2010; Varady and Raffel 1995) because desegregation signaled that blacks were moving into their schools and neighborhoods (Lowe and Kantor 1989). Therefore, school officials sought programs that were palatable and not demanding of whites. An ideal way of accomplishing both retention of white students and integration without conflict was to get people to voluntarily desegregate. School officials thought voluntary desegregation could be achieved through magnet schools.

The movement to desegregate schools was based on the assumption that the schools blacks were attending were inferior to the schools whites were attending (Cecelski 1994; Clotfelter 2004). "The grades of blacks are often discounted due to the perceived academic inferiority of black secondary schools to white ones" (Porter 1974:311) which leads to unequal returns to the investment in education of blacks. Coleman (1967) wrote that even when black and white schools had identical facilities and teacher salaries, there was still a perception that

equality of educational opportunity was absent. His interrogation of the meaning of equality of educational opportunity identifies a difference between the capital resources provided to schools (facilities, teacher salaries, and curriculum) and the human resources provided to schools (community support, background characteristics of classmates). Coleman observed that claims of inequality are often based on the former, but the latter resources have more impact on outcomes. Thus, many accounts of the operation of black schools, including Cecelski's (1994) description of Hyde County and descriptions of Booker T. Washington's work at the Tuskegee Institute, question the notion that black schools were inferior to white schools and suggest that black educators were successfully educating black students. However, it is also the case that instances where schools had identical facilities and teacher salaries were not common as school districts spent much less money on black schools than they did on white schools (Reardon and Owens 2014). Court-ordered desegregation led to large increases in funding for education overall as money was invested in traditionally black schools.

In the literature regarding segregation, desegregation, and magnet schools, there is a lack of research regarding the quality and impact of these programs on the students and specifically on the academic outcomes of students. "One reason that scholars, policy makers, and citizens are concerned with school segregation is that it is hypothesized to exacerbate racial or socioeconomic disparities in educational success" (Reardon and Owens 2014:200), yet little has been done to evaluate whether desegregation programs have improved, worsened, or had no effect on the educational success of students in comparison to similar students who did not experience these programs.

Magnet schools, as one desegregation strategy, illustrate the lack of evaluation. There are conflicting theories and claims about the effectiveness of magnet schools. While the popular

press touts the outcomes of magnet schools through relation of anecdotal success stories and playing up the competition for places in magnet schools, as discussed in the next section, much about the organization of magnet schools resembles that of comprehensive high schools.

*Magnet Schools in the Media*

According to the media, magnet schools are popular among parents and students, they offer educational opportunities that are unique within their school district, and their programs are intended to help specific groups of students (Bailey 2013; Bowie 2016). While magnet schools emerged in the 1970's and 1980's and the data analyzed in this research is from the early 1990's, magnet schools have consistently been a popular news topic. Whether the implementation of the policy was being debated in editorials or the accomplishments of students at magnet schools were being espoused. Additionally, in some cities, magnet schools continue to be a main tool being used to integrate schools (Thomas 2016). Current enthusiasm for magnet and choice schools is expressed by the press in stories about the demand for places in magnet schools (Bailey 2013; Fuller 2016). Often news reports depict the magnet school selection and admissions process. In 2016 the Cincinnati Public Schools adopted a lottery system which is a popular method of placing students in magnet schools (Fuller 2016). Previously, Cincinnati had used a first-come first served process which led to parents camping out in tents to ensure a place in a magnet school for their child. Obviously this is a hardship for parents who cannot take time off of work or otherwise be available for the long stretch of time necessary to secure a magnet school spot using such a placement method. Reports relay the rates of placement or probability of students being placed into particular schools. For example, The New Haven Independent reported in 2013 that the odds of attending one of the local high schools was 1 in 7 and other schools in the area were associated with lower odds of successful placement (Bailey 2013). The

number of students who applied and were placed and the percent of placements by school within a school district are also frequently provided. In Wake County, North Carolina, more students and a higher percent of students were placed into the schools of their choice for the 2016-17 year than for the 2015-16 year (Hui 2016). While overall 61.2 percent of students were placed into their first choice school, only 55.1 percent of magnet school applicants were placed into their first choice school in Wake County. Bailey (2013) summarized in a manner common to media coverage of school choice, "Most parents walk away disappointed: A whopping 9,333 local and suburban students applied for 2,677 open seats at 29 charter and magnet schools covering grades pre-K to 12." She also provided the percent chance for students to gain admission to particular schools. The district about which she was reporting gave preference to students based on living in the neighborhood of the school or having siblings already in the school – preferences that are frequently criticized in the consideration of magnet school placement (Wang 2016). Bailey (2013) found that for some schools, the chance of getting in after taking into consideration these two preferences declined to 0 percent! Parents were unaware that their child had no chance of getting into some of the schools. Since the application allowed only three desired schools to be listed, some parents were essentially throwing away an option by electing one of the schools where classes were already filled by students who had preference.

Demand for magnet school placements are also expressed through case studies highlighting students who did or did not secure a place in a magnet school. These articles also highlight the special programs offered by the schools. In Baltimore, additional magnet schools are being added which offer health sciences, arts, or teaching profession focused courses (Bowie 2016). The article reflects the tension of magnet school goals. The author states, "the expansion [of magnet schools] will ensure that students, whether they live in the east or west side of the

county, get the same academic opportunities" (Bowie 2016: np). But she also quotes the mother of a highlighted child who has gained admission to a magnet school, "'I feel that some students need more of challenge.'" Bowie also states that parents "believe the magnet classes keep their children motivated and on track." So are magnet schools offering the opportunity for students to have a better educational experience than other students or the opportunity for all students to get the same educational experience by attending any school in the district? The superintendent "stressed that the new magnets will not replace solid academic programs at each school. 'I don't want people to feel they have to go to a magnet school to get a good education,' he said." Echoing the sentiment expressed by many school officials which districts simultaneously promote the stellar programs at their magnet schools and assure parents their children will receive a great education at all schools.

In Indianapolis, schools have been criticized as being used to retain white families in the city school district (Wang 2016). Magnet schools have been placed in white or gentrifying neighborhoods with preference given to families who live in the neighborhood. These schools offer special curriculum which follows Inquiry based instruction and includes an International Baccalaureate program in high school. These instructional techniques are recognized as rigorous and highly effective. Parents and educational leaders outside the district find the policies of the school district in regard to magnet school admissions to favor the students who least need the additional educational resources provided by these schools. While in the current educational climate, magnet schools are offering objectively better curriculum, this was not necessarily the case twenty to thirty years ago when schools were first implementing magnet programs which were often developed locally and hastily with questionable attention to quality and rigor.

Magnet schools are usually located in urban areas and face urban school problems. They are educating a diverse group of students and face the same challenges in doing so that other schools encounter. The limited scope of existing magnet school research tends to evaluate the school as a work environment and does not address the educational mission of the schools. There is little objective data that presents outcomes across the population of students who attended magnet schools. The goal of this project is to find out whether the educational outcomes of magnet school students are better, worse, or the same as similar students in other public schools.

# CHAPTER 2: Magnet Schools, School Choice, and Educational Outcomes

This study seeks to determine whether magnet schools, while serving as a method of school desegregation, provided better educational outcomes when compared to comprehensive high schools. This chapter will review the prior research on magnet schools and academic outcomes that is pertinent to the research conducted for this dissertation.

Magnets have been utilized since they were endorsed in 1975 as a court-approved desegregation technique. They began receiving specific federal funding in 1976 through the Emergency School Assistance Act and the Magnet School Assistance Program (Blank, Levine, and Steel 1996; Smrekar and Goldring 1999). Magnet schools were first implemented in Cincinnati and Milwaukee, then spread to other school districts (Fuller, Elmore, and Orfield 1996).

## *Defining Magnet Schools*

Three specific parts of the mission of magnet schools are consistently identified by researchers (Arcia 2006; Gamoran 1996; Gelber 2008; Metz 1986; Varady and Raffel 1995; West 1994):

1. Magnets schools provide a distinctive curriculum, which can be programmatic (vocational, gifted and talented, performing arts) or involve a non-traditional instructional approach (open education, Montessori, project based).
2. Magnet schools attract students from outside a neighborhood attendance zone through recruitment efforts by school and district officials and some kind of selection process by which parents indicate they are interested in attending the school and are placed or not placed in the school.

3. Magnet schools have a goal of desegregation, which usually means that enrollment decisions are made while monitoring the racial balance of the school or building, depending on district policy.

Magnet schools were meant to provide a unique educational opportunity to students while also desegregating schools through the attraction of students of multiple races, although the focus was on the integration of black and white students, from throughout a district.

Wincek (1995) points to magnet schools as a method of dealing with shifting ideologies. Over the course of the twentieth century, multiple waves of reform pressure were aimed at education as the population served and the expected outcomes changed. The common school era saw the emergence of compulsory public education through high school for a broader population of students, standardized teacher education, and graded schools. The progressive era brought more diverse students into the schools, which necessitated a common core curriculum and school improvement initiatives that focused on serving different students. In the second half of the twentieth century, the goal was equity instead of equality, and this goal manifested in a focus on equal outcomes rather than equal resource investment. In the late 1980s, educational choice became the new trend as economic thinking about free markets was applied to education. Despite these various pushes for educational reform for over a century, the form and structure of schooling has remained rather constant.

In this research I will be evaluating competing theories about the effectiveness of magnet schools. On one side the popular press, families of magnet students, residents of school districts that include magnet schools, politicians, school board members, and parents and students who have the opportunity to attend magnet schools believe that these schools are fantastic educational opportunities that will make all the difference for those students who are lucky enough to attend.

This side also is bolstered by educational theory that touts best practices that could be put into practice at magnet schools. On the other side are theories of institutional isomorphism and a number of challenges of creating a different school in the midst of existing educational practice.

This literature review will present arguments that support the expectation that magnet schools are better than comprehensive high schools. Then the arguments that support the expectation that magnet schools are the same or worse than comprehensive high schools. Finally I will summarize the prior research findings about magnet schools and the educational outcomes this research addresses.

*The Conflicted Mission of Magnet Schools*

Magnet schools were created with a multi-faceted mission: to provide distinctive curriculum, attract students from outside the neighborhood in which the school was located, and be racially integrated. At times these three facets have been at odds with one another (Metz 1986; Smrekar and Goldring 1999). One school administrator told Andre-Bechely (2004:305), "Monitoring the goals of desegregation was not the issue. The concern was compliance with the law." This implies that meeting the numerical goals of desegregation subsumed other goals of magnet schools. Instead of seeing the goals as intertwined, different parts have been emphasized at different times. The first goal I listed when defining magnet schools was to provide distinctive curriculum. This goal leads to reasonable expectations that magnet schools would provide instruction that would benefit many students and lead to educational success. However, there are a number of reasons that magnet schools might not have been as effective as expected, largely because the other goals, to attract students and therefore integrate the schools, might overshadow the goal of providing excellent instruction. The following sections describe some of these obstacles.

*Equity.*

Magnet schools were successful in their initial implementation because they were able to attract sufficient enrollment and achieve their established desegregation goals (Gelber 2008; Metz 1986). However, conflict soon emerged for a variety of reasons, many of which centered on whether or not magnet schools were providing equity. Desegregation was undertaken to provide equal educational opportunity for all students with an underlying assumption that this meant that students of all races should go to school together. However, issues such as complex selection procedures, waiting lists, transportation, and difficult-to-access information about the schools caused the equity of magnets to be questioned.

Innovative programming caused conflict for magnet schools because the distinctiveness implied superiority compared to other schools in the district. This was problematic given that the desegregation movement was intended to increase equality in education. Schools worked hard to convey that magnet schools were not better, just different. Convincing parents of this message was not successful and this continued to be an issue for school districts with magnet schools (Gelber 2008; Humes 2003; Metz 1986). Media accounts of successes at magnet schools supported the image of difference. As media often reports on special programs that are offered at magnet schools, and the success that resulted from these programs, the image of the school being better was reinforced in the minds of members of the community.

*Problems with Implementation.*

In the initial implementation of magnet schools, there were conflicts between educational and desegregation objectives. In some areas, magnet schools were implemented very quickly, sometimes over the summer with little to no consultation with the staff of the school (Gelber 2008; Metz 1986). In Boston, school themes were selected without the input of the teachers who

were expected to implement them. Leaving out these important stakeholders led to animosity from the teachers. Criticisms were received from parents who did not observe the school themes being carried out in their child's school experience and found the education provided by the magnet school indiscernible from their former neighborhood school (Gelber 2008). Wincek (1995) uncovered a similar occurrence in her study of the first year of a magnet school. The original plan for implementation involved a year of professional development before opening the school, but district space demands led to the magnet implementation being moved up a year. Teachers and staff applied and went through a selection process that exposed them to the alternative pedagogy and ideas of the school, and those selected participated in summer training and workshops. However, these programs did not verify that everyone had the same vision for the school. As a result, teachers had different expectations of the experience of working at the new school. This variation in expectations later caused conflict among teachers and particularly between teachers and parents who expected to have an active role in the school. Wincek (1995) points to neglecting the role of teachers as an important cause of failure in many reform efforts. Often, policy changes tell teachers what interventions to undertake and how, but they neglect to invest in the training necessary to provide justification for the new practices and engender buy-in from the teachers. "Unless they see either greater efficiencies in their work or improved learning for the children, [teachers] quickly and quietly abandon the prescribed reform" (Wincek 1995:10). Teachers develop preferred methods of instruction, and when they have difficulty with new methods or question the efficacy of those methods, they are likely to revert to what is comfortable and has worked for them in the past. Teaching tends to be a solitary endeavor, and Wincek (1995) found that experienced teachers had difficulty collaborating with their family of teachers at the magnet school and would revert to individualistic teaching methods. The themes

and instructional practices magnet schools were supposed to be implementing are key to their distinctiveness from neighborhood or non-specialized public schools. If the programs were not being implemented, then magnet schools would be just like any other school.

In addition to coherence of theme and vision for the magnet school, there is an implicit expectation that a school that is recruiting students will be more responsive to the needs of those students than a school that is not vying for their attendance (Sosniak and Ethington 1992). Thus, students and parents had high expectations of the responsiveness and excellence of their schools. Sometimes these expectations were unmet (Gelber 2008; Wincek 1995). "One teacher observed that external pressures were mounting because parents thought this would be the best school in the city. 'They didn't leave room for growth pains,' he said" (Wincek 1995:63). But discontent was not only present among those who were able to secure a magnet school placement; parents of students who did not get a place in magnet schools also were displeased. Additionally, there were students and parents who did not receive sufficient information to exercise their option to attend a magnet school.

Difficulties transitioning schools from serving a single-race population to serving a multi-race population also plagued the desegregation and magnet school process. Black students were prejudged and labeled as incapable upon entrance to school (Tyack 1974). Students were bullied, and environments were hostile for some students, although adults were more likely to be the perpetrators than the other students (Cecelski 1994). Furthermore, white educators in the middle of the twentieth century were not well-versed in job prospects for black students; therefore, they were not able to provide useful counseling, and most schools did not have any black counselors on their staff (Tyack 1974).

*Selection Procedures.*

School districts employed a variety of procedures to assign students to magnet schools. These procedures required a continuum of parent and student participation. Some school districts required all families to complete a form ranking the schools they wanted to attend; other districts required students interested in magnet schools to initiate their application for admission with the default being attendance at the neighborhood school. Most school districts used a lottery to assign students to schools, but about one-third required an audition or test to gain admission (Smrekar and Goldring 1999). Schools that had admissions requirements did not show higher levels of student success than those without requirements (Moore and Davenport 1989).

Usually, school districts required a significant amount of attention to the application process – whether it was by lottery, audition, or based on criteria. Families had to familiarize themselves with the procedure, collect information about possible schools, complete forms, rank priority, and submit the forms on time. Andre-Bechely (2004) examined the application brochure for magnet schools that was mailed to all parents in one school district. She found that different parents interacted with the brochure in different ways. Parents who were native English speakers and well-educated were able to understand the complex assignment process and leverage the information provided in the brochure to gain more information and often secure a spot in the desired magnet school for their child. Non-native English speaking parents had difficulties with the brochure: they didn't understand what it was because it came in English; the brochure instructed them to contact the school, which was not something they were apt to do; and the explanation of the complex assignment process was hard to understand. For example, while many parents in the district understood that they needed to apply for schools multiple years before they would be given a spot, many non-English speaking parents applied one year, and if

their child was not placed in a magnet school, they believed their opportunity had passed (Andre-Bechely 2004). Similarly, Moore and Davenport (1989:8) wrote, "[Families] can help students prepare for admission to a desired high school beginning in elementary school, learn that a school will seldom accept students who do not list the school as their top choice, and exert political influence to secure admission." In a study done in Milwaukee, one school option was a program that started children at age four, a full year before children enrolled in other district schools (Duax 1988). Parents had to become aware of the program and enroll their child at a time when most parents were not thinking about this type of school enrollment. If parents missed the enrollment deadlines, they had missed their opportunity, because the school did not accept new students at older ages unless they had begun the program elsewhere. Families who had the time and skills to understand and navigate the admissions process had an advantage over those who were non-English speakers or had previously not experienced success with the school system (Andre-Bechely 2004; Moore and Davenport 1989). If it is the case that magnet schools enrolled students with higher levels of social capital, then the schools would not be serving a representative group of students from the district, which would not be equitable and therefore would violate the intent of desegregation.

One major problem with selection processes was the multitude of families who found themselves on waiting lists. Smrekar and Goldring (1999) found that 75 percent of school districts with magnet schools maintained waiting lists due to demand that exceeded the available space. Those on waiting lists were disproportionately black because the magnet schools were aimed at attracting and retaining white students, preventing white flight (Andre-Bechely 2004; Gelber 2008; Metz 1986; Smrekar and Goldring 1999). The racial imbalance of the waiting lists indicates that not all groups of students had equal access to the magnet schools. This is

problematic for my research because I cannot control for or measure access well using the available data.

*White Flight.*

Concern for white flight was a major driver of the creation of magnet schools. School district leaders felt specialized schools and voluntary selection would lead to sufficient integration without having to force busing or school assignments. Evidence for white flight has been mixed. Coleman, in a series of papers, wrote about white flight in the largest American school districts following desegregation orders in the late 1960s but was heavily criticized for a number of reasons, including that none of the districts implemented desegregation in the years under study (Pettigrew and Green 1976). Instead, multiple authors point to a national demographic shift to the suburbs facilitated by the post-war economic boom, which led to investments in housing and highway infrastructure as well as the ability for people to purchase houses and cars (Arcia 2006; Reardon and Owens 2014; Ryan 2010). Movement to the suburbs was mainly possible for white families who had greater economic resources, which left blacks as the majority in urban areas (Pettigrew and Green 1976). Thus, as desegregation efforts were getting underway in cities, the population of whites in the cities was declining resulting in a higher proportion of the population being minority and complicating the desegregation efforts (Reardon and Owens 2014). Depending on the benchmarks established by the desegregation plans, students could have endured quite a bit of shifting around the district in order to accomplish integration. In some districts the reduction of white students over time made accomplishing and maintaining racial balance nearly impossible (Arcia 2006; Reardon and Owens 2014).

*Skimming.*

There also were controversies about which students actually attended magnet schools. Some parents and critics claimed the schools became elite enclaves within school districts, leaving less able and disadvantaged students in non-magnet schools (Gelber 2008). This practice is called "skimming" or "creaming" (Duax 1988; Metz 1986). If this were the case, it would be reasonable to say that magnet schools were increasing inequality in districts. Such inequality would be reflected in more positive academic outcomes such as higher standardized test scores. Where accountability measures are based on test scores, it is theorized that there is motivation to gather more able students together to achieve high average scores (Moore and Davenport 1989). Moore and Davenport (1989) found magnet schools took the best students in regards to test scores, attendance, behavior, mastery of English, and not having been held back. They also point out that magnet schools were often not required to offer special education, English as a second language, or other specialized student services, making these students essentially ineligible to attend magnet schools. However, other research does not support these claims. Duax (1988) did a study in Milwaukee specifically focused on determining if creaming was taking place and concluded there was little evidence of it happening. He found that parents of students who attended public schools outside their neighborhood had more favorable characteristics in the form of education and SES, but that the academic ability of the students did not differ from those who remained in neighborhood schools. Gamoran (1996) used the National Educational Longitudinal Study to examine the academic achievement of students in various kinds of public and private city schools. In his sample, which was limited to students in city schools, he found students were almost three times as likely to attend a magnet school as to attend a comprehensive high school. This could be understood to be a result of magnet schools being used heavily by city

school districts to encourage movement of students within the district. He also found that low income and minority students were more likely to attend magnet schools than comprehensive schools compared to high income and white students. Gamoran's finding refutes the idea that particular groups of students were being shut out of magnet schools.

In Metz's (1986) qualitative investigation of a school district, the three magnet schools she studied had quite different demographic makeups. One of the schools had a student body that was reflective of the district as a whole in race, income, and academic ability. The second school had more minority students and lower income than the average for the district. The school for the gifted and talented had a student body that was disproportionately drawn from the middle class, both black and white. The students at the gifted and talented school were also more able, on average, than those in the district at large. Unexpectedly, Metz found 25 percent of the students at the gifted and talented school scored in the bottom half of the district-wide distribution on standardized tests. This could be due to a portion of the school capacity being reserved for students who live nearby. Metz partially explained this as an alternate problem to skimming that she uncovered called "dumping," where neighborhood school staff members encouraged difficult students, either behaviorally or academically, to attend a different school. This went as far as referring students with low ability to the gifted and talented school in order to get rid of them. At the same time, they did not refer some of their most able students in order to keep them in the neighborhood schools. Strong black students were underrepresented in the gifted and talented school because neighborhood schools would keep them to serve as model students.

A question related to demographics is whether magnet schools were drawing students from throughout the district or from specific neighborhoods. Metz (1986) found that the school for gifted and talented students did draw from the whole district and admission was highly in

demand, especially from middle-class and higher income parents. However, the other two schools, those with distinctive instructional programs, drew many of their students from the neighborhoods immediately surrounding the schools. Metz suggests that middle-class parents are more willing to send their children to a school far from home for a particular program. She found that many of the parents at the other two schools (those that did not have the gifted and talented program) were unaware of and not interested in the programs offered by the schools; instead, they wanted to send their children to a school that was nearby. Fuller, Elmore, and Orfield (1996) also found that, overall, inner city parents preferred nearby schools where they felt their children would feel comfortable rather than schools that were farther away but offered better educational opportunities. An exception was black parents in St. Louis who were willing to endure the challenges of their children attending a distant school in order to get a better education (Fuller, Elmore, and Orfield 1996). The desire to put their children in a comfortable environment but still take advantage of magnet school opportunities contributes to Henig's (1990) findings from his 1985 study of Montgomery County, Maryland, schools. He found that whites selected majority white schools and minorities selected majority minority schools more frequently in the magnet preference process, which increased segregation in the district. For some districts, magnet schools attracted people to the district (Humes 2003; Varady and Raffel 1995). In the case of the school studied by Humes (2003), parents moved from other countries into the United States to attend the particular magnet school.

The arguments asserting that skimming was taking place are plausible despite research findings that concluded skimming was not taking place. Other research finds that magnet school students and their parents differ from the students and parents at non-magnet public schools (Duax 1988; Henig 1990; Smrekar and Goldring 1999). If the families that elect to attend magnet

schools are different from families who do not in important ways, this is important to control for in analysis. If magnet students have higher SES than non-magnet students, given the consistent findings that academic scores are correlated with SES, we would expect magnet schools to have better academic outcomes regardless of the quality of instruction. Therefore, when comparing the two groups, it is important to use tools that can control for these differences, which is why I use propensity score techniques to conduct my analyses.

*Barriers to Magnet School Attendance.*

When examining accounts of desegregation in the United States, many barriers existed for minority students. Busing was a contentious component of this process. In many places, students attended schools far from their homes and therefore spent multiple hours each day on buses to get to and from school. Cecelski (1994) indicates that this is one reason that the desegregation plans made by white school officials in Hyde County, North Carolina, eventually led to outrage among white parents – they felt it was ridiculous for their small children to ride the bus for over an hour to avoid attending a much closer school solely because it had previously served black students. Transportation concerns also played into the schooling decisions of students in Espinoza's (2015) study – attending a school outside of a neighborhood meant working parents has to transport their child to school or the child would ride multiple buses. However, in some school districts, residential segregation patterns meant that bussing or some other method of transportation to a distant school were necessary in order to accomplish desegregation. Some districts were able to provide for the transportation needs of all students attending non-neighborhood schools for desegregation reasons, but many schools were not financially able to do so. The district Andre-Bechely (2004) studied had established a cost-minimizing bus route that was inflexible and thereby excluded some students who were too far

off the route. Metz (1986) describes the complex transportation practices of students who had to ride city buses. The need for public transportation determined what magnet schools students could attend, because one of the magnet schools did not have good access to the city bus routes. Transportation was a significant challenge to magnet school attendance, but it could be navigated by savvy and knowledgeable parents.

Parental knowledge was another barrier to magnet school attendance. As mentioned, Metz (1986) and Fuller, Elmore, and Orfield (1996) both found that some parents, even when they knew about available magnet opportunities, wanted their child to attend a school close to home. Parents were attracted to magnet schools because they perceived that they offered a quality educational opportunity, academic rigor, value systems that resonated with parents, and strong athletic reputation (Bartee and Brown 2007; Blank 1989).

Espinoza (2015) found that many parents were supportive of their child's educational pursuits but they did not have the knowledge of the educational system to really help them accomplish their goals. For this reason many minority and first-generation students are making their own educational decisions without parental assistance. Many students knew that there were alternative educational options but were reticent to attend these schools due to concerns about transportation, being

*Expectations of Magnet School Success*

Magnet schools had the opportunity to provide an alternative form of education based on the interests of students. By offering innovative programs and themes, they were able to attract students and parents who had a vested interest in the programming of the school, which was a benefit to both students and the school. The advantages that magnet school had over other types of public school led to the expectations that magnet schools would provide better educational

environments and result in better academic outcomes. There are a number of reasons why these expectations are logical and would lead to these better outcomes. I discuss these reasons next.

*Magnet Schools as Special Places.*

When Gretchen Whitney High school opened, there were no admissions requirements, and the founding administrators were concerned about having sufficient enrollment for the school to remain open (Humes 2003). It was suggested that the reason students did not want to attend the school was because anyone could attend. Once admissions requirements were established, the school became desirable, and now it is consistently rated among the best high schools in the United States. In order to attract students, magnet schools must be special in some way. Magnets differ from comprehensive high schools by offering some kind of specialization, whether through a curricular focus like math and science, an extracurricular focus like performing arts, a vocational focus like automotive repair, a theme like environmental education, or a different type of pedagogy like Montessori.

Metz (1986) discusses the different types of learning environments provided by two of the magnet elementary schools she studied due to the different instructional strategies that were offered, and the positive outcomes those schools experienced, at least among previously low-achieving students. These classrooms involved group work, project-based learning, and self-direction with guidance from teachers. Humes (2003) highlights a number of distinctive characteristics of the magnet middle and high school he observed. The school is for high-achieving students with test scores determining admission. Humes says the expectations are clear — "You're all going to college…Period!" (24) Additionally, the school was able to have a small number of students at each grade level; there were fewer than 100 students in the seventh grade. The administrators and teachers attempt to create a family-like atmosphere. This technique was

also described by Wincek (1995), who studied an elementary school that divided students into multi-age families to form sibling-like relationships between students. Additionally, Humes (2003) writes, the school "…offered a chance for kids… who would have been on the social periphery of a larger, comprehensive high school to be in the thick of things – to become leaders" (26). Opportunities for leadership are facilitated by the fact that the school has six grades but about 1,000 students. Older students are expected to mentor younger students to help them cope with the unique and intense academic environment. Hence, a special identity is formed among students and the common experience of attending the school can bond the students together. The expectations of greatness can be internalized by students who believe themselves to be great.

*Magnet Schools and Education Theory.*

While the perceptions of parents and others that magnet schools were better than non-magnet schools simply because they were different or cost more money to operate may have been based on impression rather than data, their impressions are consistent with the pedagogy recommended by educational theorists. Drawing on the work of these theorists, magnet schools could be expected to have better outcomes based on three characteristics: social integration, active learning techniques, and responsiveness to student needs.

One of the main functions of schooling is to socialize students into their culture and prepare them to be members of society (Dewey 1951; 1963; Durkheim 1956). Dewey (1951) wrote that one of the functions of education is to bring students into contact with a broader social environment than they would otherwise be exposed. He specifies exposure outside students' social class, but race, ethnicity, gender, and religion represent similar types of diversity to which schools can expose students. The goal of magnet schools was to serve as institutions of

desegregation in order to expose students to students of races they were not in contact with in their neighborhood schools. Dewey also said schools have the power to direct behavior and most of this control is not conscious or overt; rather, the environment provides constant influence, which impacts behavior or thinking. In other words, schools that successfully integrated had the opportunity to expose students to an environment of tolerance, in which multiple races in one school were normal. Both Dewey (1951) and Durkheim (1956) agree that a school or classroom can act as a small society from which students learn to function in a larger society. Thus, schools that have a multiracial student body and staff model a multiracial society.

Traditional education involved the banking model of education, where the instructor is elevated as the holder of knowledge which he or she gives to the students who are mostly passive in the process. This model of education is rejected directly by Durkheim (1956), Freire (1999), Giroux (2001), and Bronfenbrenner (1979). Instead, they encourage teaching that is responsive to the ways students learn and think about the world (Giroux 2001) and engage students in the learning process. Bronfenbrenner (1979) in particular was a proponent of learning by doing, wherein a teacher might not do much instruction at all but rather expose students to learning opportunities in which they can develop knowledge through completion of tasks, solving problems, or exploration. Similarly, Dewey (1951) writes that people will be enriched by greater engagement in the physical and social world.

Since magnet schools offer pedagogy that is different, they have the potential to be better matched and more responsive to the learning styles and interests of students. Sosniak and Ethington (1992) found that choice schools are more responsive to parents and students because they are drawn into the school rather than assigned to attend to school. Magnet schools do not apply a “one size fits all” approach; rather, they can acknowledge the different needs of

individuals, an approach lauded by a number of educational theorists (Dewey 1963; Freire 1999; Giroux 2001). Two of the schools Metz (1989) studied implemented instructional practices that were very different from those at traditional schools. Self-directed, project-based, and cooperative learning experiences helped previously low-achieving students make significant academic progress over the year in addition to improving self-confidence.

The differences in pedagogy adopted by magnet schools are expected to provide benefits from social integration, active learning, and responsiveness, which translate into positive academic returns. As a result, magnet schools should have more academic success than comprehensive high schools serving similar students.

*Magnet School Students and Parents.*

While policy makers, school district administrators, and journalists emphasize mission of magnet school to provide equal educational opportunity to families, attending magnet schools requires families to navigate information gathering about schools, application procedures, transportation planning, and other obstacles in order to gain admission and successfully attend a magnet school. Not all families are willing or able to meet these challenges. As a result, parents and students who are better able to meet such challenges find their way into magnet schools. It is not surprising that multiple studies have found that the parent characteristics of magnet students have been found to differ from those of non-magnet students (Duax 1988; Smrekar and Goldring 1999).

Magnet school parents have higher levels of income, education, and rates of employment; consequently, they have higher levels of SES (Smrekar and Goldring 1999). Yu and Taylor (1997) found that magnet school families had higher SES than other public school parents even when only minority families were compared. Duax (1988) found specifically that mothers of

magnet school students in his Milwaukee based study had higher levels of education than those of neighborhood school students. He also found more single mothers and more families who qualified for free and reduced lunch among magnet school families. This complicates the understanding of SES because single mothers tend to have lower SES than families with two parents. But the higher rate of free lunch recipients indicates that the parents are comfortable with application processes like those required to get lunch or gain admission to a magnet school. Yu and Taylor (1997) also looked at the rate of free and reduced lunch recipients but found that non-magnet school students in Cincinnati and Nashville were more apt to be recipients than were magnet schools students, consistent with their other findings that magnet families have more economic resources. Smrekar and Goldring (1999) write that parents who have more education are more aware of educational options and are more likely to select alternatives than less-educated parents, a finding echoed by Fuller, Elmore, and Orfield (1996), who add that educated parents who opt for magnet schools are also more involved in their children's education. Smrekar and Goldring (1999) also found that parents who are more dissatisfied with their neighborhood schools chose to send their children to magnet schools and that higher levels of dissatisfaction are correlated with higher levels of education. In a 1991 survey, 23 percent of parents said they would exit their neighborhood school if they could, demonstrating that there was a moderate level of dissatisfaction with schools that could motivate seeking an alternate school (Fuller, Elmore, and Orfield 1996).

*Magnet Schools and Forms of Capital.*

In concert with the flexibility of management and pedagogy accorded to magnet schools, forms of capital can be made more available by magnet schools than by comprehensive high schools. Capital provides people with knowledge, contacts, and both tangible and intangible

resources that can be drawn upon to accomplish tasks or obtain desired results (Bourdieu 1986). Bartee and Brown (2007:49) write that cultural, social, and symbolic capital is "critical to the successful matriculation of African-American students through the academic pipeline."

Social capital, emanates from the personal contacts made between people which can be leveraged in specific situations to provide information, connections to other people, job prospects, and other resources. The second form of capital, cultural capital, refers to the knowledge of dominant culture or high culture which is often thought of as being amassed through visiting museums, performing arts, and travelling to places of cultural importance (Bourdieu 1986). Cultural capital also has been used to refer to knowledge of the ways to navigate the dominant culture. Such knowledge is particularly important for students who belong to groups not considered part of the dominant culture (Bartee and Brown 2007).

Bourdieu (1986) wrote that educational institutions privilege the traditions and practices – or capital -- of the dominant culture which typically is middle or upper class and white. Capital is only legitimate if it matches the valued practices, "other forms of culturally relevant capital are assumed to be illegitimate or low culture" (Bartee and Brown 2007:50). Therefore, students, especially African-American students, come to school with knowledge of particular types of culture which is devalued while other types of culture of which they do not have knowledge are considered the legitimate form of culture. Students contending with a conflict between familiar culture and the culture valued by schools are likely to question their own identity and how they fit into their school community.

Forms of capital can either be inherited from family influences or gained from schooling (Bartee and Brown 2007). Those who successfully experience upward mobility gain capital from schooling. Thus magnet schools hold capital and have the potential to provide it as a resource to

students. Bartee and Brown (2007) seem to mostly see the forms of capital imparted by magnet schools as emanating from the desegregated environment that brings African American students into contact with white students and therefore makes them more fluent in the dominant culture. They find that employers are more likely to hire students from desegregated than from segregated schools. Additionally they cite the finding of Dawkins (1983) that African American students who attended desegregated schools were more likely to aspire to a professional or non-traditional occupation than were their counterparts at segregated high schools. Thus magnet schools, by maximizing the benefits of being a desegregated school and the opportunity to apply student responsive and sensitive pedagogical practices, are in the position to help students gain forms of capital that will help them be more successful in life.

*Magnet Schools Foster Peer Networks.*

A specific form of social capital built by magnet schools are peer networks. Desegregation efforts brought students into contact with students from outside their neighborhoods and existing social circles, potentially creating new peer environments. The impact of these peers is the topic of debate among theorists and researchers.

Some claim that the disruption of peer networks was beneficial (Guryan 2004; Metz 1986; Reardon and Owens 2014). One study finds that black and white students with cross-race friendships had higher aspirations and did better overall in school than students with only same-race friends (Kao and Thompson 2003). Guryan (2004) found that desegregation reduced the high school dropout rate among black students. One could conclude from these findings that own-race friendship and peer groups had a negative influence on students in comparison to cross-race friendships. Other integration studies investigate peer effects and "frog pond" effects. Peer effects refer to the theory that going to school with more able white students will elevate the

academic environment and minority students who had been lower performing will rise to the level of their environment and succeed (Goldsmith 2011). “Frog pond” effects refer to the theory that students assess their success by comparison to their classmates. If they perceive they are doing better than their classmates, they will feel positive about their abilities and excel academically. But if they perceive they are doing worse than their classmates, as is contended when minority students are sent into a predominantly white school, their self-esteem will be negatively impacted and they will not excel academically. Goldsmith (2011) suggests that frog ponds may be a reason that we do not see minority students in predominately white schools excelling in the way peer effects predict. Extending this to magnet schools, frog ponds would suggest that minority students would struggle when exposed to higher-achieving white students in magnet schools. In fact, accounts from early desegregated schools indicate the experience was not positive for many black students who were shunned or badly treated by teachers, parents, and, less frequently, other students (Cecelski 1994; Lowe and Kantor 1989). In an alternate form of peer effects, Crosnoe, Cavanagh, and Elder (2003) found that academically oriented friends can serve as a buffer between students and a difficult school or neighborhood environment. This is also found by Flores-González (2010), who studied Latino students working to sustain their identities as “school kids” in the face of enormous pressure to be otherwise. These students found community in other students who were similarly attempting to be academically oriented and were able to encourage and help one another cope with the challenges and pressures to be oriented away from school which came from many of their peers. While Crosnoe, Cavanagh, and Elder (2003) found significant benefits for academically oriented students, they found that for black students, large schools undermined the impact.

In sum, there are a number of reasons to question whether magnet schools were an effective mechanism for combating inequality and providing equality of educational opportunity for students from various racial groups.

*Factors Limiting the Performance of Magnet Schools*

The previous section provided many reasons for expecting magnet schools provide a superior educational environment conducive to learning that would translate into better educational outcomes among students. However there are several reasons to believe that magnet schools are offering similar or inferior education to their students in comparison to other public schools.

*Magnet Schools and Educational Quality.*

Desegregation efforts meant it was not assumed that all public school students would attend their neighborhood school but instead many families would have the opportunity to select the school of attendance. Since parents needed criteria to make a school selection, concern for school quality grew. Rossell (1991) suggests that many parents looked at class size and school spending to evaluate the quality of magnet schools in comparison to comprehensive high schools. She argues that parents were easily able to assess the facilities and number of students in their children's classes, but assessing the quality of teaching was more difficult. Often magnet schools attracted experienced teachers from throughout a district and the teachers underwent greater screening (Wincek 1995). Some parents may have been able to gain information about the number of years of experience of teachers within magnet schools and used this as a proxy for quality of instruction. Financial expenditures were also observable criteria because many magnet schools required investment in renovations, supplies, additional facilities, and often additional staff or training in order to support the new theme of the school. Rossell (1991) found that while

some school districts refused to report the cost of magnet schools because it was too difficult to parse magnet specific costs from the general operating costs of schools in general, those districts that did report had average startup costs of $500,000 for magnet schools. The school district in Houston, Texas reported that their magnet schools had additional expenditures per student of $400 to $1,300; smaller programs had larger per-student costs. This kind of spending was attractive to parents who felt monetary investment represented better educational quality. Many school districts received grant funding from the federal government through the Magnet Schools Assistance Program but this may not have always been known by parents.

In general, the community applied logic to school district funding and assumed that conspicuous additional funding for magnet schools meant less funding for other schools in the district. Metz (1986) found that some parents wanted to send their children to magnet schools because they perceived that students from high social class and achievement groups would also attend the school. School districts also had to take seriously the need to recruit students to attend various magnet schools, and they did this through attractive and informative pamphlets and booklets. This kind of information helped parents become educational critics, evaluating the quality of schools based on available information and their observations of the pedagogy and themes magnet and other schools used in instruction. However, the contents of available information and observations were not necessarily related to actual higher educational quality in magnet schools. Not included in the information parents were using to make decisions about school selection was evidence of higher test scores, greater achievement, or improved educational outcomes over those being achieved in neighborhood schools. Of course providing evidence that magnet schools were providing better education would add to the conflicted

mission of magnet schools wherein magnet schools were to provide enriched education at the same time as they expanded equal educational opportunities.

*Lack of Connection to the Neighborhood and Community.*

Desegregation of schools through magnet schools and other techniques usually required busing as students were redistributed within the school district to create a diverse student body at schools located in segregated neighborhoods. Some argue that magnet schools and other desegregation efforts destroyed the beneficial link between the neighborhood and the neighborhood schools (Cecelski 1994; Gelber 2008; Metz 1986; Ravitch 1983; Rossell 1991; Wang 2016). In many communities there had been a strong relationship between the school and the neighborhood in which it was located. Schools, particularly in black neighborhoods where the residents provided a great deal of financial and other types of support to the schools (since little or no funding came from local school funding), doubled as community centers and gathering places (Cecelski 1994). Often the teachers lived and participated in the community providing connections between parents, teachers, and students outside the school context. Such connections could foster sharing of information about schooling and academic progress in the normal course of life rather than formal school appointed meetings and a sense of accountability. As a result of the high value ascribed to community, some parents did not want to send their children to schools outside of the neighborhood no matter how good those schools were.

Transportation concerns were another concern that prevented parents from sending their children to magnet schools outside of the neighborhood. Some school districts did provide transportation, but many required parents to figure out their children's way to school which could include multiple legs of public transportation and a long duration through less than desirable or unknown neighborhoods (Cecelski 1994; Metz 1986).

The development of magnet schools did mean additional investments by school districts in purchasing materials, recruiting teachers with specialized knowledge or interest, training staff, and building facilities. Investments that led to the logical expectation that schools with new and expensive educational resources would be better, an idea that is clear in educational research where high resource school districts turn out high achieving students (Kozol 1992; Ryan 2010). However, in a Government Accountability Office Report about school segregation, one district noted that as they implemented a magnet school to promote integration using additional state funding, the educational quality of their traditional schools declined (GAO 2016).

*Ineffective skimming.*

There are many factors outside of the schooling environment that impact students' educational outcomes. While it is argued that the selection process of magnet schools result in students who have favorable external characteristics being concentrated in these schools and creamed from other schools, it is also the case that all students with these characteristics do not select to attend magnet schools or gain admission to the magnet schools. There are a number of reasons why families do not choose magnet schools. The most basic is that gaining admission requires understanding and engaging in the selection process. As highlighted in the earlier section about selection procedures, this process can be complex and nuanced, excluding some parents and students who are unable to apply or who are discouraged by the difficulty.

All parents want to send their child to the best school, but what is considered the best varies among parents. Some parents prefer a school that is in the neighborhood where they feel a sense of community and safety; other parents are interested in academic rigor regardless of location. When making choices in the context of desegregation, the racial makeup of the school becomes a component of the decision. Parents making a school choice tended to prefer schools

where the children were not racially isolated, which meant that some minority parents would select schools in higher-poverty areas because those schools had more minority students (Henig 1990). The same reasoning led many parents to prefer to send their child to a neighborhood school where there is less racial isolation for their children and therefore not participate in the application process for magnet schools.

Among families who did participate in the magnet school application process, lottery procedures might exclude them since there were usually a limited number of spots in the magnet school (Andre-Bechely 2004; Bailey 2013). Sometimes, due to lower demand for the magnet school, it would be easier for one group of students to get in than another. For example, all white students applying to attend a magnet school located in a black neighborhood gained admission but there was a waiting list for black students.

Many school districts employed lottery procedures which involved minimal entrance requirements for magnet schools. Therefore students at any academic level could gain entrance which meant that high achieving students might not gain admission while lower achieving students might be admitted. Therefore the argument that magnet schools skimmed the best students away from non-magnet schools was not true for the many districts who used lotteries or other more assignment strategies that did not consider academic achievement as the key criteria for admission. Thus, while many privileged students did make their way into magnet schools, many did not. Those who did not attend magnet schools took their favorable characteristics to their neighborhood school and likely attained a high level of achievement.

*Isomorphism.*

There are many reasons, as outlined earlier in this work, that magnet schools could be innovative, pedagogically strong institutions that provide stimulating environments that offer

higher quality education than the other options available. However, research evaluating charter schools introduces reasonable doubt that these expectations are realized. Charter schools are public schools that have a contract with a school district but are managed outside of the regular district structure. These schools are often opened in areas where public schools are perceived to fail to meet the needs of some portion of the population. Similar to magnet schools, they may aim to use themes or alternate pedagogy to better serve their students. Charter schools, true to their name, usually have a guiding document including a mission statement that outlines what and how they aim to provide education to their students. Despite the common motivations for developing charter schools, to provide an educational environment that is different from the alternatives, an analysis of charter school mission statements finds they are not as innovative as expected and largely reflect conventional educational goals that do little to differentiate them from other schools (Renzulli, Barr, and Paino 2015). This occurs due to isomorphism, organizational pressure for different entities to perform the same function, such as providing education, in the same way. Ravich (1983) writes that educational innovation is often unsuccessful due to isomorphism, as teachers, administrators, and the expectations of parents and students regress to what is considered the conventional manner of education. A finding echoed by Wincek (1995) in her research which described experienced teachers struggling with the new techniques they were expected to employ in a new magnet school reverting to the practices they had employed in their classrooms prior to teaching at the magnet school.

*Academic Achievement in Magnet Schools*

Gamoran (1996) suggests that we can expect higher educational achievement from magnet students for several reasons. First, "schools with distinctive purposes may provide access to social capital for students who cannot find it in their homes and neighborhoods" (3). Students

can make friends among their peers or connect with school staff members who will provide them with information, skills, and other people who can help them be more successful in school and life. Second, a magnet school should offer a more focused and intensive academic environment that should result in higher achievement. Third, magnet schools should foster a greater sense of belonging and distinctiveness that should lead to greater academic achievement. Indeed, Blank (1989) writes that average test scores at magnet schools are higher than at non-magnet schools and magnet student scores are higher than those of similar non magnet students. He also finds that when students are followed, magnet students show greater academic growth than those in non-magnet schools. However, he states that the results vary by subject, school, and grade. He also notes that magnet schools, on average, have students that have better educational qualifications than non-magnet schools because magnet schools often can bypass at-risk students. Therefore, magnet students begin with higher academic scores than non-magnet students, and not all the studies conducted by school districts that Blank reviewed accounted for these differences. Additionally, Blank found that many school districts used aggregate data in their comparisons, which is not as accurate as individual-level data. Those districts that used individual data and research designs classified as complex by Blank showed positive results for the impact of magnet schools on the educational outcomes of students. The studies that were able to compare similar magnet and non-magnet students also concluded that magnet schools were beneficial. Gamoran (1996) found that principals at magnet schools rated their school's academic environment more positively than did principals at comprehensive high schools. Blank (1989) cites high levels of teacher satisfaction with magnet schools due to high levels of parent involvement and a greater sense of school autonomy from the school district. Gamoran (1996) also found that magnet schools had positive effects on the academic achievement of students;

specifically, they encouraged greater achievement among average students than did comprehensive high schools. Similarly, Crain, Heebner, and Si (1992) found that students who were admitted to the career magnet schools in New York City through a special program that provided space for students who otherwise would not have been admitted, and were average or below-average readers, increased their reading scores, earned more credits toward graduation, and were more likely to pass an advanced mathematics test than similar non magnet students. Metz (1986) also had findings like those of Gamoran (1996) in two of the schools she studied that did not give grades and followed programs that were uniquely student centered. These schools rewarded student progress and effort rather than being at grade level or demonstrating excellence based on an objective benchmark. Because these schools met students at their current state and provided a great deal of support for individual academic development, they had success with previously low-achieving students. These findings provide support for the expectation that specialized programs housed at magnet schools can produce greater academic achievement than comprehensive public schools.

The results for short-term academic outcomes seem impressive, but in a study of the success of students in public universities, Bowen, Chingos, and McPherson (2009) concluded that while the academic level of high schools does matter in determining subsequent success, it has less impact than many assume. Additionally, in a study of early elementary students, Duax (1988) found no difference in test scores between students who attended a variety of different kinds of public schools, including magnet schools, and those who attended neighborhood schools.

Although not all schools that were desegregated were magnet schools, desegregation was a goal of magnet schools in the later decades of the twentieth century. Therefore, it is reasonable

to examine some of the educational effects of desegregation. Guryan (2004) found a decrease in high school dropouts among black students following desegregation. Reardon and Owens (2014) echoed this finding and added that educational attainment for black students was increased by one-tenth of a year for each additional year of exposure to a desegregation order. There was no effect of desegregation on white students, which dispels the concern that exposure to non-white students who were assumed to have lower achievement would be detrimental to their progress (Guryan 2004). Guryan identified three possible reasons for his findings. First, desegregation altered the students' peer groups at school, which meant that there were new influences on the students. He points out that the anticipation of a change in peers may result in some parents removing their students from school but also presents data that all students experienced increased integration in their schools regardless of whether the schools were considered desegregated. Thus there was the opportunity for change in peer group racial makeup for all students in his study. Second, desegregation may have led to black students attending better schools. This assumes that the schools that black students were attending were inferior to those that white students were attending. While this seems to have been true in terms of physical, environmental, and monetary resources, evidence supports the quality of the human resources at black schools (Cecelski 1994).

*Educational Outcomes*

The lack of research dedicated to measuring the outcomes of magnet school students on a large scale is concerning. Since magnet schools are offering distinctive programs to students and parents, it seems logical that efforts would be made to assess whether the schools are having distinctive outcomes. It is possible that individual magnet schools are doing alumni studies that are reported locally but not elevated to the national stage. But it is important to know the impact

of magnet schools, taken together, on a national level. Are magnet schools an academically beneficial form of school choice and desegregation? In answering this question, I will look at four academic outcomes: test scores in twelfth grade, educational expectations in twelfth grade, prompt matriculation to postsecondary education, and postsecondary attainment by age 26. The following sections summarize what is known about these measures in general as there is limited or no data about aggregate magnet educational outcomes.

*Test Scores.*

Although standardized testing has become increasingly controversial as the tests are used as accountability measures or for tracking (Kozol 1992; Oakes 2005; Ryan 2010; Wincek 1995; Tyack 1974), the tests can be useful for comparing across a national sample of students. Standardized test scores are an objective measure of aptitude in the areas included in the exam and are used for many purposes, including school accreditation, measurement of annual yearly progress, determining grade level or placement, and informing college admission decisions (Kozol 1992; Oakes 2005; Smrekar and Goldring 1999; Tyack 1974; Weis 1990). The data used in this study comes from a cohort of students who were in school when federally mandated testing standards were implemented and therefore may have been less impacted by over-testing and teaching to the test than subsequent cohorts (Ingels, Curtin, Kaufman, Alt, and Chen 2002). However, standardized testing is additionally controversial due to the correlation between SES and test scores – students who attend high SES schools have higher test scores than do students who attend low SES schools (Bowen, Chingos, and McPherson 2009). Another complication is the fact that the test may not be in line with the curriculum at all of the schools. Metz (1986) found that math scores at one of the schools she studied were quite low, but this was attributed to the open school style, which did not prepare students for the types of math problems found on a

standardized test. Teaching to the test is a real concern when looking at schools that may use an alternate form of instruction that involves a focus on the process of getting the answer rather than the answer itself, test taking strategies, and familiarity with multiple choice exams, which may be found in mainstream classrooms.

Despite the potential pitfalls, test scores are a good measure to use in a study like this one where comparisons are being made between students from across the country who have attended different schools and come from different neighborhoods. The students all took the same test, and their results provide information about their ability to complete identical tasks in a testing situation. If magnet schools are providing better education, I would expect magnet students to score better than comparable non-magnet students.

*Educational Expectations.*

Student educational expectations are highly predictive of eventual attainment (Andres, Adamuti-Trache, Yoon, Pidgeon, and Thomsen 2007; Somers, Cofer, and VanderPutten 2002). Students who have specific early expectations are likely to maintain those expectations over time and attain the expected level of education (Alexander, Bozick, and Entwisle 2008). The rate at which students expected to attend colleges and universities increased over the last half of the twentieth century and was in an uptick at the time of the NELS data collection (Ingels et al. 2002). Rosenbaum (1998) points to the "college-for-all" mindset as one reason for the increase in high expectations. He contends that teachers, counselors, and other school personnel encourage all students to attend college without considering their academic qualifications to do so. This leads to potentially overinflated expectations for educational success (Goyette 2008). These high expectations may be checked when students actually matriculate to PSE. Students who expect to earn a bachelor's degree in twelfth grade and then attend a two-year institution

have been found to frequently decrease their expectations, referred to as "cooling out" (Alexander, Bozick, and Entwisle 2008; Pascarella, Edison, Nora, Hagedorn, and Terenzini 1998). However, an alternate phenomena happens as students experience the world outside of high school and realize they need additional education to get the job they want (Weis 1990). Sometimes referred to as "warming up," this also occurs as students attend PSE and find success, leading them to expect higher levels of educational attainment (Alexander, Bozick, and Entwisle 2008). Warming up or cooling out is experienced by a minority of students; the majority of students show great consistency in their expectations over time and attain their expected level of education.

Educational expectations are important to measure among students because they reflect the preparation they have received for life after high school, the knowledge they have about life opportunities, and how they envision their future.

*Prompt Matriculation.*

Just as an early decision to attend college leads students to actually attend (Plank and Jordan 2001; Somers, Cofer, and VanderPutten 2002), other behaviors, such as applying to college during high school and making the transition to postsecondary education from high school without delay, have been found to increase the likelihood of completing a bachelor's degree (Baker and Velez 1996; Carbonaro, Ellison, and Covay 2011). Often students who are less certain about their chances in college are from lower-income families or are first-generation college students who plan to work a few years to save money for college before attending or plan to work in addition to attending college (Bozick and DeLuca 2005). Once they begin working full time, it is often difficult to quit or limit hours to make room for returning to school. Attending PSE promptly after high school and full time leads students to maintain their

educational expectations; not doing so tends to lead to cooling out, or a reduction in educational expectations (Alexander, Bozick, and Entwisle 2008).

*Educational Attainment.*

When evaluating educational attainment, researchers often focus on bachelor's degrees (Carbonaro, Ellison, and Covay 2012; Trusty 1999). However, all levels of educational attainment are beneficial. Looking at earnings data, completion of any amount of postsecondary education increases the amount a person will earn over the course of their lifetime when compared to having a high school education (Baker and Velez 1996; Perna 2006). Additionally, students enter postsecondary education with different goals. Students who are looking to become welders, auto mechanics, and horticulturalists may attain valuable credentials that are not bachelor's degrees. Tinto (1993) also encourages researchers to consider delayed entry to college as he claims a great deal of research eliminates those who do not promptly matriculate and by doing so we underestimate college going by at least 10 percent.

The average level of education among Americans increased over the course of the twentieth century. From 1940 to 2000, the percent of American adults age 26 or older who had completed high school or more education increased from 24.5 percent to 80.4 percent and the percent who had earned at least a bachelor's degree increased from 4.6 percent to 24.4 percent (Bauman and Graf 2003). As the economy has become more technical, higher levels of education have become required, which can lead some students to adjust their educational plans beyond high school. Some students who did not anticipate needing post-secondary education may see the need for it later and enroll (Weis 1990). It is also possible that students who were encouraged to attend college and had high expectations might find college more challenging than they anticipated and drop out or lower their goals. Conversely, students who find success in college

may be encouraged to continue their education for a higher degree (Alexander, Bozick, and Entwisle 2008).

*Race and Educational Outcomes*

Many educational outcomes are associated with SES and race since both status characteristics impact the resources families have available and the types of neighborhoods and schools students attend. Family resources, neighborhoods, and schools all have an impact on the academic preparation students receive. These factors come together to create accumulated disadvantage among minority students (Espinoza 2015). Race will be discussed in this section and SES will be discussed in the next section.

Educational opportunities for non-white students, and especially for black students, were expanded through the court decisions that came out of the civil rights movement and the decades that followed. As a result, gaps in educational attainment closed. In 1960, the gap between white and non-white adults ages 25–34 who had graduated from high school was 25.1 percentage points, but this narrowed to 7.6 percentage points by 1980 (LaViest and McDonald 2002). Research consistently finds that Asian or white students have higher levels of educational achievement and attainment than do students of other ethnicities (Bowen, Chingos, and McPherson 2009; Kao and Thompson 2003). Asians and whites are likely to successfully make each educational transition, including graduating from high school, attending college, and graduating from college. Long, Kelly, and Gamoran (2009) found that black students were more likely than white students to graduate from high school and attend college, but fell behind in graduating from college.

All ethnic groups tend to report expectations of high levels of education; however, given that educational expectations are generally self-reported by students through a survey instrument,

it is unclear whether what we call expectations are aspirations or whether students are actively working to achieve these academic goals (Kao and Thompson 2003). Asian, Hispanic, and black students often have higher educational expectations than would be predicted by their SES level (Kao and Thompson 2003). While educational expectations are excellent predictors of eventual attainment, many students fall short of their expectations. Researchers and theorists have pointed to the lack of available role models who have successfully navigated the educational system to coach them through the process as one possible reason for this gap (Stanton-Salazar 2001; Tyack 1974). Espinoza (2015) highlights the importance of what she calls "pivotal moments" when educators intervene in the lives of students to provide them encouragement coupled with informational resources that make it possible for them to make successful transitions into and through PSE. Another possibility is a realization of the unequal returns to an investment in education. Non-white students who do see same-race others obtaining high levels of education may become disillusioned with the dissonance between what school personnel tell them a degree will do for them and what they see their acquaintances achieving (Tyack 1974). A third influence is the finding by Porter (1974) that ambition was less related to the educational attainment of black students than was social conformity. Despite these potentially cooling influences, students have continued to raise their aspirations (Ravich 1983).

Differences between ethnic groups in school performance and educational expectations contribute to different rates of dropping out of high school (Kao and Thompson 2003:426). Black students have high rates of dropping out of high school, which can be traced to low levels of capital. Similarly, some groups of recent immigrants also have low levels of capital, which contributes to dropout and difficulties making educational transitions. For example, students of Mexican origin have low high school graduation rates even when controls for background are

employed (Kao and Thompson 2003). This finding was echoed by Everett, Rogers, Hammer, and Krueger (2011), who found students with Mexican origin had the lowest levels of educational attainment of the many groups they studied. However, more detailed investigations of immigrant educational outcomes have uncovered conflicting results when examining the age at which immigrant children arrive in the United States. Everett et al. (2011) find that earlier arrival leads to better educational outcomes, whereas Kao and Thompson (2003) find a more complex pattern in which youth who immigrated in adolescence were less likely to drop out of high school than were native-born or those who had immigrated at an earlier age even if their families had lower SES or levels of capital. It is also important to note that different groups activate their capital in different ways, as described by Stanton-Salazar (2001). That is, minority students were sometimes reluctant to seek assistance from willing adults in favor of trying to accomplish tasks on their own. However Espinoza (2015) found this reluctance could be overcome if an educator intervened and a positive relationship was fostered.

Matriculating to PSE quickly after high school graduation improves the probability that students will complete a degree. In research completed by Peng (1988), two years after high school graduation, 86 percent of Asian and 64 percent of white students were in some kind of PSE. Of the high school graduates who attended a four-year school, 86 percent of Asians, 75 percent of whites, 71 percent of blacks, and 66 percent of Hispanics persisted into their second year.

Research on Hispanic students has uncovered some specific patterns in secondary and postsecondary education. Hispanic males graduate high school and enroll in college at greater rates than Hispanic females. But once in college, Hispanic females have higher graduation rates (Bowen, Chingos, and McPherson 2009). Two-year colleges seem to be the preferred type of

PSE for Hispanic students, who are least likely to attend four-year institutions (Alvarado and Turley 2012; Bowen, Chingos, and McPherson 2009; Kao and Thompson 2003). This leads to undermatching for Hispanic students who are academically qualified to attend more prestigious and selective institutions than they elect to attend (Bowen, Chingos, and McPherson 2009).

Undermatching also occurs among academically able black students. While Long, Kelly, and Gamoran (2009) found that black students were more likely to attend college than white students, they also found black students are significantly less likely to attend highly prestigious institutions and are less likely to graduate from college than white students. In addition to other less favorable outcomes, black students also have slower time to degree (Bowen, Chingos, and McPherson 2009). Slower time to degree can be a reflection of having academic difficulties – being placed in remedial courses, having to retake classes, or taking a reduced course load in order to dedicate additional time to passing courses. This can lead to frustration and may contribute to both black and Hispanic students being more likely than whites and Asians to drop out of college due to academic difficulties (Kao and Thompson 2003).

*SES and Educational Outcomes*

SES has a great impact on educational success throughout the life course. Family background explains half to two-thirds of educational attainment differences for all groups except for Asians who tend to be consistently high achieving across levels of SES (Kao and Thompson 2003). Differences in educational achievement are present early in a student's educational careers, "…research shows that low-income and minority students participate at higher rates in vocational curricula and at lower rates in academic curricula than do affluent and white students" (Kao and Thompson 2003:424) and that tracking has a negative impact on those who are placed in lower-level tracks. Those in middle tracks are not impacted by track placement

but those in high tracts benefit. Vocational tracks are unlikely to provide information or encouragement for students to pursue PSE, and they often do a poor job of connecting students to non-educational post-secondary paths as well (Oakes 2005). Unfortunately, the lack of support and knowledge about PSE results in students with lower levels of SES and college preparation pursuing paths less likely to lead to a degree (Goldrick-Rab 2006). However, among students who are on a conventional trajectory — pursing a degree at a flagship four-year state university or a prestigious college — lower SES students are less likely to graduate, and the difference cannot be explained by preparation for college (Bowen, Chingos, and McPherson 2009). Thus, even among well-prepared students who have successfully matriculated at a favorable institution, SES is a barrier to completion.

High SES students are more likely to graduate from college, and they do so more quickly (Bowen, Chingos, and McPherson 2009). They are more likely to successfully navigate educational transitions because they are better able to manage financial aid and have better support systems than lower SES students, who often delay or stop attendance in order to arrange financial aid (Goldrick-Rab 2006). Navigating financial aid is challenging but many students also struggle to enter and complete PSE because of financial and other types of obligations that are not directly related to attending school. Higher SES can insulate students from the difficulty of paying for tuition, books, housing, and managing childcare or assistance to parents and siblings (Bozick and DeLuca 2005; Duncan, Featherman, and Duncan 1972).

*Returns to Parent Education.*

There is an assumption in the use of education in calculations of SES that higher levels of education will translate into higher standing in society, greater cultural capital, greater social capital, and higher income. However, the ability to mobilize education into benefits for children

differs by race. Particularly for black parents, their investment in education has often failed to translate into occupation and financial returns equal to those of whites (Long, Kelly, and Gamoran 2009). The children of highly educated blacks have not attained higher levels of education than the children of other blacks and comparably educated white parents (Everett, Rogers, Hammer, and Krueger 2009). While increasing levels of education among black parents did translate into better outcomes for their children in the middle of the twentieth century, middle class backgrounds for more recent cohorts of children have continued to pay off in educational attainment for white children but not black children; thus, the benefits of a middle class background for blacks is being cancelled out in relation to the educational success they would hope to see their children achieve (Long, Kelly, and Gamoran 2009). However, children of highly educated Mexican-Americans do have higher levels of educational achievement than other Mexican-Americans (Everett, Rogers, Hammer, and Krueger 2009). The relationship between parent education and child education is not as clear once race is taken into consideration.

*Research Questions*

Given the little research that has been done on a national basis about magnet school students, and the absence of data that examines their long-term outcomes, I will answer the following research questions:

1. Did students in magnet schools perform better on standardized tests in twelfth grade than students at comprehensive schools?
2. Did students at magnet schools have higher educational expectations in twelfth grade than students at comprehensive schools?

3. Did magnet school graduates enter postsecondary education promptly after graduation at a greater rate than comprehensive high school students?
4. Did magnet school graduates have higher levels of educational attainment by age 26 than comprehensive high school graduates?

There are many reasons to expect that magnet schools would be successful and benefit the students who attend them. Magnet schools provide a school that is labeled as special and thereby can make students feel special who might not otherwise feel that way. By offering special programming, magnet schools bring together students who have similar interests whether that be in dance, engineering, or attending college. This creates a sense of belonging among the students so that they become a support group to one another as described by Humes (2003) and Flores-González (2010). This type of positive feeling of being different and belonging to a group leads students to remain in touch with one another beyond high school. Particularly for the students described by Flores-González (2010) who were embracing an identity that emphasized academics which conflicted with the identities of many of their neighborhood peers who were ambivalent or rejected school-based identities, belonging to a group of other students who shared their challenges was encouraging. Through their classmates, magnet students build strong peer networks with other students who are determined to succeed and these networks can be activated at a later time to help people make the transition to graduate school, find jobs, get elected to public office, or accomplish other life goals.

The choice to attend a magnet school put students in more diverse schools than their neighborhood school. They learned to work with their diverse classmates and how to navigate diverse social spheres. Porter (1974) found that for black students conformity to middle class white norms was more important to the educational attainment of black males than was ambition.

I believe that magnet students who have voluntarily attended a more diverse school are likely to be more open to learning the norms of the school and will leave school with the necessary skills to navigate social institutions. Therefore magnet students matriculate to PSE promptly and have higher levels of attainment than comprehensive high school students.

Magnet schools have the opportunity to implement specialized curriculum that is more student centered and tailored to the needs of students than other schools. Additional resources allow schools to use more experiential, hands on, and engaging teaching methods which are endorsed by educational theorists as characterizing high-quality instruction and leading to greater levels of learning. Research by Metz (1986) found that the flexibility of pedagogy employed by magnet schools allows instruction to be adapted to the needs of students to a greater extent than in comprehensive schools where traditional instructional practices were in use. As a result students progressed academically rather than stagnating due to mismatched instructional techniques. Innovative instruction can provide students with a variety of learning and study techniques that make them self-sufficient learners who know their personal learning style. Progress can feel very much like success for students who have struggled. When student needs are met they have a positive self-concept and see themselves as capable. Therefore students at magnet schools leave with more positive feelings about their abilities and the skills necessary to facilitate their own success. These attributes are important in making the transition to PSE and persisting to completion.

The responsiveness of the school to student needs extends beyond subject learning to the provision of the social capital students need in order to succeed in high school and beyond. The students targeted by desegregation were disadvantaged by neighborhood and by their schooling due to their neighborhood schools being subject to unequal funding (Ryan 2010). Thus magnet

students emerge from high school with higher levels of cultural fluency and the skills to navigate PSE and other institutions. As a result they feel they can succeed in higher education, the job market, and the workplace. Therefore they will expect to attain higher levels of education, matriculate promptly, and attain higher levels of education than students who attend less diverse and cultural responsive comprehensive high schools.

Much of the discussion regarding school choice implies that, when families choose schools, students will get a better education, which will lead to better academic outcomes. This may be due to the higher levels of education and social capital of parents. Also the specific focus of the magnet school can generate enthusiasm and engagement from both parents and students which can improve outcomes.

In opposition to the many reasons magnet schools are expected to be better, there are a few strong reasons to believe magnet schools will do equally well or worse than comprehensive schools. Magnet schools disrupted the connection between neighborhoods and schools which disrupted the potential informal relations between students, parents, and teachers which could result in greater levels of accountability for all parties. While magnet schools are believed to have creamed the best students or those who already had higher levels of familial resources through the application process, having entrance requirements, and not accepting students with special needs, due to capacity constraints and the use of lotteries, not all of these students gained admission to magnet schools. These students took their resources to their neighborhood schools and probably performed well without the influence of the magnet school. Third, and most significant, education experiences a great deal of isomorphism so the education students received at magnet schools was probably quite similar to what they would receive at their neighborhood school. All teachers tend to be taught similar pedagogical methods in university education

departments across the country. They are coached in these methods during their training and early teaching careers. If they are hired by a magnet school, it is difficult to transition to a new method of teaching endorsed by the school. They are likely to employ the skills and methods they know and are comfortable with, undermining the stated unique qualities of the magnet school.

Given these two narratives - that magnet high schools should be more successful than comprehensive high schools and that magnet high schools no different from comprehensive high schools - I seek to find out how the educational outcomes of the two groups compare to one another. Finding that students at magnet schools perform better affirms the arguments outlining why magnet schools should be better. Finding that magnet students perform the same or worse than comprehensive students supports the argument that these two types of schools are more similar than popularly believed.

# CHAPTER 3: Methodology, Data, and Statistical Modeling

In order to evaluate the educational success of magnet schools, I have chosen to compare high school students who attended magnet schools to similar students who did not attend magnet schools. Since magnet high schools are public schools, I used other public school students who attended comprehensive high schools as the comparison group. The dataset used to supply the respondents included private schools, but students who attend private schools tend to be different in many ways from students who attend public high schools, including in terms of race, academic ability, parent characteristics, and SES, so these students were not used in the analysis. To determine whether there was a difference between the academic outcomes of magnet and comprehensive high school students, I used propensity score weighting to conduct four clusters of regression analyses corresponding to my four research questions. Due to early findings that indicated that the impact of magnet schools differ by race, the clusters of regressions include running the analyses within racial groups. As the results will show, there are substantial differences between the overall sample results and the results of the single-race subsets. Additionally, the within race analyses are done as a result of the limits on interpretation estimates related to independent variables in regression results when propensity score techniques are applied.

## *Data*

The restricted version of the National Educational Longitudinal Study of 1988 (NELS) (USDOE, NCES 2004) was obtained and used for this research. NELS was collected beginning with a clustered, stratified sample of eighth graders in 1988 (Curtin, Ingels, Wu, and Heuer 2002). The primary sampling unit was schools which offered eighth grade and the second level of selection was of students within the schools. Subsequent to the survey of eighth grade

students, a sample of these students was surveyed again in tenth and twelfth grade and two and eight years after most of them graduated from high school, around ages 20 and 26. The transition from middle schools to high schools provided a particular challenge to the research as students dispersed to many more high schools than expected, thereby increasing the number of schools researchers needed to contact to collect administrative data. Freshening was done at each follow up so the sample represented the population of tenth and twelfth grade students in the United States at the time of the survey. However, this research does not make use of freshened respondents due to the reliance on data from the base year to generate the propensity scores.

NELS has a complex survey design considering the clusters of students within schools that offered eighth grade which provided the sample, the diversity of the sample, and the challenge of following the student respondents. As a result, NELS provides the variables necessary to account for survey design. In addition, NELS provides a number of weights to adjust for participation in the survey over the multiple waves, to reflect the population of students in the appropriate grade in that particular year. There is no indication that magnet school attendance was taken into consideration in the design of the survey and thus in the creation of the weights. There is no assumption that magnet school students are representative of the whole population of high school students. However, Hispanic and Asian students were intentionally oversampled by the NELS. Because I expect that these two groups are highly likely to attend magnet schools, I also expect that they are disproportionately included in my sample as a consequence of oversampling. The use of weights could result in the population of magnet students being incorrectly represented since weights will adjust the sample to be more representative of the population of students at large which may be inaccurate and the failure to use weights could do the same as Hispanic and Asian students may unduly influence the results.

In order to determine the difference, in tables that follow in this chapter, the frequencies are provided accounting for the survey design including weights and without adjustment. To account for the complex survey design, I declared the survey design in Stata. I adjusted for stratum with single primary sampling units within them with the centered option which considers the mean of the strata to be the grand mean across stratum. The appropriate panel weight was used considering all members of the sample were in all five waves of the survey. Beyond the expected difference in the proportion Hispanic and Asian, the differences made by using the survey weighting are not great and do not indicate that they would impact the outcomes of the regression analyses. Therefore the weights provided by NELS are not used to make population adjustments in the regression analyses and other descriptive statistics presented.

NELS is an appropriate dataset to use in this analysis because the data was collected at a time when most of the magnet schools in the United States had been established for the purpose of desegregation and magnet schools had operated for enough years that their programs were fully implemented. Metz (1986) noted in her qualitative study that teachers and administrators reported that it was not until the third year of the magnet school program that they felt comfortable with their competency in the selected instructional approaches. This finding is echoed by the challenges and conflicts identified by Wincek (1995) in her case study of the first year of implementation of a magnet school. Many districts did not implement magnet programs until the 1970s or 1980s, and the number of magnet schools doubled from the early 1980s to the early 1990s as a result of federal grant funding through the Magnet School Assistance Program (Steel and Levine 1994). However, between 1991 and 2009, many school districts were released from their mandatory desegregation plans, leading them to relax their vigilant attention to racial balance, even if they did not do away with their programs, and as a result schools began to

resegregate (Arcia 2006; Lowe 2007; Reardon et al. 2011). Thus, the NELS survey occurred at an optimal time. The first follow up, when students were mostly in tenth grade, was in 1990, a year before magnet programs for the purpose of desegregation began to be dismantled in large numbers. Use of the NELS data also allows this research to focus on the long-term impact of magnet school attendance on students since it followed students for two and eight years beyond high school. This improves on previous research because it is student focused and longitudinal.

Use of NELS for this research does have several drawbacks, one of which is the representation of magnet schools and students in the data. NELS sampled students in the eighth grade and then followed them to whichever high schools they selected. The sample was meant to be representative of the eighth graders in the United States in 1988, but students were lost from the sample in the transition to high school. No effort has been documented to select magnet schools or students within magnet schools, thus the high school types that students attended were based on chance rather than research design. Ideally, since magnet schools make up a small portion of schools nationally, and particularly secondary schools, magnet schools would have been oversampled to ensure representation. Instead, we have few magnet schools included and sometimes few students within those magnet schools. There are 12,140 student records in the NELS Base Year through Follow-up Four dataset, 8,180 meet the definition of a comprehensive high school student and 580 are magnet school students[1]. Additionally, the comparison of magnet and non-magnet students is troublesome, because the NELS dataset does not indicate the availability of magnet schools within the school districts attended by the students (ICPSR 2004). I am modeling a choice to attend or not attend a magnet school that does not exist for all students. Ideally, NELS would provide more information about the school districts within the

[1] Pursuant to the license agreement for the use of restricted data from the National Center for Education Statistics, all sample sizes provided in written material must be rounded to the nearest ten.

dataset or would provide school or district codes that could be tied to an external dataset like the Common Core of Data collected by the U.S. Department of Education.

Magnet school students were identified through a question asked of school administrators in the first follow-up survey, which took place in 1990 when the students were in tenth grade (ICPSR 2004). The question indicated the school type and the administrators were given fourteen options including public comprehensive and public magnet. The designation "public magnet" does not differentiate between the two types of magnet schools: dedicated magnets and school-within-a-school magnets. Designated magnets are those in which all students who attend the school are part of the magnet program. School-within-a-school magnets are those where the school is shared with other magnet programs or a comprehensive school, some refer to them as program-within-a-school magnets. Rossell (1991; 2003) concluded that since magnet schools intend to desegregate the school as a whole, not just the magnet program, using metrics for the whole school is appropriate. Other researchers would disagree because individual schools have varying levels of interaction between the students in magnet and non-magnet programs on the same campus, an issue addressed pointedly by West (1994), who found classroom-level segregation in magnet schools. Metz (1986) also described a distinct separation between magnet students and the rest of the student body in one of the schools she studied, as does Rossell (1991) herself. Clotfelter (2004) found less interracial contact among students in student organizations than would have been expected given the racial makeup of the student body, but points out that the informal interactions of students that occur on a daily basis are most important, though these interactions are more difficult to measure. Nearly all schools experience some kind of grouping of students through formal or informal divisions based on interest, age, or other characteristics (Coleman 1969). Therefore, we can hope that the random sample of schools NELS procured

balances out into a representative pool of magnet and comprehensive high schools including schools that cover the continuum of student interaction. In any case, separating the magnet program from the non-magnet program students at a school that has been designated a magnet school is not possible in NELS, so I will use all students attending magnet-designated schools as magnet students. My focus in this research is to compare magnet school students to comprehensive high school students so the analytic sample will be limited to only these two groups of students, eliminating the Catholic, private, and public choice high schools included in NELS. Thus, in this research, a comprehensive high school student is one who attends a public high school that is not a magnet, choice, or other specialized school.

*Propensity Scores*

Propensity score analysis techniques are a group of tools that can be applied to data that has not benefitted from random assignment to groups but where there is a treatment to be evaluated (Guo and Fraser 2010). In this case, I am considering that attending a magnet school is a treatment that can be compared to attending a comprehensive high school. Students in NELS were not randomly assigned to attend magnet schools; they exercised their option to do so. Because it was a choice, there are likely differences between those who chose to attend magnet schools and those who did not choose to attend magnet schools which would result in a selection bias in the data. To account for the difference between groups, propensity scores are generated that include the variables that predict membership in the treatment or control category. These propensity scores can then be used in different ways. For example, they can be used to match students in the two groups for comparison to one another, to limit the size of the group, or, as is done in this research, to create weights that can be applied when analyzing the data through regressions.

The process of generating the propensity scores is called propensity scoring. Propensity scoring estimates the probability of receiving treatment based on a vector of predictors that are related to receiving the treatment through a logistic regression (Rosenbaum and Rubin 1983). By using propensity scoring, one can reduce the selection bias related to being in one group versus another group. An obstacle to performing the desired comparison between magnet and comprehensive high school students is not all students have access to a magnet school. There no NELS question that indicates whether a magnet school was available to a student or if they chose not to attend a magnet school. As mentioned, even in those areas where magnet schools are available, many students find themselves on waiting lists. Since, given the available data, it is not possible to isolate the data to those who had access to magnet schools the propensity scores used here may underestimate the likelihood of magnet attendance given that the scores are based on a sample of students, proportionally few of whom attended magnet schools. Propensity scores allow me to match students who have similar characteristics and to evaluate whether attending a magnet school has made a difference, overcoming some of the obstacles related to magnet school availability and choice.

*Propensity Score Prediction Variables*

The propensity scores were generated from a vector of variables that predict attending a magnet school when compared to a comprehensive magnet school based on the literature. Since I am predicting magnet attendance in tenth grade the estimation variables are drawn from eighth grade. The propensity scores were estimated for the sample overall and within race groups. The results charts for the logistic regressions that generated the propensity scores can be found in Tables 34 through 38 in the Appendix.

Two basic demographic variables, gender and race are included in the overall propensity score vector. Race was taken from a variable that was created by the researchers and allowed for multiple races to be reported. Unfortunately multiracial students are dropped from the analysis due to the small size of the group, although they had a substantial presence among magnet students relative to their size in the overall sample. American Indians are dropped from the analysis because of their small frequency in the dataset as a whole and among magnet school students specifically. Thus the categories of race are Asian, black, white, and Hispanic. Race was not included as a variable in the vectors that produced the propensity scores within race groups, but gender was included.

Several characteristics of schools are included in the prediction as I try to compensate for the lack of information indicating whether a magnet school is available in the district. Urbanicity of the eighth grade school is included because magnet schools are more common in urban areas and therefore students attending eighth grade at an urban school are more likely to have the option to attend a magnet school for high school. An additional variable marking schools with a majority minority student body is also included. Schools with high percentages of minority students would be expected to be more likely to be required to desegregate and therefore use methods like magnet schools to do so. The percent minority in schools was not evenly distributed among the respondents in the sample; therefore, I transformed the variable to one that indicated attendance at a school that was majority minority (60 percent or more, which was about 12 percent of students in the analytic sample).

Educational variables related to the students' aptitude and educational plans were included as they reflect the high school choices students are likely to make. Aptitude test scores in math and reading are included as higher scores are likely to mean a student is eligible to gain

entrance to schools that might have attendance requirements. Additionally included is what type of high school program the student anticipated attending: college preparatory, vocational/technical, general high school, or a special program like dance or music. Some students indicated some other unnamed type of school or that they did not know; these students were grouped together and entered into the predictive logistic regression with the other categories while the general high school category was the omitted category. These special programs were entered because they represent the kind of programs that would be offered by a magnet school and therefore planning to attend such a program in eighth grade should increase the probability of attending in tenth grade. Table 1 displays that a slightly higher percent of students who attended magnet schools indicated in eighth grade that they anticipated enrolling in a special or vocational high school program. However, when weights are applied, a slightly lower percent of eventual magnet students expected to attend a specialized school.

Table 1: Type of High School Program Expected by Students in Eighth Grade by Tenth Grade School Type

| | Type of School | | | Weighted | | |
|---|---|---|---|---|---|---|
| | Comprehensive | Magnet | Total | Comprehensive | Magnet | Total |
| Don't Know/Other | 1,880 | 140 | 2,010 | | | |
| | *32.17* | *32.93* | *32.22* | *31.85* | *32.15* | *31.88* |
| College Preparatory | 1,870 | 120 | 1,980 | | | |
| | *32.01* | *28.37* | *31.77* | *31.76* | *26.70* | *31.36* |
| Vocational | 980 | 90 | 1,070 | | | |
| | *16.74* | *22.36* | *17.12* | *16.57* | *23.42* | *17.11* |
| General High School | 830 | 50 | 880 | | | |
| | *14.2* | *11.3* | *14.01* | *14.61* | *12.69* | *14.46* |
| Specialized High School | 280 | 20 | 310 | | | |
| | *4.87* | *5.05* | *4.88* | *5.21* | *5.04* | *5.20* |
| Total | 5,830 | 420 | 6,250 | | | |
| | *100* | *100* | *100* | *100* | *100* | *100* |

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

Lastly, several parental variables are included. Parents were asked a number of questions about their interaction and activities with their child and their child's school. I included three variables that indicate that parents talked to their child regularly about school, high school plans, and plans after high school, respectively. In theory, one would expect parents who are more information savvy and with greater involvement with their child and the school to choose magnet schools. However, an important element is how parents feel about the magnet schools. If parents feel like the magnet schools offer a unique and beneficial academic experience for their child, like research finds minority parents do, then they are more likely to send their child there. But if they see the magnet school in a negative light or focus only on difficulties like transportation, they would be less likely to send their child. These feelings about a magnet school are not measured, so I cannot model this. What I can model is the parents' self-reported interaction with their child, which indicates concern for their child's academic career and future, which would increase the likelihood that parents are paying attention to educational options like magnet schools. I also included the highest level of education attained by one of the parents which is included as a three category variable (high school or less, some postsecondary education, or a bachelor's degree or more education). Parents with higher levels of education are more comfortable interacting with institutions like schools to advocate for their child and improve the potential for attendance at any kind of special program (Duax 1988; Smrekar and Goldring 1999). The parents' educational expectations for their child are also included with the same categories as the education of the parents. I would expect parents with higher levels of expectations to be more likely to seek out the advantages magnet schools advertise as an avenue to provide their child with the best opportunity to meet their high expectations. Finally, measures of English proficiency were included. I include English proficiency because of the importance of

parents being able to read any literature sent home about school options and understand the magnet school application or election process. The English proficiency variable required replacement of missing data using mean imputation by class and is described next.

*Language Imputation.*

I created an index to represent a parent's English proficiency at the base year by combining the responses from four questions asked of parents who indicated a language other than English was spoken at home. The questions asked the parent, "How well do you…" "understand someone speaking English," "speak English," "read English," and "write English." The response categories were "very well," "pretty well," "well," "not very well," and "not at all well" with values from one to five, respectively. I reversed the coding and added up the recoded values, resulting in a variable with a range from 4 to 20, with high numbers indicating higher levels of English proficiency. Unfortunately, there was a high level of missing values due to parents not having completed the base year parent survey. Overall, of the 12,140 respondents in the dataset, 1,500 were missing data from parents; of the comprehensive and magnet students, 700 of 8,750 were missing. This rate of missingness is particularly concerning given parents with lower levels of English proficiency are less apt to navigate administrative forms like those represented by the NELS survey and magnet school applications (Andre-Bechely 2004). To address the missing data, I looked to the student surveys and used mean imputation by class to provide the missing values. I created three classes from two base year student variables that asked about language usage at home — "Is any language other than English spoken in your home?" and "What language do the people in your home USUALLY speak?" I compared the responses to the first question between the parent and student survey where there were responses for both and found 93 percent of pairs agreed that there was or was not another language spoken

at home. The three classes I created were English only, usually English, and usually another language. The distribution of these classes in the final sample is shown in Table 2. I found the mean value for the index described above for each group (19.95, 18.62, and 14.37 respectively) and replaced missing values with the appropriate group mean. Overall, this procedure reduced missing values in the whole dataset from 1,500 to 760 and reduced the mean for the index variable from 19.20 to 19.13, which is consistent with the expectation that this procedure would bring more parents with lower English proficiency into the sample. A t-test applied to the analytic sample finds there is not a significant difference between the mean of the original variable and the imputed variable in the dataset.

Table 2: Language Spoken in Students' Homes, Eighth Grade

| | All (Weighted) | All | Asian | Black | Hispanic | White |
|---|---|---|---|---|---|---|
| English Only | | 4,940 | 50 | 520 | 170 | 4,200 |
| | *84* | *79* | *13* | *93* | *22* | *93* |
| English Usually | | 610 | 110 | 30 | 240 | 230 |
| | *8* | *10* | *32* | *5* | *31* | *5* |
| Usually Another Language | | 680 | 190 | 10 | 380 | 110 |
| | *8* | *11* | *55* | *2* | *47* | *2* |
| Total | | 6,250 | 350 | 570 | 800 | 4,530 |
| | *100* | *100* | *100* | *100* | *100* | *100* |

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

*Propensity Scoring and Weighting in Stata*

The propensity scoring was completed in Stata using the *pscore* command (Becker and Ichino 2002; Leuven and Sianesi 2003). To begin, I used the *pscore* command to generate the propensity scores based on a logit regression and employing the vector of variables described above. The results of the logistic regressions are in Tables 34 through 38 in the Appendix. The essence of propensity scoring techniques is that the two groups are balanced on the predictive

variables so that the differences between the groups can be evaluated under the assumption that the two groups are equivalent (Guo and Fraser 2010; Guo and Fraser 2014; Rosenbaum and Rubin 1983). This assumption of equivalence is theoretically the same as the assumption of equivalence of groups made when random assignment is used in an experiment. The *pscore* command assists with this by dividing the data into blocks based on the propensity score and checking for balance within each block for all the variables. I increased the level of significance required to reject the null hypothesis that the two groups were the same from the default of 0.01 to 0.001 to facilitate the match.

The propensity score was used to create a series of weights following the equations provided by Guo and Fraser (2014:244-45). To measure the average treatment effect (ATE),

for the treated $\omega(W, x) = 1/\hat{e}(x)$

for the control $\omega(W, x) = 1/\ (1 - \hat{e}(x))$

and the average treatment effect on the treated (ATT),

for the treated $\omega(W, x) = 1$

for the control $\omega(W, x) = \hat{e}(x)/\ (1 - \hat{e}(x))$

where $\hat{e}(x)$ is the propensity score. In a more simplified statement of the equations, using P to represent the propensity score, the ATE for the treated is 1/P, for the untreated 1/(1–P) and the ATT for the treated is 1 and P/(1–P) for the untreated. The ATE represents the impact of the treatment imagining we could treat everyone; in other words, it is an estimation of what would happen if all members of the sample attended magnet schools. It estimates whether the treatment would have an impact on everyone and therefore should be given to everyone. The ATT estimates the impact of the treatment on those who were treated, in this case, the impact of attending a magnet school on the magnet school students. It determines if the people who did get

the treatment benefitted from it. The ATT is more consistent with my research questions, which ask whether attending magnet schools makes a difference for the students who did attend. Because there are differences in the results of the regression analyses discussed using ATE or ATT weights, I will describe the results of both.

Weights were produced from the propensity scores generated for the overall group and the race subsets. After creating the propensity score weights, I checked the balance as suggested by Guo and Fraser (2014:242–243). This process involved running weighted linear or logistic regressions, depending on the appropriate choice for the type of variable being used as the dependent variable, for each of the independent variables in the propensity score equation. The variables were entered as the dependent variable and magnet school attendance was the sole independent variable in the regression. Each regression was run with ATE and ATT weights. Ideally, the results of these regressions should be insignificant. Guo and Fraser (2014) suggest that if the results are significant for many of the variables, one should reevaluate the variables that are being used. Prior to the final vector of variables described above, my vector included two variables which did not pass the balance check just described. The first variable was an indicator of desegregation practices in the assignment of students in the district. School administrators were asked how students were assigned to schools; one of the options was "Pupils are assigned from particular areas to achieve desired racial or ethnic composition in the school." Although desegregation, integration, and magnet schools are not mentioned, this is the closest variable NELS offers to my ideal variable indicating that desegregation was occurring in a school district. As such, it is not surprising that school assignment made with consideration for race was not balanced between the magnet and non-magnet groups. The second variable that did not pass the balance test was SES in the eighth grade. I included both parent education and SES in the

propensity score vector because of the importance I place on level of parent education in determining the educational trajectory of students.[2] I included SES because magnet schools tended to serve areas with lower levels of SES on average (Duax 1988). Instead of being included in the propensity score vector, these variables are included as independent variables in additional regression analyses for each research question. They can be thought of as controls rather than as variables whose impact on the dependent variable is being estimated. Such estimates are not consistent with the purpose of propensity score weighting, which is to estimate the impact of the grouping variable on the dependent variable of interest.

[2] The same decision is undertaken by Turley, Santos, and Ceja (2007). Further support comes from the discussion in Long, Kelly, and Gamoran (2009) about the differences found in SES, occupational attainment, family organization, and wealth among black and white families led by parents with similar levels of education.

Table 3: Variables Related to the Propensity Score, Means

| Variable | Asian n = 350 | Black n = 570 | Hispanic n = 800 | White n = 4530 |
|---|---|---|---|---|
| Attended a Magnet School | 0.134 | 0.161 | 0.147 | 0.036 |
| Male | 0.491 | 0.414 | 0.471 | 0.471 |
| Eighth Grade School was Urban | 0.329 | 0.342 | 0.377 | 0.129 |
| Eighth Grade School Majority Minority | 0.269 | 0.425 | 0.450 | 0.019 |
| Eighth Grade Standardized Reading Score | 53.967 | 46.601 | 47.713 | 52.496 |
| Eighth Grade Standardized Math Score | 57.844 | 45.522 | 47.379 | 52.746 |
| Don't Know/Other Type of High School | 0.317 | 0.313 | 0.391 | 0.312 |
| College Preparatory Program High School | 0.434 | 0.292 | 0.230 | 0.327 |
| Vocational or Technical Program High School | 0.140 | 0.230 | 0.232 | 0.155 |
| General Program High School | 0.074 | 0.124 | 0.099 | 0.154 |
| Special Program High School (Art, Dance, Science) | 0.034 | 0.041 | 0.048 | 0.051 |
| Parent Talks to Student about School | 0.543 | 0.740 | 0.653 | 0.828 |
| Parent Talks to Student about High School Plans | 0.300 | 0.536 | 0.503 | 0.426 |
| Parent Talks to Student about Plans after High School | 0.306 | 0.485 | 0.447 | 0.354 |
| Another Language is Spoken at Home | 0.579 | 0.018 | 0.478 | 0.023 |
| Parent Understands Spoken English | 3.960 | 4.988 | 4.215 | 4.993 |
| Parent Speaks English | 3.801 | 4.989 | 4.013 | 4.988 |
| Parent Reads English | 3.887 | 4.993 | 4.004 | 4.990 |
| Parent Writes English | 3.814 | 4.988 | 3.891 | 4.981 |
| Parent English Ability Scale | 15.470 | 19.957 | 16.131 | 19.950 |
| Parent Expects Student to Attain High School or Less | 0.069 | 0.120 | 0.137 | 0.106 |
| Parent Expects Student to Attain Two-Year or Voc Degree | 0.086 | 0.294 | 0.320 | 0.296 |
| Parent Expects Student to Attain a Bachelor's Degree + | 0.846 | 0.586 | 0.543 | 0.597 |
| Parent Education: High School or Less | 0.214 | 0.358 | 0.477 | 0.278 |
| Parent Education: Some PSE | 0.297 | 0.492 | 0.388 | 0.448 |
| Parent Education: Bachelor's Degree or More | 0.489 | 0.150 | 0.134 | 0.274 |
| Eighth Grade School District Used Assign to Schools by Race | 0.100 | 0.253 | 0.094 | 0.058 |
| Eighth Grade Family SES | 0.147 | -0.446 | -0.537 | -0.025 |
| Propensity Score | 0.134 | 0.161 | 0.147 | 0.036 |
| ATE Weight | 2.031 | 2.002 | 1.989 | 1.983 |
| ATT Weight | 0.260 | 0.321 | 0.293 | 0.071 |

Note: Provided n above are the most common n for the category. Some variables do have missing values. Complete descriptive statistics are provided in the appendix.
Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

*Descriptive Statistics*

Including students for whom responses are available from all four waves, the analytic sample from NELS contains 5,830 comprehensive public high school students in 680 schools

and 420 magnet students in 90 schools. By comparison, Steel and Levine (1994:*vi*) reported that in 1991–1992 there were 2,433 magnet schools in the United States serving 1.2 million students. Twenty percent, according to Steel and Levine (1994:34), were secondary schools, and an additional 11 percent of magnet schools offered combined grades, such as offering K–12 in one school. In my sample, program-within-a-school students have been combined with dedicated magnet school students. Table 4 displays the location of the schools in the sample. While most magnet schools were located in urban areas, nearly one quarter were outside of a large city. Since the majority of magnet schools are in cities or urban areas, the analysis could have logically been limited to these areas as Gamoran (1996) did in his analysis of urban magnet and other types of high schools. I chose not to do this due to the consequential decrease in sample size. I did replicate the analyses using only urban sample members and found little difference in the results. A brief discussion of these results is provided at the end of Chapter 4.

Table 4: Location of High Schools Attended by Sample Members in Tenth Grade

| | Type of School | | | Weighted | | |
|---|---|---|---|---|---|---|
| | Comprehensive | Magnet | Total | Comprehensive | Magnet | Total |
| City > 50,000 People | 1,230 | 300 | 1,530 | | | |
| | *21.34* | *71.63* | *24.73* | *21.29* | *71.33* | *25.27* |
| Suburb of a City > 50,000 | 1,210 | 70 | 1,280 | | | |
| | *21.03* | *16.11* | *20.70* | *21.33* | *17.71* | *21.04* |
| Rural | 1,480 | 30 | 1,500 | | | |
| | *25.55* | *6.25* | *24.26* | *24.52* | *5.76* | *23.03* |
| Small City < 50,000 People | 1,850 | 30 | 1,880 | | | |
| | *32.07* | *6.01* | *30.32* | *32.13* | *5.19* | *29.99* |
| Total | 5,770 | 420 | 6,190 | | | |
| | *100* | *100* | *100* | *100* | *100* | *100* |

Source: NELS 88

*Percent of category in italics*

Note: There are 60 comprehensive high school students missing the urbanicity variable. This variable is not an independent variable used in the analysis.

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

Table 5 shows the distribution of student race across school types among the respondents in the analytic sample. Not surprisingly white students make up the vast majority of

comprehensive high school students but a much smaller proportion of magnet high school students. Corresponding to the proportion of white students, black and Hispanic students are a much larger proportion of the magnet school population than the comprehensive high school population. Somewhat surprisingly, Asian students, while a small group in size, make up a substantially larger proportion of magnet high school students than comprehensive high school students.

Table 5: Race and Type of High School in Tenth Grade

| | Type of School | | | Weighted | | |
|---|---|---|---|---|---|---|
| Race | Comprehensive | Magnet | Total | Comprehensive | Magnet | Total |
| Asian | 300 | 50 | 350 | | | |
| | *5.2* | *11.3* | *5.60* | *2.14* | *4.81* | *2.35* |
| Black | 470 | 90 | 570 | | | |
| | *8.13* | *21.88* | *9.05* | *9.07* | *30.44* | *10.77* |
| White | 4,370 | 160 | 4,530 | | | |
| | *72.91* | *37.01* | *70.48* | *79.97* | *45.10* | *77.19* |
| Hispanic or Latino | 680 | 120 | 800 | | | |
| | *11.65* | *28.13* | *12.75* | *8.82* | *19.65* | *9.69* |
| Total | 5,830 | 420 | 6,250 | | | |
| | *100* | *100* | *100* | *100* | *100* | *100* |

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

Table 6 displays the distribution of gender across school types and the chi-square indicates that the proportion of males and females does not differ across the two types of schools. Gender was included in the vector of variables that created the propensity scores because it helped balance the groups.

Table 6: Gender and Type of High School in Tenth Grade

| | Type of School | | | Weighted | | |
|---|---|---|---|---|---|---|
| | Comprehensive | Magnet | Total | Comprehensive | Magnet | Total |
| Male | 3,110 | 220 | 3,330 | | | |
| | *53.27* | *53.37* | *53.27* | *50.61* | *51.91* | *50.71* |
| Female | 2,720 | 190 | 2,920 | | | |
| | *46.73* | *46.63* | *46.73* | *49.39* | *48.09* | *49.29* |
| Total | 5,830 | 420 | 6,250 | | | |
| | *100* | *100* | *100* | *100* | *100* | *100* |

Pearson chi2(1) = 0.0015 Pr = 0.969

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

*Analyses*

For each of the four research questions, thirty regressions were completed. Each analysis was applied to the sample as a whole and then completed for Asians, blacks, whites, and Hispanics. Within the five groupings by race, the analyses were completed three times: without weights, with ATE weights, and with ATT weights applied. Additionally, the analyses were completed including only the independent variable indicating attendance at a magnet school and then two control variables were added. These two variables were family SES in eighth grade and whether students attended an eighth grade in a district where students were assigned to schools with consideration for their race. The later variable is used as an indicator that desegregation efforts were being made in the district in which students lived. Both of these variables were originally included in the propensity score prediction equation but failed post-scoring balancing tests. Both variables are felt to be important and therefore are included in the analyses as controls.

Tables 1, 2, 4, 5, and 6 included weighted data reflecting adjustments made to account for the survey design of NELS. The differences between the adjusted and unadjusted distributions

are not substantial except for the expected difference resulting from intentional oversampling of Hispanic and Asian students. In the analyses described below, the majority of the analyses are within race groups where the adjustments for survey design which adjust for racial representation are unnecessary. Survey adjustments would be called for in the overall analyses if there was evidence of substantial differences between the adjusted and unadjusted samples. There is no evidence of substantial differences therefore survey design adjustments are not used. As a result of this decision, the standard errors provided by Stata are understated and the significance of regression results may be overstated.

*Standardized Test Scores in the Twelfth Grade.*

There are a number of propensity score techniques that can be used to assess treatment effects depending on the type of treatment, selection into treatment groups, and type of outcome (Guo and Fraser 2010). My first research question compares the standardized scores of magnet and comprehensive high school students in twelfth grade. The Neyman-Rubin counterfactual framework (Guo and Fraser 2010) allows the comparison of outcome values between the treated and untreated group to determine the effect of the treatment. The results of a t-test demonstrate that there is a difference ($p < 0.05$) between the mean test score among magnet students (50.376) and the mean score of comprehensive high school students (51.641). But there are factors that can influence test scores that must be accounted for so a linear regression is an appropriate analysis. In its basic form, a linear regression predicts the coefficients necessary to multiply by the values of the independent variables used in an equation that best forms a line encompassing the values of a dependent variable. Using a linear regression improves on a t-test because it allows additional independent variables beyond the grouping variable, facilitates the calculation

of the effects of a predictor with other factors held constant, and weights can be applied providing additional control.

The dependent variable in this analysis is the composite score from the standardized test administered for the NELS in twelfth grade. Unfortunately, there is a large amount of missingness in this test variable, which reduces the sample size from 6,250 to 5,020 for this analysis. Descriptive statistics for this dependent variable is shown in Table 7. Missingness reduced the number of magnet and comprehensive high school students in nearly equal proportion; however, respondents who were missing values had lower base-year SES and test scores, on average, than those who were not missing test scores.

Table 7: Descriptive Statistics for Standardized Test Scores in the Twelfth Grade by Group

| | Overall | | | | | Magnet Students | | | | | Comprehensive Students | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max |
| Overall | 5020 | 51.564 | 9.538 | 27.86 | 71.04 | 310 | 50.376 | 10.309 | 30.67 | 69.75 | 4720 | 51.641 | 9.482 | 27.86 | 71.04 |
| Asian | 280 | 56.517 | 9.559 | 31.72 | 70.88 | 30 | 55.838 | 12.048 | 31.72 | 69.75 | 250 | 56.609 | 9.196 | 32.16 | 70.88 |
| Black | 440 | 45.684 | 9.103 | 30.47 | 66.31 | 70 | 46.297 | 8.929 | 32.22 | 65.50 | 370 | 45.575 | 9.141 | 30.47 | 66.31 |
| Hispanic | 610 | 48.194 | 8.777 | 30.34 | 68.57 | 90 | 46.862 | 9.494 | 31.19 | 68.54 | 520 | 48.425 | 8.635 | 30.34 | 68.57 |
| White | 3690 | 52.440 | 9.253 | 27.86 | 71.04 | 120 | 53.828 | 9.247 | 30.67 | 68.99 | 3570 | 52.395 | 9.251 | 27.86 | 71.04 |

Source: NELS 88

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

*Educational Expectations in Twelfth Grade.*

The second research question calls for a comparison of educational expectations in twelfth grade, an ordinal variable with options that do not represent equal intervals. Although a great deal of research regarding the transition to postsecondary education focuses on matriculation at four-year institutions (Carbonaro, Ellison, and Covay 2011; Trusty 1999), students have a range of educational goals. Since this research focuses on magnet schools, it is important to consider multiple levels of educational expectations, because many magnet schools have a vocational emphasis. The dependent variable was derived from an eleven category variable stemming from a question asked at the second follow up: “As things stand now, how far

in school do you think you will get?" I have collapsed the eleven categories into a five-category variable:

1. Don't know or unsure (includes those who provided multiple responses, as coded by NELS).
2. High school or less.
3. Vocational, trade, business school, or two years or less of college. (I will refer to this category as "some PSE").
4. Bachelor's.
5. Graduate degree.

I preferred fewer categories, but many students had high expectations, which led me to maintain graduate degree as a separate category, as displayed by Table 8.

Table 8: Educational Expectations in the Twelfth Grade by Type of School in Tenth Grade

| | Type of School | | |
|---|---|---|---|
| Educational Expectations | Comprehensive | Magnet | Total |
| Don't Know | 300 | 30 | 320 |
| | *5.23* | *6.67* | *5.32* |
| High School or Less | 400 | 30 | 430 |
| | *7.09* | *6.42* | *7.05* |
| Some PSE | 1,500 | 80 | 1,580 |
| | *26.45* | *19.51* | *25.99* |
| Bachelor's Degree | 1,840 | 130 | 1,980 |
| | *32.39* | *33.09* | *32.44* |
| Graduate Degree | 1,640 | 140 | 1,780 |
| | *28.84* | *34.32* | *29.2* |
| Total | 5,680 | 410 | 6,090 |
| | *100* | *100* | *100* |

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

Additionally, there were quite a few students in the "Don't know or unsure" category, and I did not want to lose them from the analysis. It is interesting to consider the students who were unsure of where they were headed in twelfth grade given all the literature about early decision making and educational trajectories which indicate that defining one's educational path early leads to greater success in achieving educational goals (Carbonaro, Ellison, and Covay 2011; Plank and Jordan 2001; Somers, Cofer, and VanderPutten 2002). Looking just at bivariate relationship, educational expectations in twelfth grade differed significantly between the magnet and comprehensive high school students in the sample ($chi2 = 12.700$, $p < 0.05$). Among magnet students, a higher percentage of students expected to earn a graduate degree than among comprehensive high school students (34.32 percent vs. 28.84 percent).

Because the outcome is categorical, a multinomial logistic regression is an appropriate analysis and will display the differential effects of magnet school attendance on the various levels of education respondents expected with and without controls, and with and without weighting.

*Prompt Matriculation to Postsecondary Education.*

Research has found that continuing from high school into college without a break leads to better educational outcomes such as degree or credential completion and shorter time to degree (Carbonaro, Ellison, and Covay 2011). NELS asked students two years after normative high school graduation to retrospectively report their post-secondary attendance monthly since graduation. I defined prompt matriculation as attendance within six months of high school graduation. Students will either have matriculated promptly or not; thus, I employ a logistic regression to determine if there is a significant difference between the magnet and comprehensive high school students. Table 9 displays the distribution of prompt matriculation

among magnet and comprehensive high school students. In this bivariate analysis, there is not a significant difference between the two groups.

Table 9: Prompt Matriculation to Postsecondary Education and Type of High School in Tenth Grade

| | Type of School | | |
|---|---|---|---|
| Prompt Matriculation | Comprehensive | Magnet | Total |
| No | 2,340 | 180 | 2,530 |
| | *40.18* | *44.23* | *40.45* |
| Yes | 3,490 | 230 | 3,720 |
| | *59.82* | *55.77* | *59.55* |
| Total | 5,830 | 420 | 6,250 |
| | *100* | *100* | *100* |

Pearson chi2(1) = 2.6471 Pr = 0.104

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

*Educational Attainment by the Fourth Follow-Up.*

The fourth research question employs a multinomial logistic regression, similar to the second question, to compare the levels of education attained by respondents by the last wave of NELS, six years after normative high school graduation. The education attainment variable was created from several variables which gathered PSE attained and high school diploma status. The created variable categories are:

1. High school or less.
2. Some postsecondary education, no degree.
3. Earned a certificate, license, or associate's degree.
4. Bachelor's degree or more.

The distribution of respondents among the categories is shown in Table 10.

Table 10: Educational Attainment at Age 26 by Type of High School in Tenth Grade

| | Type of School | | |
|---|---|---|---|
| Educational Attainment | Comprehensive | Magnet | Total |
| High School or Less | 1,130 | 80 | 1210 |
| | *19.39* | *19.23* | *19.38* |
| Some PSE | 1,800 | 140 | 1940 |
| | *30.92* | *32.69* | *31.04* |
| Certificate, License, or Associate's Degree | 940 | 70 | 1,000 |
| | *16.06* | *16.59* | *16.1* |
| Bachelor's Degree or More | 1,960 | 130 | 2,090 |
| | *33.63* | *31.49* | *33.49* |
| Total | 5,830 | 420 | 6,240 |
| | *100* | *100* | *100* |

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

In the bivariate analyses of educational outcomes of magnet and comprehensive high school students, differences are found for test scores and educational expectations in the twelfth grade but not prompt matriculation to PSE or educational attainment by age 26. While this is interesting information that could lead to conclusions about the effectiveness of magnets, it does not take into consideration the unequal likelihood of attending a magnet school among the students in the sample. Creating propensity scores and propensity score weights and then applying the weights to regressions will provide a better picture of whether magnet schools are impacting the outcomes under examination.

# CHAPTER 4: Results

The prior chapter provided explanations of the analyses completed and descriptive statistics, including the bivariate relationship between the dependent variables and main independent variable to be investigated in each of the analyses. This chapter presents the results of each of the analyses. The four research questions examine four different educational outcomes: test scores in the twelfth grade, educational expectations in the twelfth grade, prompt matriculation to PSE, and eventual educational attainment. Each outcome is examined in relation to attending a magnet high school in the tenth grade in comparison to attending a comprehensive, or non-specialized, high school.

Using the propensity score as a weight balances the magnet and comprehensive students on propensity to attend a magnet school since some of the factors that predict attending a magnet school are also related to the educational outcomes in question. Recall that the vector of predictors included demographic variables describing the student and their parents, as well as variables for parent involvement and location of their school. (For more details, see the section "Propensity Score Prediction Variables" in the Methodology chapter.) I applied propensity score weighting to regressions for all students overall and for each racial group in the sample that had a large enough sample to analyze. Native American and multiracial students were excluded from the analyses due to insufficient sample size. Each analysis is completed with and without two control variables: family SES and whether the respondent attended eighth grade in a school district where assignment to schools considered race. Propensity score methods are not meant to accurately estimate coefficients for control variables therefore interpretation of the coefficients will be brief. In general, and consistent with prior research, SES appears to be a significant predictor of positive educational outcomes. Attending eighth grade in a district where assignment

to schools considered student race showed significance in multiple results. This variable is being used as a proxy for school districts that were implementing desegregation.

*Linear Regression Results Predicting Standardized Test Scores in Twelfth Grade*

To determine whether magnet school attendance had an impact on standardized test scores in the twelfth grade, a series of linear regressions were conducted.

Table 11: Linear Regression Coefficients Predicting Test Scores in the Twelfth Grade for All Students in the Sample

| | Magnet Only | | | With Controls | | |
|---|---|---|---|---|---|---|
| | Coef. | | SE | Coef. | | SE |
| *Unweighted* | | | | | | |
| Magnet | -1.265 | * | 0.561 | 0.077 | | 0.509 |
| Assignment by Race | | | | -0.579 | | 0.451 |
| SES (Base Year) | | | | 5.738 | *** | 0.166 |
| Constant | 51.641 | *** | 0.139 | 52.229 | *** | 0.130 |
| *ATE Weighted* | | | | | | |
| Magnet | -0.305 | | 0.898 | -0.221 | | 0.797 |
| Assignment by Race | | | | -3.777 | * | 1.798 |
| SES (Base Year) | | | | 5.453 | *** | 0.485 |
| Constant | 51.571 | *** | 0.14 | 52.453 | *** | 0.187 |
| *ATT Weighted* | | | | | | |
| Magnet | -0.188 | | 0.671 | -0.034 | | 0.608 |
| Assignment by Race | | | | -1.077 | | 0.909 |
| SES (Base Year) | | | | 5.659 | *** | 0.376 |
| Constant | 50.564 | *** | 0.325 | 52.42 | *** | 0.307 |

N = 5,020

* p < .05, ** p < .01, *** p < .001

Source: NELS

The linear regression results displayed in the top third of Table 11 show that there are differences between magnet and comprehensive school students when propensity weights are not applied. Not using weights means the two groups are not balanced on the predicted likelihood of attending a magnet school. Since some factors that predict magnet school attendance are associated with educational outcomes, differences are not surprising. For example, magnet

school students are more likely to be from urban areas and have lower SES, both factors that are associated with lower test scores. In the unweighted regression, magnet school students are predicted to score 1.265 points lower on standardized tests in the twelfth grade than comprehensive high school students. This is about ten percent of a standard deviation, thus, while significant, it is not a large difference. When ATE and ATT weights are applied to the regression the difference between magnet and comprehensive high school students became insignificant. When the two control factors, whether the school district in which the school is located assigned students to schools with consideration for racial balance and SES, are added, the results show there is no predicted significant difference between the two school types among all students in the sample. SES is consistently a strong predictor of higher test scores, although it is important to note that propensity score methods are not meant to provide precise estimation of the impact of control variables. Assignment by race also had a significant impact in the ATE weighted model, although in a negative direction. This may reflect an additional indication that the student attended school in an urban area in a school district under a desegregation order since that is where most schools that were considering race in school placement were located.

Table 12: Linear Regression Coefficients Predicting Test Scores in the Twelfth Grade for Asian Students

| | Magnet Only | | With Controls | |
|---|---|---|---|---|
| | Coef. | SE | Coef. | SE |
| *Unweighted* | | | | |
| Magnet | -0.772 | 1.749 | 1.948 | 1.639 |
| Assignment by Race | | | -0.002 | 1.65 |
| SES (Base Year) | | | 5.368 *** | 0.642 |
| Constant | 56.609 *** | 0.604 | 55.329 *** | 0.582 |
| *ATE Weighted* | | | | |
| Magnet | 3.561 | 2.424 | 4.411 * | 2.049 |
| Assignment by Race | | | 0.371 | 1.844 |
| SES (Base Year) | | | 6.688 *** | 0.944 |
| Constant | 56.313 *** | 0.605 | 55.063 *** | 0.596 |
| *ATT Weighted* | | | | |
| Magnet | 1.67 | 2.368 | 1.359 | 2.081 |
| Assignment by Race | | | 4.652 * | 2.074 |
| SES (Base Year) | | | 6.993 *** | 1.22 |
| Constant | 54.168 *** | 1.198 | 54.984 *** | 1.009 |

N = 285

* p < .05, ** p < .01, *** p < .001

Source: NELS

Looking at the results for Asian students in Table 12, the only significant difference between magnet and comprehensive students appears in the ATE weighted model with controls. This means that if all Asian students attended magnet schools rather than comprehensive high schools, it is predicted they would score, on average, 4.411 more points on the twelfth grade standardized test which is equivalent to almost half of a standard deviation. Across the models which include controls, higher levels of SES are a consistently significant predictor of higher test scores. Assignment by race is significant in the ATT weighted model and has a positive impact on test scores. Given these results, it appears there are some positive effects of magnet school attendance and desegregation practices for Asian students.

Table 13: Linear Regression Coefficients Predicting Test Scores in the Twelfth Grade for Black Students

| | Magnet Only | | With Controls | |
|---|---|---|---|---|
| | Coef. | SE | Coef. | SE |
| *Unweighted* | | | | |
| Magnet | 0.722 | 1.208 | 0.379 | 1.108 |
| Assignment by Race | | | 2.563 ** | 0.915 |
| SES (Base Year) | | | 4.642 *** | 0.536 |
| Constant | 45.575 *** | 0.471 | 46.946 *** | 0.545 |
| *ATE Weighted* | | | | |
| Magnet | -1.356 | 1.47 | -1.649 | 1.273 |
| Assignment by Race | | | 1.565 | 1.384 |
| SES (Base Year) | | | 4.989 *** | 0.607 |
| Constant | 45.809 *** | 0.498 | 47.581 *** | 0.652 |
| *ATT Weighted* | | | | |
| Magnet | -0.813 | 1.477 | -1.079 | 1.423 |
| Assignment by Race | | | 0.995 | 1.563 |
| SES (Base Year) | | | 4.009 *** | 1.133 |
| Constant | 47.11 *** | 1.002 | 48.665 *** | 1.23 |

N = 440

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 13 shows the results from the linear regression for black students. Attending magnet versus comprehensive high schools does not appear to make a difference in test scores for black students in any of the models. Assignment to schools by race is significant in the unweighted model in a positive direction.

Table 14: Linear Regression Coefficients Predicting Test Scores in the Twelfth Grade for White Students

| | Magnet Only | | With Controls | |
|---|---|---|---|---|
| | Coef. | SE | Coef. | SE |
| *Unweighted* | | | | |
| Magnet | 1.433 | 0.869 | 0.867 | 0.796 |
| Assignment by Race | | | -0.436 | 0.616 |
| SES (Base Year) | | | 5.539 *** | 0.204 |
| Constant | 52.395 *** | 0.155 | 52.572 *** | 0.145 |
| *ATE Weighted* | | | | |
| Magnet | -0.063 | 1.152 | -0.089 | 0.991 |
| Assignment by Race | | | -4.819 | 2.882 |
| SES (Base Year) | | | 5.421 *** | 0.654 |
| Constant | 52.451 *** | 0.155 | 52.837 *** | 0.21 |
| *ATT Weighted* | | | | |
| Magnet | -0.169 | 0.896 | 0.015 | 0.822 |
| Assignment by Race | | | -3.453 * | 1.592 |
| SES (Base Year) | | | 5.185 *** | 0.57 |
| Constant | 53.996 *** | 0.279 | 53.891 *** | 0.306 |

N = 3,690

* p < .05, ** p < .01, *** p < .001

Source: NELS

The results for white students shown in Table 14, similar to those of blacks, show no significant difference of attending magnet versus comprehensive high schools. Assignment by race has a significant and negative predicted impact on test scores in the ATT weighted model. It is difficult to pinpoint the meaning of this particular finding. Considering that many of the white students in the sample (and many white students in the United States) attend predominately white schools that tend to be suburban and well-funded, it is possible that those students who attended schools in the eighth grade in districts that are utilizing desegregation methods attended schools that are less well-funded and the students are from families with fewer resources. However, since SES[3] is entered separately in the regression and both parent education and urbanicity of the school are part of the propensity score weight, it is difficult to conclude that this is the case.

[3] Based on a t-test, SES does not differ among white magnet and comprehensive students.

Attending a desegregated school might correspond to lower test scores for the white students who do so, but higher levels of SES can compensate for the lower scores.

Table 15: Linear Regression Coefficients Predicting Test Scores in the Twelfth Grade for Hispanic Students

| | Magnet Only | | With Controls | |
|---|---|---|---|---|
| | Coef. | SE | Coef. | SE |
| *Unweighted* | | | | |
| Magnet | -1.563 | 1.001 | -0.286 | 0.96 |
| Assignment by Race | | | -0.366 | 1.185 |
| SES (Base Year) | | | 4.077 *** | 0.459 |
| Constant | 48.425 *** | 0.385 | 50.407 *** | 0.434 |
| *ATE Weighted* | | | | |
| Magnet | 0.484 | 1.789 | 0.724 | 1.743 |
| Assignment by Race | | | -2.32 | 3.323 |
| SES (Base Year) | | | 2.812 * | 1.289 |
| Constant | 48.182 *** | 0.387 | 49.834 *** | 0.819 |
| *ATT Weighted* | | | | |
| Magnet | 0.084 | 1.208 | 0.269 | 1.161 |
| Assignment by Race | | | -1.104 | 2.033 |
| SES (Base Year) | | | 3.827 *** | 0.824 |
| Constant | 46.778 *** | 0.682 | 49.78 *** | 0.823 |

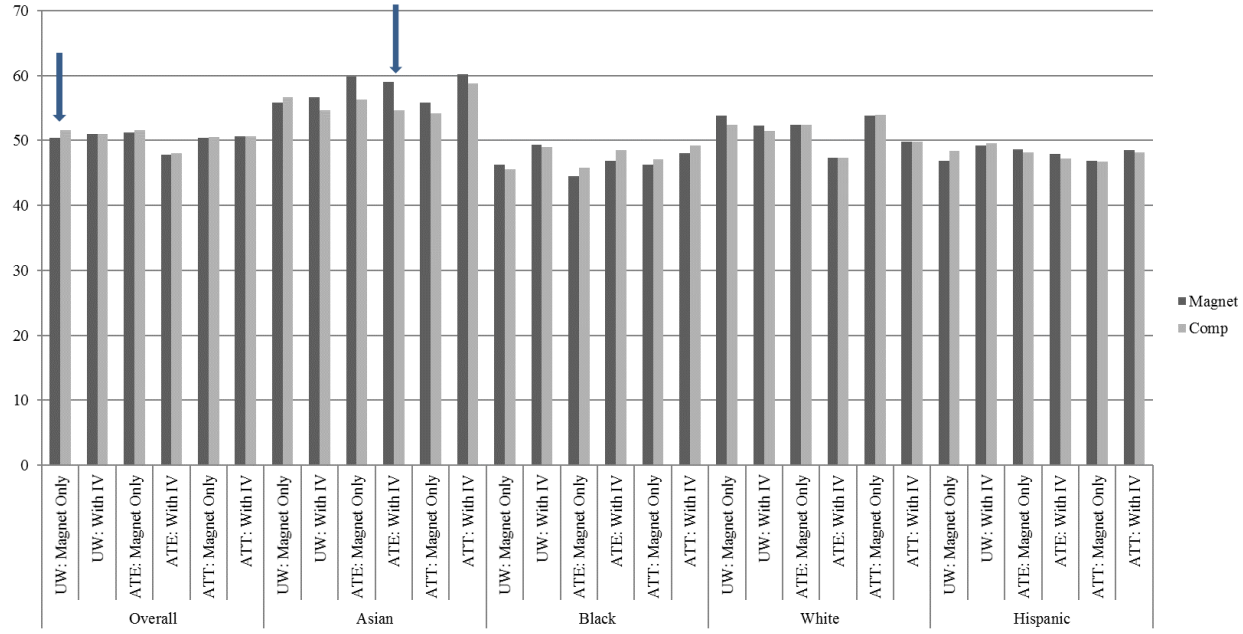
N = 610

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 15 displays the results for Hispanic students. These students have results that are similar to those of white and Black students. Magnet school attendance is not a significant predictor of higher test scores in any of the regressions run for Hispanic students. Unlike the results for other groups and all students overall, assignment by race is not a significant predictor Hispanic students. This may be because Hispanic students are not the target of desegregation practices in most districts, the practices did not impact them as much or the simplest explanation, that Hispanic student perform equally well in desegregated schools and in segregated schools.

Figure 1: Visual Depiction of the Results of the Linear Regressions Predicting Test Scores in the Twelfth Grade, Control Variables Held at Their Means




Overall, the impact of magnet school attendance on standardized test scores is found to be insignificant. When other factors are controlled for, attending a school where race is considered in the assignment of students to schools has a positive impact on Asian students. The results for all regressions can be seen above in Figure 1, the two regressions where magnet school students were significantly different from comprehensive students are marked with arrows. The figure shows that, while the differences are significant, they are not large.

The impact of racial assignment on all students in the regression results is negative, driven by the negative impact on white students who are the majority of the sample. This negative impact on whites is likely to be a reflection of the SES level of the schools that utilize racial assignment and the students within them. White students who attend a school with lower average scores are likely to benefit from the impact of higher levels of their own family SES since SES is positively related to test scores across the linear regression results presented in this section.

*Multinomial Logistic Regression Predicting Educational Expectations in Twelfth Grade*

My second research question asks whether magnet students have higher educational expectations than comparable comprehensive high school students. Using a multinomial logistic regression allowed me to examine the impact of magnet school attendance on expecting to earn one of several levels of PSE. In this analysis expecting to earn a bachelor's degree is the omitted category meaning all columns in Tables 13 through 17, which represent the level of education the twelfth grade students expected they would eventually attain, are interpreted in comparison to earning a bachelor's degree. Odds ratios are estimated for all students in the group and by racial groupings. Magnet attendance is included as the sole independent variable and subsequently the two controls, assignment to schools with consideration for race and SES, are included as additional independent variables.

Table 16: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Expectations in the Twelfth Grade for All Students in the Sample

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 1.249 | 0.886 | 0.722 * | 1.165 |
| *ATE Weighted* | | | | |
| Magnet | 1.19 | 0.765 | 0.877 | 1.261 |
| *ATT Weighted* | | | | |
| Magnet | 1.231 | 0.889 | 0.75 | 1.164 |

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 1.017 | 0.553 * | 0.557 *** | 1.357 * |
| Assignment by Race | 0.903 | 1.509 * | 1.016 | 1.068 |
| SES (Base Year) | 0.496 *** | 0.26 *** | 0.436 *** | 1.796 *** |
| *ATE Weighted* | | | | |
| Magnet | 1.147 | 0.761 | 0.833 | 1.228 |
| Assignment by Race | 2.253 | 2.211 * | 2.648 ** | 1.976 * |
| SES (Base Year) | 0.464 ** | 0.245 *** | 0.463 *** | 2.053 *** |
| *ATT Weighted* | | | | |
| Magnet | 1.183 | 0.833 | 0.723 | 1.217 |
| Assignment by Race | 1.012 | 1.873 * | 1.257 | 1.486 |
| SES (Base Year) | 0.574 ** | 0.395 *** | 0.614 *** | 1.84 *** |

N = 6,090

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree

Source: NELS

In the analyses for all students in the sample using magnet school attendance as the sole independent variable, which can be seen at the top of Table 16, there is only one significant difference between the educational expectations of magnet and comprehensive high school students. Students who attended magnet schools are predicted to have odds of expecting to earn some PSE rather than expecting to earn a bachelor's degree that are 28 percent lower than those of comprehensive high school students. In other words magnet students have higher predicted

odds of expecting to earn a bachelor's degree than to attend some PSE when compared to comprehensive students.

Looking at the lower half of Table 16, which includes the models with the two control variables, there are several significant results. In the unweighted model, magnet students are predicted to have lower odds than comprehensive high school students of expecting high school or less education and some PSE than to expect to earn a bachelor's degree, and higher odds than comprehensive high school students of expecting to earn a graduate degree than to earn a bachelor's degree. These are positive results for the impact of magnet schools, but they do not consider the propensity to attend a magnet school. Once the weights are applied to balance the groups, the significance of magnet school attendance disappeared. As in the prior analysis of test scores, SES is a consistently significant predictor of educational expectations, and continues to influence outcomes in the within race models. Assignment to schools is also a positive predictor of expecting to attain high school rather than a bachelor's degree in the unweighted and ATT models and expecting to attain high school or less, some PSE, and a graduate degree rather than a bachelor's degree in the ATE weighted model.

Table 17: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Expectations in the Twelfth Grade for Asian Students

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 0.969 | 0.000 | 0.998 | 1.192 |
| *ATE Weighted* | | | | |
| Magnet | 0.466 | 0.000 *** | 1.001 | 2.504 |
| *ATT Weighted* | | | | |
| Magnet | 1.623 | 0.000 *** | 0.791 | 2.219 |

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 1.183 | 0.000 | 1.01 *** | 2.383 * |
| Assignment by Race | 0 | 2.522 | 0 | 0.986 |
| SES (Base Year) | 1.037 | 0.377 | 0.347 | 2.559 *** |
| *ATE Weighted* | | | | |
| Magnet | 0.431 | 0.000 *** | 0.634 | 3.871 |
| Assignment by Race | 0.000 *** | 2.011 | 0.315 | 0.547 |
| SES (Base Year) | 0.817 | 0.288 | 0.328 ** | 2.772 *** |
| *ATT Weighted* | | | | |
| Magnet | 1.671 | 0.000 *** | 0.691 | 3.150 * |
| Assignment by Race | 0.000 *** | 2.104 | 0.030 *** | 0.779 |
| SES (Base Year) | 0.790 | 0.320 | 0.447 | 2.497 ** |

N = 340

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree

Source: NELS

The results for Asian students, displayed in Table 17, are impacted by the fact that there are relatively few Asian students in the sample therefore the distribution among the categories of educational expectations also reflects small numbers. In the regressions using only magnet school attendance as an independent variable, Asian magnet students are predicted to have much lower odds of expecting to earn a high school diploma or less education than to expect to earn a

bachelor's degree in comparison to comprehensive high school students in both the ATE and ATT weighted models.

In the unweighted model that includes control variables, Asian magnet students are predicted to have one percent greater odds of expecting some PSE rather than a bachelor's degree compared to comprehensive high school students. They have predicted odds of expecting a graduate degree rather than a bachelor's degree that are 2.38 times greater than those of Asian comprehensive high school students. Notably SES does not have a uniformly significant impact on educational expectations in the set of models for Asian students, unlike the pattern for other groups. In the unweighted model, SES predicts greater odds of expecting graduate school than a bachelor's degree for magnet students when compared to comprehensive high school students.

In the ATE weighted model, Asian magnet school students are predicted to have much lower odds of expecting to attend high school or less education. The results for students who attended eighth grade in a district that assigned students to schools with consideration for race also varied across the models for Asian students. Students who attended race aware school districts are predicted to have much lower odds of being unsure about their educational expectations rather than expect to earn a bachelor's degree when compared to students who attended school in districts that did not assign students to school by race.

In the ATT weighted regression, Asian magnet students are predicted to have much lower odds of expecting to attend high school or less education and higher odds of expecting to earn a graduate degree than a bachelor's degree when compared to comprehensive high school students. Those who attended schools in eighth grade that considered race in the assignment of students to schools have much lower odds of being unsure about their educational expectations and 97 percent lower predicted odds of expecting some PSE than expecting to earn a bachelor's degree

compared to students whose school district did not consider race in school assignment. While these differences are significant it is important to remember that there are relatively few Asians in the sample and that few Asian students were unsure of their educational expectations at both magnet and comprehensive high schools.

The results indicate magnet schools have a positive impact on Asian students. Asian magnet students have greater odds of expecting to attend graduate school and lower odds of expecting to attend high school or less. The pattern of educational expectations is consistent with magnet schools having a positive effect on Asian students' aspirations. Whereas SES is a consistently significant and strong influence on educational outcomes in other analyses and for other racial groups, SES did not play as great a role for Asian students.

Table 18: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Expectations in the Twelfth Grade for Black Students

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 0.554 | 0.496 | 0.443 * | 1.013 |
| *ATE Weighted* | | | | |
| Magnet | 0.806 | 0.733 | 0.625 | 0.591 |
| *ATT Weighted* | | | | |
| Magnet | 0.535 | 0.464 | 0.495 | 1.247 |

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 0.561 | 0.481 | 0.450 * | 1.005 |
| Assignment by Race | 0.951 | 2.039 | 0.952 | 1.291 |
| SES (Base Year) | 0.529 * | 0.322 *** | 0.490 *** | 1.361 * |
| *ATE Weighted* | | | | |
| Magnet | 0.866 | 0.847 | 0.707 | 0.576 |
| Assignment by Race | 1.665 | 1.795 | 1.972 | 3.794 ** |
| SES (Base Year) | 0.460 ** | 0.222 ** | 0.294 ** | 1.207 |
| *ATT Weighted* | | | | |
| Magnet | 0.554 | 0.508 | 0.515 | 1.321 |
| Assignment by Race | 0.830 | 1.505 | 1.018 | 2.509 * |
| SES (Base Year) | 0.463 * | 0.284 * | 0.526 * | 1.370 |

N = 540

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree

Source: NELS

In the analysis using only magnet school attendance as an independent variable to predict the educational expectations of black students, there is only one significant result in the upper portion of Table 18. Black magnet students are predicted to have 56 percent lower odds of expecting to earn some PSE rather than a bachelor's degree than black comprehensive high school students. This result persists in the unweighted analysis including control variables at the bottom of Table 18 where black magnet students are predicted to have 65 percent lower odds of

expecting some PSE than a bachelor's degree compared to comprehensive high school students. However, once the propensity weights are added, the effect becomes insignificant. Thus there are differences between magnet and comprehensive high school students but they are explained by the factors included in the propensity to attend a magnet school. In the ATE and ATT weighted regression, those who attended school in a district that assigned students to schools with consideration for race have greater predicted odds of earning higher levels of education than those who did not attend districts with desegregation policies.

Table 19: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Expectations in the Twelfth Grade for White Students

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 1.319 | 0.855 | 0.764 | 1.334 |
| *ATE Weighted* | | | | |
| Magnet | 1.507 | 0.741 | 0.947 | 1.510 |
| *ATT Weighted* | | | | |
| Magnet | 1.737 | 1.180 | 0.999 | 1.233 |

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 1.385 | 0.916 | 0.793 | 1.338 |
| Assignment by Race | 0.792 | 1.498 | 1.154 | 0.970 |
| SES (Base Year) | 0.446 *** | 0.178 *** | 0.347 *** | 1.982 *** |
| *ATE Weighted* | | | | |
| Magnet | 1.383 | 0.889 | 0.949 | 1.492 |
| Assignment by Race | 4.981 | 0.89 | 2.569 | 1.717 |
| SES (Base Year) | 0.367 * | 0.169 *** | 0.361 *** | 2.744 *** |
| *ATT Weighted* | | | | |
| Magnet | 1.702 | 1.202 | 0.974 | 1.360 |
| Assignment by Race | 1.479 | 0.358 * | 1.273 | 1.237 |
| SES (Base Year) | 0.689 | 0.215 *** | 0.461 *** | 2.811 *** |

N = 4,430

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree

Source: NELS

There are no significant results among the analyses using magnet school attendance as the only independent variable to predict educational expectations of white students, as shown in Table 19. In the unweighted regression predicted educational expectations among white students including control variables, only SES is a significant independent variable. In the ATT weighted regression, white students who attended school in a district where race is considered in the assignment of students to schools have lower predicted odds of expecting to complete high

school or less education rather than a bachelor's degree than white students who attended school in a district that did not consider race in assignment. This indicates that white students who experienced desegregation are predicted to have lower odds than those who did not experience desegregation of having low educational expectations such as expecting not to complete high school.

Table 20: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Expectations in the Twelfth Grade for Hispanic Students

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 1.540 | 1.617 | 0.829 | 0.691 |
| *ATE Weighted* | | | | |
| Magnet | 1.064 | 1.055 | 0.663 | 0.630 |
| *ATT Weighted* | | | | |
| Magnet | 1.264 | 0.959 | 0.675 | 0.677 |

| | Unsure Odds Ratio | High School or Less Odds Ratio | Some PSE Odds Ratio | Graduate Degree Odds Ratio |
|---|---|---|---|---|
| *Unweighted* | | | | |
| Magnet | 1.196 | 1.086 | 0.683 | 0.861 |
| Assignment by Race | 1.440 | 3.248 ** | 1.503 | 0.633 |
| SES (Base Year) | 0.506 ** | 0.350 *** | 0.623 ** | 1.581 *** |
| *ATE Weighted* | | | | |
| Magnet | 0.852 | 0.759 | 0.488 | 0.551 |
| Assignment by Race | 2.542 | 14.485 *** | 9.033 *** | 3.842 * |
| SES (Base Year) | 0.241 * | 0.209 *** | 0.599 * | 1.062 |
| *ATT Weighted* | | | | |
| Magnet | 1.131 | 0.866 | 0.632 | 0.704 |
| Assignment by Race | 1.104 | 5.602 ** | 2.886 * | 1.345 |
| SES (Base Year) | 0.450 | 0.566 | 0.792 | 1.465 |

N = 770

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree

Source: NELS

The regression analyses regarding Hispanic students, like those for white students, have no significant findings in the regressions using magnet school attendance as the sole independent variable. In the unweighted regression using control variables, SES showed the same pattern seen in other analyses of being significant in all categories shown in Table 20. Also in the unweighted model, students who attended schools in districts which considered race in student placement have predicted odds of expecting to attain high school or less education rather than a bachelor's degree that are more than twice the odds of students who did not attend schools where desegregation practices are indicated. In the ATE weighted regression, students who attended schools in desegregating districts have higher predicted odds of expecting to attain high school or less, some PSE, or a graduate degree than to expect to earn a bachelor's degree. The pattern of importance of assignment to schools by race continued in the ATT weighted regression except that expecting to earn a graduate degree was not significantly different than expecting to earn a bachelor's degree. These analyses show that desegregation practices are not as beneficial for Hispanic students as they are for other groups. Students who attended schools where desegregation is indicated are much more likely to expect to complete high school or less than those who did not experience desegregation which is concerning. However, the expectation of some PSE is consistent with research findings that Hispanic students are more likely to expect to earn an Associate's degree than a bachelor's degree (Alvarado and Turley 2012; Bowen, Chingos, and McPherson 2009; Kao and Thompson 2003).

Overall, magnet attendance did not have an impact on the educational expectations of students. For Asian students, however, attendance at magnet schools results in lower odds of expecting to attain high school or less when compared to Asian students attending comprehensive high schools.

*Logistic Regression Results Predicting Prompt Matriculation to PSE*

The third research question asks whether magnet students matriculated to PSE within six months of high school graduation at higher rates than similar comprehensive high school students. This question is answered through a series of logistic regressions. Like the previous analyses, the regressions are run on the whole sample then on groups by race. Within these groupings the regressions include magnet schools as the sole independent variable and then two control variables are added: whether the school district in which the student attended school in eighth grade assigned students to schools with consideration for race and family SES in the base year. The regressions analyses are unweighted, with the ATE weight, and with the ATT weight.

Table 21: Logistic Regression Predicting Prompt Matriculation to Postsecondary Education for All Students in the Sample

| | Magnet Only Odds Ratio | With Controls Odds Ratio |
|---|---|---|
| *Unweighted* | | |
| Magnet | 0.847 | 1.128 |
| Assignment by Race | | 0.881 |
| SES (Base Year) | | 3.259 *** |
| *ATE Weighted* | | |
| Magnet | 0.979 | 0.951 |
| Assignment by Race | | 0.630 |
| SES (Base Year) | | 3.128 *** |
| *ATT Weighted* | | |
| Magnet | 0.979 | 1.002 |
| Assignment by Race | | 0.886 |
| SES (Base Year) | | 2.455 *** |

N = 6,250

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 21 displays the results from the logistic regressions predicting prompt matriculation for the whole sample. Magnet school attendance is not a significant predictor in any of these models, and magnet attendance continues to be an insignificant predictor in every

model predicting prompt matriculation. In the models which include controls, higher levels of SES resulted in higher predicted odds of attending PSE within six months of high school completion for all members of the sample.

Table 22: Logistic Regression Predicting Prompt Matriculation to Postsecondary Education for Asian Students

| | Magnet Only | With Controls | |
|---|---|---|---|
| | Odds Ratio | Odds Ratio | |
| *Unweighted* | | | |
| Magnet | 1.021 | 1.368 | |
| Assignment by Race | | 1.999 | |
| SES (Base Year) | | 1.781 | ** |
| *ATE Weighted* | | | |
| Magnet | 0.799 | 0.855 | |
| Assignment by Race | | 3.667 | * |
| SES (Base Year) | | 1.344 | |
| *ATT Weighted* | | | |
| Magnet | 1.583 | 1.504 | |
| Assignment by Race | | 6.765 | * |
| SES (Base Year) | | 1.245 | |

N = 350

* p < .05, ** p < .01, *** p < .001

Source: NELS

The results for Asian students can be seen in Table 22. In the unweighted model with control variables, higher levels of SES increase the odds of Asian students promptly matriculating to PSE. In the ATE and ATT weighted model, Asian students who attended schools in districts where race is considered in assignment to schools had higher predicted odds of immediately matriculating than those who did not.

Tables 23 and 24 show the results for black and white students. The pattern of results for both groups is the same. Magnet attendance has no impact on whether students promptly matriculate and SES is positively related to higher odds of matriculation.

Table 23: Logistic Regression Predicting Prompt Matriculation to Postsecondary Education for Black Students

| | Magnet Only Odds Ratio | With Controls Odds Ratio | |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 0.815 | 0.754 | |
| Assignment by Race | | 1.020 | |
| SES (Base Year) | | 2.552 | *** |
| *ATE Weighted* | | | |
| Magnet | 0.583 | 0.510 | |
| Assignment by Race | | 1.659 | |
| SES (Base Year) | | 2.581 | *** |
| *ATT Weighted* | | | |
| Magnet | 0.747 | 0.658 | |
| Assignment by Race | | 1.120 | |
| SES (Base Year) | | 2.252 | *** |

N = 570

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 24: Logistic Regression Predicting Prompt Matriculation to Postsecondary Education for White Students

| | Magnet Only Odds Ratio | With Controls Odds Ratio | |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 1.032 | 0.931 | |
| Assignment by Race | | 0.806 | |
| SES (Base Year) | | 3.864 | *** |
| *ATE Weighted* | | | |
| Magnet | 1.066 | 0.977 | |
| Assignment by Race | | 0.491 | |
| SES (Base Year) | | 4.207 | *** |
| *ATT Weighted* | | | |
| Magnet | 0.861 | 0.872 | |
| Assignment by Race | | 0.736 | |
| SES (Base Year) | | 3.900 | *** |

N = 4,530

* p < .05, ** p < .01, *** p < .001

Source: NELS

Hispanic students also have increasing predicted odds of prompt matriculation with increasing SES in the unweighted and weighted models. In the ATE weighted model, Hispanic students who attended schools where desegregation practices are indicated have lower predicted odds of prompt matriculation than those who did not attend desegregated schools.

Table 25: Logistic Regression Predicting Prompt Matriculation to Postsecondary Education for Hispanic Students

| | Magnet Only Odds Ratio | With Controls Odds Ratio |
|---|---|---|
| *Unweighted* | | |
| Magnet | 0.806 | 1.172 |
| Assignment by Race | | 0.627 |
| SES (Base Year) | | 2.663 *** |
| *ATE Weighted* | | |
| Magnet | 0.923 | 1.087 |
| Assignment by Race | | 0.331 * |
| SES (Base Year) | | 2.424 *** |
| *ATT Weighted* | | |
| Magnet | 1.157 | 1.276 |
| Assignment by Race | | 0.564 |
| SES (Base Year) | | 2.194 *** |

N = 800

* p < .05, ** p < .01, *** p < .001

Source: NELS

Magnet school attendance was not a predictor of prompt matriculation in any of the analyses. For Asian students, attending school in a district where student area assigned by race results in much higher predicted odds of prompt matriculation. Assignment by race for Hispanic students is detrimental as the ATE weighted model predicts lower odds of matriculation for students who attend districts that implement the policy.

*Multinomial Logistic Regression Predicting Educational Attainment*

The fourth research question examines educational attainment around age 26 for the sample of magnet and comprehensive high school students. Since educational attainment is a

categorical variable this question employed a multinomial logistic regression. Like the analyses for the previous three research questions, the analyses are conducted for the sample as a whole and for groups by race, without weights and with ATE and ATT weights, and including just magnet school attendance as the independent variables and with the two control variables. The comparison group for the educational attainment categories is attaining a bachelor's degree or more education.

Table 26: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Attainment around Age 26 for All Students in the Sample

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Associate's Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 1.059 | 1.129 | 1.103 |
| *ATE Weighted* | | | |
| Magnet | 0.769 | 1.135 | 0.802 |
| *ATT Weighted* | | | |
| Magnet | 1.071 | 0.943 | 0.943 |

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 0.614 ** | 0.853 | 0.785 |
| Assignment by Race | 1.205 | 1.247 | 1.130 |
| SES (Base Year) | 0.113 *** | 0.313 *** | 0.236 *** |
| *ATE Weighted* | | | |
| Magnet | 0.751 | 1.124 | 0.761 |
| Assignment by Race | 2.584 * | 1.143 | 2.055 |
| SES (Base Year) | 0.106 *** | 0.274 *** | 0.232 *** |
| *ATT Weighted* | | | |
| Magnet | 1.026 | 0.908 | 0.908 |
| Assignment by Race | 1.123 | 1.067 | 1.020 |
| SES (Base Year) | 0.181 *** | 0.395 *** | 0.360 *** |

N = 6,240

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree or More Education

Source: NELS

The model results predicting educational attainment for all students around age 26 are shown in Table 26. In the models with only magnet school attendance as a predictor there are no significant results. Therefore educational attainment did not differ among magnet and non-magnet students. In the unweighted multinomial logistic regression predicting educational attainment for all students with control variables included, students who attended magnet schools

have predicted odds of attaining high school or less education rather than a bachelor's or graduate degree that are 39 percent lower than students who attended comprehensive high schools. Magnet school students have higher odds of earning some level of PSE than attaining high school or less when compared to comprehensive high school students. In the ATE weighted regression for all students, those who attended schools where race is considered in school assignment are predicted to have higher odds of attaining high school or less rather than a bachelor's degree or more than students who did not attend school in a district where race is a consideration for school assignment. If all students went to magnet schools, the impact of desegregation, defined here as attending a school where race is considered in school placement, would lead to more students attaining high school or less education than earning bachelor's degrees. This is a concerning negative finding. This variable could be picking up on other characteristics of schools in districts where desegregation practices are in use such as school funding, teacher experience, or counselor availability that could lead to lower levels of educational attainment.

Table 27: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Attainment around Age 26 for Asian Students

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Associate's Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 1.120 | 0.715 | 1.433 |
| *ATE Weighted* | | | |
| Magnet | 0.318 | 0.795 | 0.438 |
| *ATT Weighted* | | | |
| Magnet | 1.309 | 0.696 | 1.034 |

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 0.623 | 0.504 | 0.898 |
| Assignment by Race | 0.000 | 0.509 | 1.027 |
| SES (Base Year) | 0.309 *** | 0.518 *** | 0.492 ** |
| *ATE Weighted* | | | |
| Magnet | 0.224 | 0.685 | 0.349 |
| Assignment by Race | 0.000 *** | 0.262 * | 0.850 |
| SES (Base Year) | 0.296 *** | 0.621 | 0.441 *** |
| *ATT Weighted* | | | |
| Magnet | 1.425 | 0.809 | 1.125 |
| Assignment by Race | 0.000 *** | 0.029 *** | 0.178 |
| SES (Base Year) | 0.586 | 0.962 | 0.754 |

N = 350.

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree or More Education

Source: NELS

The small number of Asian students in the sample, as in the analysis predicting educational expectations, leads to small cell sizes in this analysis predicting a categorical outcome. Among Asian students, the models, shown in Table 27, including magnet school attendance as the only independent variable, as in the overall models, netted no significant differences meaning magnet and non-magnet students have similar educational attainment. In the

ATE weighted regression, Asian students who attended school in districts where race is considered in school assignment have much lower predicted odds of attaining high school or less education or some PSE compared to earning a bachelor's degree or more education than are students who did not attend schools in districts are racial assignment is used. Thus the ATE model indicates that if all Asian students attended schools where desegregation practices are in use, they would have lower odds of earning lower levels of education and higher odds of earning a bachelor's degree or more. The ATT model also has a similar pattern in relation to students who attended schools in districts that assigned students by race. Those who attended such districts have much lower odds of attaining high school or less education and of attaining some PSE than earning a bachelor's degree or more education compared to students who did not experience such desegregation practices. As few Asian students, at both magnet and comprehensive high schools, expected to attend high school or less or some PSE, the differences between the groups, while significant and seemingly large, are likely an effect of these small category sizes.

Table 28: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Attainment around Age 26 for Black Students

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Associate's Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 0.948 | 1.090 | 0.760 |
| *ATE Weighted* | | | |
| Magnet | 1.803 | 1.709 | 1.645 |
| *ATT Weighted* | | | |
| Magnet | 1.244 | 0.936 | 0.627 |

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 1.014 | 1.091 | 0.789 |
| Assignment by Race | 1.066 | 1.435 | 0.816 |
| SES (Base Year) | 0.172 *** | 0.331 *** | 0.283 *** |
| *ATE Weighted* | | | |
| Magnet | 2.441 | 1.837 | 1.836 |
| Assignment by Race | 0.706 | 1.415 | 0.913 |
| SES (Base Year) | 0.106 *** | 0.430 * | 0.328 ** |
| *ATT Weighted* | | | |
| Magnet | 1.568 | 1.082 | 0.720 |
| Assignment by Race | 0.845 | 1.425 | 0.924 |
| SES (Base Year) | 0.188 *** | 0.403 ** | 0.359 ** |

N = 570

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree or More Education

Source: NELS

In the models predicting educational attainment for black students, those that used only magnet school attendance have no significant results, meaning magnet school attendance did not benefit or deter the educational path of black students. Since black students are almost always the target of desegregation efforts, it is notable that neither magnet schools nor assignment to schools by race have an impact on their educational attainment.

Table 29: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Attainment around Age 26 for White Students

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Associate's Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 0.615 | 1.065 | 0.965 |
| *ATE Weighted* | | | |
| Magnet | 0.834 | 1.302 | 0.757 |
| *ATT Weighted* | | | |
| Magnet | 0.834 | 1.222 | 1.266 |

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 0.672 | 1.384 | 0.739 |
| Assignment by Race | 1.662 * | 0.833 | 3.360 * |
| SES (Base Year) | 0.079 *** | 0.247 *** | 0.181 *** |
| *ATE Weighted* | | | |
| Magnet | 0.831 | 1.384 | 0.739 |
| Assignment by Race | 5.014 * | 0.833 | 3.360 * |
| SES (Base Year) | 0.061 *** | 0.247 *** | 0.181 *** |
| *ATT Weighted* | | | |
| Magnet | 0.768 | 1.114 | 1.150 |
| Assignment by Race | 2.681 * | 1.488 | 2.307 * |
| SES (Base Year) | 0.074 *** | 0.226 *** | 0.195 *** |

N = 4,530

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree or More Education

Source: NELS

For white students, the unweighted and weighted models using only magnet school attendance to predict educational attainment did not result in any significant differences. Thus white students who attended magnet schools did not differ from those who attended comprehensive high schools in educational attainment based on this analysis. In the unweighted and weighted analyses that included control variables, the patterns of significance were the same

for magnet school attendance which did not impact outcomes. In the analyses with control variables, SES was consistently significant and assignment by race indicated higher odds of attaining high school or less or a certificate, license, or Associate's degree than obtaining a bachelor's degree or more.

Table 30: Odds Ratios Resulting from a Multinomial Logistic Regression Predicting Educational Attainment around Age 26 for Hispanic Students

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Associate's Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 1.810 | 0.967 | 1.211 |
| *ATE Weighted* | | | |
| Magnet | 0.896 | 0.755 | 0.706 |
| *ATT Weighted* | | | |
| Magnet | 1.352 | 0.776 | 0.807 |

| | High School or Less Odds Ratio | Some PSE Odds Ratio | Certificate, License, or Odds Ratio |
|---|---|---|---|
| *Unweighted* | | | |
| Magnet | 0.955 | 0.677 | 0.795 |
| Assignment by Race | 2.070 | 1.680 | 2.182 |
| SES (Base Year) | 0.160 *** | 0.433 *** | 0.384 *** |
| *ATE Weighted* | | | |
| Magnet | 0.658 | 0.618 | 0.589 |
| Assignment by Race | 3.953 | 1.755 | 1.448 |
| SES (Base Year) | 0.128 *** | 0.265 *** | 0.259 *** |
| *ATT Weighted* | | | |
| Magnet | 1.224 | 0.730 | 0.762 |
| Assignment by Race | 1.214 | 0.828 | 0.864 |
| SES (Base Year) | 0.193 *** | 0.388 *** | 0.417 ** |

N = 800

* p < .05, ** p < .01, *** p < .001

Omitted category of the dependent variable is Bachelor's Degree or More Education

Source: NELS

Hispanic students continued to follow to the pattern of insignificant results for the unweighted and weighted models predicting educational attainment based only on magnet school attendance. Again, magnet school attendance did not improve or worsen the educational path of Hispanic students based on this model. As with the models using control variables to predict educational attainment for black students, the models for Hispanic students also only have significant results for SES. Given results in prior analyses in this research, it is surprising that there are not significant results for the variable measuring assignment to schools by race.

Magnet school attendance did not make a difference for students in determining their eventual educational attainment. In the model for all students, attending eighth grade in a district where assignment to school considered race predicted higher odds of earning high school or less than earning a bachelor's degree or more in the ATE weighted regression. Asian students had the opposite trend. They were predicted to have lower odds of earning high school or less or some PSE than a bachelor's degree or more education if they attended a school in a district that assigned by race. White students were more similar to the pattern of students overall and had higher predicted odds of earning high school or less and higher predicted odds of earning a certificate, license, or Associates degree than a bachelor's degree or more if they attended school in a district with assignment by race.

*Models Using an Only Urban Sample*

One concern in conducting research about magnet schools is the reality that they exist most frequently in urban school districts. I chose to include all available respondents from NELS which included students who attended school in rural, suburban, and urban areas. This leads to a reasonable concern that the comprehensive high school students outside of urban areas might dilute the effects of magnet schools on students in this research. Suburban comprehensive high

schools have more resources than urban high schools; they have better facilities, lower student-to-teacher ratios, lower counselor-to-student ratios, and often better teachers on average (Ryan 2010). In addition the parents of suburban students tend to have higher SES and be able to provide extracurricular resources that would improve academic outcomes like career or college coaches, test preparation, and tutoring (McDonough 1997; Ryan 2010).

To evaluate whether there was dilution, all of the models described were replicated using a sample that only included students who attended tenth grade in a school located in an urban area as reported by the administrator who completed the school survey. As indicated in Table 4 in Chapter 3, 60 (6 percent) comprehensive high school students had missing information for this variable. These students were excluded from the analysis. No magnet schools were missing information about the location of the school. The results of the analyses were surprisingly similar to the results just described for the sample including schools in all types of locations.

If I had decided to focus only on urban students I would have made adjustments to my research design to suit the sample size. Given the reduction in sample size, I probably would not have analyzed the urban sample using race groups. In the all locations sample, there were challenges due to the few Asian students in the analysis. When the sample was reduced, there were only 120 Asian students included and the problem was exacerbated. In addition there were few black students (180) in the urban sample so similar issues arose in the multinomial logistic regression analyses for blacks and Asians. Thus the results of these analyses had unrealistic odds ratios. Only two significant findings were different from those in the all location sample. First, overall in the urban analysis, magnet students had lower predicted odds of expecting to earn some PSE than to earn a bachelor's degree when compared to comprehensive high school students in the ATT weighted regression with and without controls. Second, white magnet school

students were predicted to have higher odds of being unsure about their educational expectations in twelfth grade than to expect a bachelor's degree in the ATE weighted regression with control variables. Note that both of these findings are in the multinomial logistic regressions where having a small number of members in a category can amplify the importance of the independent variable in relation to the outcome variable.

*Analysis Summary*

Over all of the analyses presented in this chapter, magnet school attendance did not make a difference in the educational outcomes studied. Given the prior research and the expected benefits magnet school attendance imparts on students, these findings are disappointing. In order to affirm the effectiveness of magnet schools, I expected magnet school students to have, on average, higher test scores, educational expectations, prompt matriculation rates, and educational attainment across all groups. The decision not to employ complex survey design was expected to inflate the number of significant findings, but very few significant findings arose for magnet school attendance, particularly when controls and weights calculated from the propensity scores were employed. The next chapter discusses the notable findings of this research.

# CHAPTER 5: Discussion of Results and Findings

Magnet schools are implemented with a dual mission of desegregating schools while providing innovative educational experiences for students. Accounts indicate that magnet schools are successful in desegregating school districts (Arcia 2006; Gamoran 1996; Gelber 2008; Lowe 2007; Metz 1986; Reardon and Owens 2014; Varady and Raffel 1995). However, as school districts have been released from the requirements to monitor and maintain the levels of desegregation within their schools, resegregation has begun to occur (Arcia 2006; Lowe 2007). Some attribute resegregation and the concentration of poverty and minority students in urban schools in the late twentieth century to a demographic shift of people out of central cities (Arcia 2006; Reardon and Owens 2014; Ryan 2010). Although the desegregation mandates have been lifted, magnet schools have not disappeared. Some school districts have intentionally left their desegregation orders in place as a mechanism to continue to monitor the racial makeup of their schools and avoid resegregation (GAO 2016). Special programing at magnet schools is still being funded by the federal government through grants and new programs are being created by school districts across the country. As a result of the GAO (2016) report regarding racial segregation in schools, new legislation and funding is being proposed to encourage school districts to address resegregation and voluntarily implement plans that will promote integration. Given the positive press given to magnet schools, they are likely to be a primary component of proposed plans to fulfill the requirements of the Stronger Together School Diversity Act, if passed.

Past and present, special programming in magnet schools often focused on advanced academics, but all magnet missions are expected, at least by some constituencies (Bailey 2013; Fuller 2016; Gelber 2008; Metz 1986), to improve educational quality and academic

achievement. As a result, magnet schools continue to be an appealing community asset that attracts and retains white and middle class families to neighborhoods (Humes 2003; Varady and Raffel 1995; Wang 2016).

In concert with the provision of educational quality, magnet schools are expected to bring together students with a particular focus or interest and teachers who can foster the development of skills and interests in these specialized areas (Humes 2010; Metz 1986; Rossell 1991; Wincek 1995). Because students in a magnet program (or their parents) have selected to attend the school, it is reasonably assumed that they will be more dedicated to the program and to school in general which will predispose them to have better outcomes (Andre-Bechely 2004; Duax 1988; Moore and Davenport 1989). Additionally, students who make such selections are assumed to be better students (Moore and Davenport 1989). Expectations of magnets are also high because these schools have been allowed latitude to implement programs and use pedagogy that is different than that used at comprehensive high schools. This type of pedagogy combined with the types of special interests often offered by magnet schools result in more active learning and student engagement with the curriculum. This type of engagement is expected to result in higher levels of learning and translate into better educational outcomes (Bronfenbrenner 1979; Dewey 1951; Durkheim 1956, Freire 1999, Giroux 2001). Many of the characteristics of magnet schools – embracing a particular theme or focus, an amount of autonomy from school district management, and attendance via a selection process rather than by neighborhood of residence – are similar to the characteristics touted by proponents of schools of choice. Therefore the findings related to magnet schools may be applicable to these similar schools.

However, research on another form of choice school, the charter school, has shown that isomorphism impacts the mission statements of those schools so that they resemble one another

and the mission of non-specialized schools, like comprehensive high schools. The power of isomorphism reflects the tendency to maintain the status quo by continuing to do similar tasks in similar ways. The pedagogical approaches of teachers across the country are the product of education departments that tend to teach similar approaches. Despite attempts to change the manner of instruction, teachers are apt to return to the methods they learned in training programs and practiced in supervised teaching.

Magnet and other types of choice schools attract a great deal of press due to being different. Their admissions procedures lend them a sense of exclusivity and the limited number of available spots in many schools create a real shortage which reinforces the impression of exclusivity. Media helps to reinforce this image through their reports of student success, programmatic accomplishments at schools, and demand for places in the schools. However there are plenty of reportable cases of student success and programmatic accomplishments in all public schools. Despite the depictions of demand for magnet school places, not all the highly able students attend these schools.

Claims of magnet school success in the media and literature are anecdotal and the longitudinal impact on students has not previously been scrutinized. This research evaluated whether attending a magnet school rather than a comprehensive high school impacted the educational outcomes of magnet students in comparison to similar comprehensive high school students. If magnet schools did lead to better academic outcomes in the period of analysis, when magnet schools are primarily intended to bring about desegregation, then it may provide useful information for current discussions of how to combat resegregation in schools. If magnet schools did not meet expectations and did not lead to favorable educational outcomes, this is also useful

information and can be helpful in understanding the potential impact of school choice programs nationally.

*Magnet Impact*

Magnet school attendance does not make a significant impact across the educational outcomes analyzed. My research questions examined four educational outcomes: test scores, educational expectations, prompt matriculation to PSE, and educational attainment by early adulthood. All four of these outcomes are frequently measured and reported as outcomes of importance in school accountability and accreditation evaluations[4].

Magnet school attendance did not predict better scores on standardized tests in the twelfth grade compared to similar comprehensive high school students, with one exception. Asian students who attended magnet schools are predicted to score more than four points higher than Asian students who attended comprehensive high schools when ATE weights are applied in the linear regression that included the two control variables, the indicator of desegregation practices and family SES. However, this increase in test scores represents only about half a standard deviation; while the difference is significant, it is not a large.

Magnet school students did not have higher educational expectations, on average, than comprehensive high school students. Asian students again are an exception. In both the ATE and ATT weighted multinomial regressions, Asian students who attended magnet schools had lower predicted odds than comprehensive high school students of expecting to attain high school or less education rather than a bachelor's degree. This continued to be the case once the two control variables are added. However, the small number of Asian students in the sample and the small

[4] For example see the Illinois Report Card (illinoisreportcard.com) or a similar tool from Wisconsin, WISEdash (wisedash.dpi.wi.gov), where demographic descriptive data, standardized test score averages, college readiness, and AP test rates are available for all public schools in the state.

number of Asian students who attended magnet and comprehensive high schools who expected to attain both levels of education work to exaggerate the difference between groups. Additionally, in the ATT weighted regression including the controls, Asian magnet students had higher predicted odds of expecting to earn a graduate degree than expecting to earn a bachelor's degree, compared to similar comprehensive high school students.

Prompt matriculation to PSE was not more likely for magnet students than for comprehensive high school students. Magnet school attendance also did not make a difference in eventual educational attainment for magnet and comprehensive high school students.

Using propensity score techniques was a key element of this research and the main improvement over prior research conducted about magnet schools. These techniques allowed me to control for factors that are believed to relate to the likelihood of attending a magnet school. By calculating a propensity score from these elements and using it to weight my regressions I am simulating an experiment in which there are two groups of students, one who received treatment and one who did not. Propensity score weighting helps to adjust the groups so that I can say I am comparing similar students. The weighting technique allowed me to look at the ATT which modeled the impact of magnet school attendance on those who did so. Using the ATT helped me conclude that magnet school attendance was not a significant influence on the four evaluated educational outcomes in this study. Because other research did not control for the differences between groups of students who did and did not attend magnet schools and their propensity to attend a magnet school due to these characteristics, they may have found that magnet schools had positive effects on students. Especially in the case of examination of magnet school effectiveness within a single or several school districts, it may be the case that within those school districts creaming is occurring and this could be reflected in higher levels of achievement among magnet

students if appropriate controls for differences are not included. Such results would be impacted by selection bias which can and should be controlled using a method such as those that fall within the family of propensity score techniques.

Researchers have concluded in many studies that there are differences in test scores, educational expectations, college attendance, and educational attainment based on race. Several of these studies were based on analysis of NELS. However, my analysis did not address between race differences, rather I addressed within race differences. Attending a magnet school rather than a comprehensive high school could elevate students' achievement through a number of mechanisms. Students who otherwise may have been a minority in a school may benefit from additional same-race classmates. Students who are from a majority minority school may benefit from a more diverse school environment. Students whose neighborhood school suffers from underfunding and other maladies of poor performing schools may benefit from additional funding, teacher expertise, or a more rigorous learning environment at a magnet school. It is possible that attending magnet schools provided a different kind of environment that resulted in higher levels of self-esteem or a sense of possibility emanating from the specialness or increased responsiveness of the school to student needs, like what was described by Crosnoe, Cavanagh, and Elder (2003). Unfortunately, the results show that magnet school attendance did not seem to make a difference within race groups except for Asian students, as previously mentioned, in the first two educational outcomes evaluated: test scores and educational expectations. As mentioned, the difference in test scores is about half a standard deviation and the small size of the groups expecting to attain high school or less or some PSE likely led to artificially inflated estimates of the difference between the groups which temper the importance of the results. It is possible that for Asians, who make up a small proportion of the American population, attending

a magnet school meant attending a school with more same-race peers than in their neighborhood school and this could have provided additional identity support which translated into better test scores and higher expectations as suggested by Humes (2003) in his study of a magnet school that serves many Asian students and Flores-González (2010) in her study which uncovered the importance of peer support among Latino students.

*Being "Unsure" About Educational Expectations*

Initially, the "unsure" category for educational expectations in twelfth grade was frustrating as clear-cut categories of expectations that equated to educational attainment categories are preferred. The motivation for including the "unsure" responses in my analysis was to preserve cases. However, as I thought about it, this was a potentially interesting group of people, although I was uncertain about their identity. Are they wasting away their lives and unable to muster the time or interest to consider their future plans? Are they struggling to get to school every day because they are dealing with illness, poverty, or a dangerous neighborhood and they really did not know what was next? Are they overwrought and anxious about their future and debating whether they would need a bachelor's degree or a PhD to be a rocket scientist? Are they aspiring first-generation college students who were unsure if it was going to happen because they did not know where tuition would come from? Maybe all of these students are in the "unsure" category. So, I decided to see what happened if I included them. They are a small group, but they did yield a few interesting results.

First, it is interesting to examine the composition of the group. Of the comprehensive students in the analytic sample, 5.23 percent are unsure about their educational expectations and 6.67 percent of magnet students are unsure, a chi square analysis determined this is not a significant difference. While gender has not been mentioned in this research since males and

females attended magnet schools and comprehensive schools at similar rates and had similar outcomes, a gender difference emerges among unsure students. Significantly more males (6.22 percent) than females (4.54 percent) are unsure about their educational expectations. Students who are unsure had lower class rank than those who expressed other educational expectations ($44^{th}$ percentile compared to $58^{th}$) and significantly lower GPAs. On average, unsure students had a self-reported GPA of 1.61 and students with other expectations had a GPA of 2.02. Between five and six percent of students who lived in urban and non-urban areas in eighth and tenth grade are unsure about their educational expectations in twelfth grade. There was not a significant difference between the urban and non-urban students which is somewhat surprising given the documented lack of resources for many urban schools in counseling. One would have expected that more urban students would have been uncertain about their educational path. Overall, students who are unsure had lower SES than students with other expectations. In the regression analyses displayed in the prior chapter, higher levels of SES decreased the odds of being unsure rather than expecting to earn a bachelor's degree. This was the case in the unweighted and both weighted models which included control variables. Asian students who attended eighth grade in school districts where desegregation efforts are indicated had much lower odds of being unsure rather than expecting a bachelor's degree in both the ATE and ATT weighted regressions including controls. Black students followed the overall pattern of high SES reducing the odds of being unsure. For white and Hispanic students, higher levels of SES decreased their odds of being unsure of their educational expectations rather than expecting a bachelor's degree in the unweighted and ATE weighted regressions with controls.

Table 31: Prompt Matriculation by Students who were Unsure and Had Other Expectations

| Prompt Matriculation | Twelfth Grade Educational Expectations: Unsure | Other Expectations | Total |
|---|---|---|---|
| No | 210 | 2,230 | 2,440 |
| | *65.74* | *38.64* | *40.08* |
| Yes | 110 | 3,540 | 3,650 |
| | *34.26* | *61.36* | *59.92* |
| Total | 320 | 5,760 | 6,090 |
| | *100* | *100* | *100* |

Pearson chi2(1) = 93.8378 Pr = 0.000

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

Second, what happened to those who are unsure about their expectations? Are they more or less successful in terms of educational attainment? Looking at bivariate analyses shown in Table 31, students who are unsure made prompt transitions to PSE at a significantly lower rate than did students with other levels of expectations[5]. This finding is consistent with the finding mentioned above related to educational preparation – lower grades and class rank are expected to reduce the likelihood of transitioning to PSE. In Table 32 the educational attainment of those who are unsure and those with other expectations in the senior year is shown. Students who are unsure had higher rates of attaining high school or less and lower rates of attaining a bachelor's degree or more education. However, unsure students had higher levels of attainment at the middle levels — attending some PSE but not obtaining a degree, or earning a credential, license, or Associate's degree — than those who had other expectations. These findings support the idea that early and clear educational plans are important for obtaining bachelor's and graduate

[5] The data shown includes students who indicated they expected to attain high school or less education in the "Other Expectations" group. Analysis not shown excluding these students obtained similarly significant results.

degrees[6]. But being unsure about their educational plans in twelfth grade did not deter students from attaining further education. Also, the eventual attainment of the unsure group tells us that this group is not made up of students lacking ambition or drive.

Table 32: Educational Attainment of Students who were Unsure and Had Other Expectations

| | Twelfth Grade Educational Expectations | | |
|---|---|---|---|
| Attainment at Age 26 | Unsure | Other Expectations | Total |
| High School or Less | 120 | 1,050 | 1,160 |
| | *36.42* | *18.15* | *19.12* |
| Some PSE | 110 | 1,780 | 1,890 |
| | *34.57* | *30.82* | *31.02* |
| Certificate, License, or Associate's | 60 | 910 | 970 |
| | *17.59* | *15.86* | *15.95* |
| Bachelor's Degree or More | 40 | 2,030 | 2,060 |
| | *11.42* | *35.17* | *33.91* |
| Total | 320 | 5,760 | 6,090 |
| | *100* | *100* | *100* |

Pearson chi2(3) = 106.5512 Pr = 0.000

Source: NELS 88

*Percent of category in italics*

Note: Due to the use of restricted data, all sample sizes are rounded to the nearest ten.

Further study about students who are unsure is warranted. Are they suffering from distraction, burnout, information overload, lack of information, or disinterest? Why two to six months before what, for most people, is a major life transition, high school graduation, are these students uncertain about which path they will try next? This information can provide more insight into the educational trajectories and the PSE decision making processes of students and aid in the identification of interventions to help uncertain students, if research concludes they would be helpful.

[6] Less than one percent of students who were unsure about their educational expectations in twelfth grade went on to earn a graduate degree.

*Limitations*

This study aimed to study the educational outcomes of magnet students and a comparison group made up of comprehensive high school students using national data. These goals have been successfully met but there are a few limitations. While I believe NELS is the best available dataset for this analysis, it is far from perfect. Studying magnet schools was not the focus of data collection and therefore many variables that would have been useful to this study are missing. I would have appreciated knowing whether the school district was using magnet schools for desegregation, whether the district was busing students for desegregation purposes, and whether the students I studied are definitely in a magnet program at a magnet school rather than possibly being a non-magnet student at a school offering a magnet program. While I do not think the number of magnet schools and magnet students in this study was inappropriate, I actually am pleased that the proportion of magnet schools was roughly representative of their proportion of schools across the country at the time (Steel and Levine 1994), it would have been nice for magnet students to have been oversampled to increase the available sample size.

As a quantitative study using national data, I cannot be certain about how well the treatment of attending a magnet school was applied to my sample. I outlined in the second chapter some of the problems that occurred when magnet schools are implemented. I cannot know if students attending magnet schools for the purpose of desegregation are sitting in integrated classrooms or if the schools are internally segregated as found in studies by Clotfelter (2004), Metz (1986), Rossell (1991), and West (1994). I also cannot verify whether the themes, curricular focus, or instructional strategies are being applied at the school in the ways they are advertised. In other words, I cannot verify if classes at a magnet school are any different than classes at a comprehensive high school. As described in Chapter Two, there are reasons to

believe that magnet schools are subject to isomorphism which may negate the potential positive benefits of offering innovative instruction. The results of this research can be interpreted, on the whole, as finding that magnet schools have little impact on the educational outcomes of students in comparison to comprehensive high schools. In other words, students will have the same outcomes in either type of school, taking into consideration background characteristics. Because I have used national data, my findings apply to the average impact of magnet schools compared to comprehensive high schools. It is quite likely the case that there are magnet schools who are doing an exemplary job of educating students, where themes and pedagogy are implemented in an ideal manner. In these schools the students may have test scores and educational expectations that exceed their peers, they may promptly matriculate to postsecondary education at a higher rate and have higher levels of eventual educational attainment than their peers. This research does not claim that this is not the case.

In conducting this research I made a decision to include all comprehensive high schools and all magnet schools regardless of location. This means that I grouped urban, suburban, and rural schools together. While this decision contributed to a larger sample side it likely has some costs that impact the results I obtained and how they can be understood. Ryan (2010) provides a compelling explanation of the difference between urban and suburban school districts in terms of available financial and other types of resources. This difference in resources translates into a difference in the educational environments and likely the outcomes for these students. Suburban schools usually have better facilities, higher pay for teachers, more spending per student, and more support staff to provide assistance as needed even though students in more wealthy schools districts are less likely to need such assistance since their parents are able to provide these supports themselves or through paying for services apart from the schools (McDonough 1997).

Since magnet schools were more likely to have been implemented in urban school districts it would have been reasonable to restrict this analysis to only students attending urban schools. The fact that I included non-urban schools may have inflated the successful outcomes among the pool of comprehensive high school students to whom the, largely urban, magnet school group was compared. As described in Chapters 2 and 4, I replicated the models using a sample limited to students who attended urban magnet and comprehensive schools. These analyses netted few differences from those that are the focus of this project thus I conclude that the results were not inflated by the inclusion of non-urban students.

*Plans vs Action.*

My analyses of twelfth grade outcomes are based largely on attitudes and planning rather than actions students had taken to attend PSE. While attitudes can inform action, knowing what students have done to achieve their goals would have been useful. Part of Rosenbaum's (1998) argument about "college-for-all" is that students do not know what college requires. Similarly, students do not know what careers require, particularly as the economy changes and jobs require more education and specific training (Weis 1990). Despite the popularity of "career day" in elementary school, it is difficult for students to know about the various careers that are available to them. If they do not know someone who has the job and it is not a common career, they are unlikely to find it while browsing the Occupational Outlook Handbook (U.S. Bureau of Labor Statistics 2014). Thus students need some guidance to help them discover their interests, translate those interests into skills, identify a job that requires their skills, and understand what is required to do that job. Most schools have a career center stocked with the software and pamphlets, but are the students getting the most out of these resources? Utilizing these resources can help students have more accurate educational expectations and career goals. Not all students

need to go to college, but all students need to understand the requirements of their career of choice, whether that is stay-at-home parent, rocket scientist, computer game designer, or accountant at a health care giant (Coleman 1969; Tyack 1974; Weis 1990). Better understanding can help students understand what level of education they need and the value of each level of education. Additionally, more future focus can help students take substantive steps toward jobs through their part time jobs or volunteer work which will better prepare them for their future jobs.

*Further Research*

I continue to be surprised that there has not been more research evaluating the educational outcomes of magnet schools on a national level. There is still a great deal that could be done with NELS data to look deeper at magnet schools. Testing the mechanisms of magnet school selection among parents that have been developed largely by qualitative researchers on this data would be an interesting project. Focusing on teachers in magnet schools and how they differ or are the same as teachers in other types of schools would also be interesting. Most of the case studies of magnet schools are of elementary schools with elaborate programs; are high schools also drastically different work and learning environments compared to comprehensive high schools?

Looking more closely at desegregation and race in magnet schools is an area that warrants more study. This study did not compare the impact of magnet schools on students of different races, but rather the impact within race groups. Is there a different impact of attending magnet schools for students of different races? In terms of desegregation, are magnet schools effective at desegregating students' lives? Once students left their integrated magnet schools, did they move on to more integrated social spaces – schools, work, and neighborhoods?

Magnet school matriculated to PSE at about the same rate as comprehensive high school students. But does it mean to not promptly matriculate? A minority of students take a "gap year," recently brought to public attention by the announcement that Malia Obama will take one before beginning college at Harvard. In this planned year they may do a number of things – go on a mission trip, travel the world, volunteer. This is generally a privileged situation, not like the students who delay college to work to save money for tuition or those who have decided they do not want to attend college. If we are able to look at those taking a gap year, what are their educational trajectories?

*Implications*

Magnet high schools did not impact the educational outcomes of the students who attended them in comparison to similar students who attended comprehensive high schools. This finding does not discount the accomplishments of students who attend magnet schools, instead it finds that similar students at comprehensive and magnet schools, on average, are achieving at similar levels. Attending one type of school rather than the other did not make a difference in educational outcomes. Expectations that magnet schools would provide a better education to students have not been met based on this analysis.

However, it is important to acknowledge that this research aggregated all magnet high school students and all comprehensive high school students. I have discussed that a main reason for the similar outcomes among similar students is because isomorphism suggests that students at all types of schools are receiving similar instruction because their teachers received similar forms of training. But, there are likely individual magnet schools that are doing an excellent job of educating students, where innovative programing is being efficiently implemented. Given the resources that have been invested in magnet schools, it is disappointing that they have not made

an educational impact on their overall. This is an important finding because the same kind of investments are being made in charter schools and other types of schools of choice, which claim to be different and specialized but may provide the same return on investment that we see with magnet schools.

Desegregation was a controversial policy for a number of reasons, including distaste for assigning students to schools based on race rather than neighborhood. This research shows that there are mixed results for students who attended schools in districts that assigned students by race, a measure I used as a proxy for desegregation efforts. Asian and black students who had attended desegregated schools had positive results, but white and Hispanic students did not. It is important to realize that not all groups respond to school environments in the same way and that not all people within groups respond the same way. Again, the mechanism through which these impacts occur is not clear and is difficult to study. It also is unclear what the implications of desegregation were for the groups of students – did attending a desegregated school mean more or fewer same-race peers? Attending a school close or far away from home? There are many questions that could be examined by additional research to obtain a greater understanding of why some students might have more positive or negative outcomes after attending desegregated schools. In the past, and particularly in the rhetoric around white flight in the face of desegregation, there have been questions about whether attending desegregated schools has a negative impact on the educational outcomes of white students. This research is an additional piece of evidence that attending desegregated schools does not have negative impact on white students. Also, if we consider that magnet schools often serve a lower SES, urban, and often less well-prepared population of students, that they have the same outcomes as comprehensive high

schools, which in this sample includes more suburban and rural schools where students have access to greater resources and capital, is a positive accomplishment.

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# APPENDIX

Table 33: Shortened Variable Name Key for Tables in the Appendix

| Short Variable Name | Variable |
|---|---|
| Magnet | Attended a Magnet School |
| Male | Male |
| Asian | Asian |
| Black | Black |
| Hispanic | Hispanic |
| White | White |
| Urban | Eighth Grade School was Urban |
| Assign by Race | Eighth Grade School District Used Assign by Race |
| SES | Eighth Grade Family SES |
| Reading Test | Eighth Grade Standardized Reading Score |
| Math Test | Eighth Grade Standardized Math Score |
| Other HS | Don't Know/Other Type of High School |
| College Prep HS | College Preparatory Program High School |
| Voc HS | Vocational or Technical Program High School |
| General HS | General Program High School |
| Special HS | Special Program High School (Art, Dance, Science) |
| Talk about School | Parent Talks to Student about School |
| Talk HS Plans | Parent Talks to Student about High School Plans |
| Talk After HS | Parent Talks to Student about Plans after High School |
| Other Language | Another Language is Spoken at Home |
| P Spoken Eng | Parent Understands Spoken English |
| P Speaks Eng | Parent Speaks English |
| P Reads Eng | Parent Reads English |
| P Writes Eng | Parent Writes English |
| P Eng Ability | Parent English Ability Scale |
| P Exp HS or < | Parent Expects Student to Attain High School or Less |
| P Exp 2 Yr | Parent Expects Student to Attain Two-Year |
| P Exp Bach | Parent Expects Student to Attain a Bachelor's Degree + |
| P Ed HS or < | Parent Education: High School or Less |
| P Ed Some PSE | Parent Education: Some PSE |
| P Ed Bach + | Parent Education: Bachelor's Degree or More |
| Majority Minority | Eighth Grade School Majority Minority |
| Propensity Score | Propensity Score |
| ATE Weight | ATE Weight |
| ATT Weight | ATT Weight |
| Test Score | Standardized Test Scores, Twelfth Grade |
| Edu Exp | Educational Expectations, Twelfth Grade |
| Prompt Matric | Prompt Matriculation to PSE |
| Ed Attain | Educational Attainment, Age 26 |

Table 34: Logistic Regression Coefficients for the Propensity Score Equation, All Students

| Variable | Coeff. | | SE |
|---|---|---|---|
| Male | -0.071 | | 0.114 |
| Female (omitted) | | | |
| Asian | -0.022 | | 0.236 |
| Black | 0.660 | *** | 0.185 |
| Hispanic | 0.015 | | 0.192 |
| White (Omitted) | | | |
| Urban | 1.655 | *** | 0.118 |
| Reading Test | 0.007 | | 0.008 |
| Math Test | 0.013 | | 0.009 |
| Other HS | -0.026 | | 0.190 |
| College Prep HS | -0.099 | | 0.195 |
| Voc HS | 0.133 | | 0.205 |
| Special HS | -0.001 | | 0.297 |
| General HS (Omitted) | | | |
| Talk about School | -0.265 | | 0.141 |
| Talk HS Plans | 0.241 | | 0.146 |
| Talk After HS | -0.245 | | 0.145 |
| P Eng Ability | -0.080 | *** | 0.018 |
| P Exp HS or < (Omitted) | | | |
| P Exp 2 Yr | -0.063 | | 0.202 |
| P Exp Bach | 0.015 | | 0.197 |
| P Ed HS or < (Omitted) | | | |
| P Ed Some PSE | 0.050 | | 0.141 |
| P Ed Bach + | 0.184 | | 0.181 |
| Majority Minority | 1.352 | *** | 0.154 |
| Constant | -3.073 | *** | 0.552 |

N = 6,250

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 35: Logistic Regression Coefficients for the Propensity Score Equation, Asian Students

| Variable | Coeff. | | SE |
|---|---|---|---|
| Male | 0.064 | | 0.390 |
| Female (omitted) | | | |
| Urban | 1.275 | ** | 0.410 |
| Reading Test | 0.071 | * | 0.030 |
| Math Test | -0.005 | | 0.026 |
| Other HS | -1.532 | * | 0.647 |
| College Prep HS | -1.904 | ** | 0.650 |
| Voc HS | -1.077 | | 0.708 |
| Special HS | -1.711 | | 1.493 |
| General HS (Omitted) | | | |
| Talk about School | 0.006 | | 0.536 |
| Talk HS Plans | 0.053 | | 0.626 |
| Talk After HS | 0.058 | | 0.625 |
| P Eng Ability | -0.070 | | 0.047 |
| P Exp HS or < (Omitted) | | | |
| P Exp 2 Yr | -0.906 | | 0.889 |
| P Exp Bach | -0.324 | | 0.712 |
| P Ed HS or < (Omitted) | | | |
| P Ed Some PSE | -0.460 | | 0.486 |
| P Ed Bach + | -0.531 | | 0.624 |
| Majority Minority | 2.441 | *** | 0.444 |
| Constant | -4.019 | * | 1.657 |

N = 350

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 36: Logistic Regression Coefficients for the Propensity Score Equation, Black Students

| Variable | Coeff. | | SE |
|---|---|---|---|
| Male | 0.037 | | 0.280 |
| Female (omitted) | | | |
| Urban | 1.487 | *** | 0.284 |
| Reading Test | 0.007 | | 0.020 |
| Math Test | 0.019 | | 0.022 |
| Other HS | -0.474 | | 0.454 |
| College Prep HS | -0.272 | | 0.457 |
| Voc HS | 0.002 | | 0.456 |
| Special HS | 0.460 | | 0.712 |
| General HS (Omitted) | | | |
| Talk about School | -0.236 | | 0.333 |
| Talk HS Plans | -0.050 | | 0.323 |
| Talk After HS | 0.028 | | 0.313 |
| P Eng Ability | -0.375 | | 0.225 |
| P Exp HS or < (Omitted) | | | |
| P Exp 2 Yr | 0.354 | | 0.490 |
| P Exp Bach | 0.491 | | 0.476 |
| P Ed HS or < (Omitted) | | | |
| P Ed Some PSE | -0.343 | | 0.299 |
| P Ed Bach + | -0.067 | | 0.460 |
| Majority Minority | 1.949 | *** | 0.328 |
| Constant | 2.821 | | 4.635 |

N = 570

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 37: Logistic Regression Coefficients for the Propensity Score Equation, White Students

| Variable | Coeff. | | SE |
|---|---|---|---|
| Male | -0.184 | | 0.171 |
| Female (omitted) | | | |
| Urban | 1.765 | *** | 0.170 |
| Reading Test | 0.010 | | 0.012 |
| Math Test | 0.003 | | 0.012 |
| Other HS | 0.029 | | 0.273 |
| College Prep HS | 0.154 | | 0.269 |
| Voc HS | 0.329 | | 0.306 |
| Special HS | 0.232 | | 0.394 |
| General HS (Omitted) | | | |
| Talk about School | -0.464 | * | 0.222 |
| Talk HS Plans | 0.423 | * | 0.210 |
| Talk After HS | -0.329 | | 0.215 |
| P Eng Ability | -0.032 | | 0.105 |
| P Exp HS or < (Omitted) | | | |
| P Exp 2 Yr | -0.236 | | 0.318 |
| P Exp Bach | -0.106 | | 0.317 |
| P Ed HS or < (Omitted) | | | |
| P Ed Some PSE | 0.242 | | 0.234 |
| P Ed Bach + | 0.437 | | 0.265 |
| Majority Minority | 1.501 | *** | 0.313 |
| Constant | -3.790 | | 2.149 |

N = 4,530

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 38: Logistic Regression Coefficients for the Propensity Score Equation, Hispanic Students

| Variable | Coeff. | | SE |
|---|---|---|---|
| Male | -0.067 | | 0.229 |
| Female (omitted) | | | |
| Urban | 1.872 | *** | 0.251 |
| Reading Test | -0.033 | | 0.018 |
| Math Test | 0.042 | * | 0.019 |
| Other HS | 0.950 | * | 0.471 |
| College Prep HS | 0.447 | | 0.517 |
| Voc HS | 0.785 | | 0.491 |
| Special HS | 0.295 | | 0.729 |
| General HS (Omitted) | | | |
| Talk about School | -0.209 | | 0.264 |
| Talk HS Plans | 0.137 | | 0.314 |
| Talk After HS | -0.340 | | 0.296 |
| P Eng Ability | -0.094 | *** | 0.022 |
| P Exp HS or < (Omitted) | | | |
| P Exp 2 Yr | 0.009 | | 0.355 |
| P Exp Bach | -0.014 | | 0.356 |
| P Ed HS or < (Omitted) | | | |
| P Ed Some PSE | 0.200 | | 0.274 |
| P Ed Bach + | 0.016 | | 0.446 |
| Majority Minority | 0.541 | * | 0.260 |
| Constant | -2.632 | ** | 0.957 |

N = 800

* p < .05, ** p < .01, *** p < .001

Source: NELS

Table 39: Descriptive Statistics, All Sample Members

| | Overall | | | | | Magnet Students | | | | | Comprehensive Students | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max |
| Magnet | 6250 | 0.067 | 0.249 | 0 | 1 | 420 | 1 | 0 | 1 | 1 | 5830 | 0 | 0 | 0 | 0 |
| Male | 6250 | 0.467 | 0.499 | 0 | 1 | 420 | 0.466 | 0.499 | 0 | 1 | 5830 | 0.467 | 0.499 | 0 | 1 |
| Asian | 6250 | 0.056 | 0.230 | 0 | 1 | 420 | 0.113 | 0.317 | 0 | 1 | 5830 | 0.052 | 0.222 | 0 | 1 |
| Black | 6250 | 0.090 | 0.287 | 0 | 1 | 420 | 0.219 | 0.414 | 0 | 1 | 5830 | 0.081 | 0.273 | 0 | 1 |
| Hispanic | 6250 | 0.127 | 0.334 | 0 | 1 | 420 | 0.281 | 0.450 | 0 | 1 | 5830 | 0.116 | 0.321 | 0 | 1 |
| White | 6250 | 0.726 | 0.446 | 0 | 1 | 420 | 0.387 | 0.488 | 0 | 1 | 5830 | 0.750 | 0.433 | 0 | 1 |
| Urban | 6250 | 0.191 | 0.393 | 0 | 1 | 420 | 0.625 | 0.485 | 0 | 1 | 5830 | 0.160 | 0.367 | 0 | 1 |
| Assign by Race | 6250 | 0.082 | 0.275 | 0 | 1 | 420 | 0.188 | 0.391 | 0 | 1 | 5830 | 0.075 | 0.263 | 0 | 1 |
| SES | 6250 | -0.119 | 0.741 | -2.23 | 1.91 | 420 | -0.352 | 0.768 | -2.23 | 1.56 | 5830 | -0.102 | 0.736 | -2.23 | 1.91 |
| Reading Test | 6250 | 51.436 | 9.880 | 31.98 | 70.55 | 420 | 50.307 | 10.232 | 32.56 | 70.55 | 5830 | 51.516 | 9.850 | 31.98 | 70.55 |
| Math Test | 6250 | 51.694 | 10.024 | 34.24 | 77.20 | 420 | 50.772 | 10.350 | 34.43 | 77.20 | 5830 | 51.760 | 9.998 | 34.24 | 77.20 |
| Other HS | 6250 | 0.322 | 0.467 | 0 | 1 | 420 | 0.329 | 0.471 | 0 | 1 | 5830 | 0.322 | 0.467 | 0 | 1 |
| College Prep HS | 6250 | 0.318 | 0.466 | 0 | 1 | 420 | 0.284 | 0.451 | 0 | 1 | 5830 | 0.320 | 0.467 | 0 | 1 |
| Voc HS | 6250 | 0.171 | 0.377 | 0 | 1 | 420 | 0.224 | 0.417 | 0 | 1 | 5830 | 0.167 | 0.373 | 0 | 1 |
| General HS | 6250 | 0.140 | 0.347 | 0 | 1 | 420 | 0.113 | 0.317 | 0 | 1 | 5830 | 0.142 | 0.349 | 0 | 1 |
| Special HS | 6250 | 0.049 | 0.216 | 0 | 1 | 420 | 0.050 | 0.219 | 0 | 1 | 5830 | 0.049 | 0.215 | 0 | 1 |
| Talk about School | 6250 | 0.782 | 0.413 | 0 | 1 | 420 | 0.675 | 0.469 | 0 | 1 | 5830 | 0.790 | 0.408 | 0 | 1 |
| Talk HS Plans | 6250 | 0.439 | 0.496 | 0 | 1 | 420 | 0.469 | 0.500 | 0 | 1 | 5830 | 0.437 | 0.496 | 0 | 1 |
| Talk After HS | 6250 | 0.375 | 0.484 | 0 | 1 | 420 | 0.375 | 0.485 | 0 | 1 | 5830 | 0.375 | 0.484 | 0 | 1 |
| Other Language | 6210 | 0.110 | 0.313 | 0 | 1 | 410 | 0.297 | 0.458 | 0 | 1 | 5790 | 0.097 | 0.296 | 0 | 1 |
| P Spoken Eng | 6190 | 4.840 | 0.618 | 1 | 5 | 410 | 4.418 | 1.139 | 1 | 5 | 5790 | 4.870 | 0.552 | 1 | 5 |
| P Speaks Eng | 6190 | 4.804 | 0.702 | 1 | 5 | 410 | 4.318 | 1.253 | 1 | 5 | 5780 | 4.838 | 0.632 | 1 | 5 |
| P Reads Eng | 6180 | 4.809 | 0.714 | 1 | 5 | 410 | 4.294 | 1.322 | 1 | 5 | 5780 | 4.845 | 0.635 | 1 | 5 |
| P Writes Eng | 6180 | 4.784 | 0.766 | 1 | 5 | 410 | 4.231 | 1.381 | 1 | 5 | 5780 | 4.823 | 0.686 | 1 | 5 |
| P Eng Ability | 6250 | 19.213 | 2.727 | 4 | 20 | 420 | 17.207 | 4.930 | 4 | 20 | 5830 | 19.356 | 2.435 | 4 | 20 |
| P Exp HS or < | 6250 | 0.109 | 0.312 | 0 | 1 | 420 | 0.115 | 0.320 | 0 | 1 | 5830 | 0.109 | 0.311 | 0 | 1 |
| P Exp 2 Yr | 6250 | 0.287 | 0.453 | 0 | 1 | 420 | 0.260 | 0.439 | 0 | 1 | 5830 | 0.289 | 0.454 | 0 | 1 |
| P Exp Bach | 6250 | 0.603 | 0.489 | 0 | 1 | 420 | 0.625 | 0.485 | 0 | 1 | 5830 | 0.602 | 0.490 | 0 | 1 |
| P Ed HS or < | 6250 | 0.307 | 0.461 | 0 | 1 | 420 | 0.375 | 0.485 | 0 | 1 | 5830 | 0.302 | 0.459 | 0 | 1 |
| P Ed Some PSE | 6250 | 0.436 | 0.496 | 0 | 1 | 420 | 0.404 | 0.491 | 0 | 1 | 5830 | 0.438 | 0.496 | 0 | 1 |
| P Ed Bach + | 6250 | 0.257 | 0.437 | 0 | 1 | 420 | 0.221 | 0.416 | 0 | 1 | 5830 | 0.260 | 0.439 | 0 | 1 |
| Majority Minority | 6250 | 0.124 | 0.330 | 0 | 1 | 420 | 0.505 | 0.501 | 0 | 1 | 5830 | 0.097 | 0.296 | 0 | 1 |
| Propensity Score | 6250 | 0.067 | 0.103 | 0.01 | 0.70 | 420 | 0.225 | 0.191 | 0.01 | 0.67 | 5830 | 0.055 | 0.082 | 0.01 | 0.70 |
| Block | 6250 | 2.057 | 1.391 | 1 | 7 | 420 | 3.933 | 1.769 | 1 | 7 | 5830 | 1.923 | 1.257 | 1 | 7 |
| ATE Weight | 6250 | 1.985 | 5.678 | 1.01 | 78.74 | 420 | 14.780 | 17.575 | 1.48 | 78.74 | 5830 | 1.071 | 0.154 | 1.01 | 3.29 |
| ATT Weight | 6250 | 0.133 | 0.275 | 0.01 | 2.29 | 420 | 1.000 | 0.000 | 1.00 | 1.00 | 5830 | 0.071 | 0.154 | 0.01 | 2.29 |
| Test Score | 5020 | 51.564 | 9.538 | 27.86 | 71.04 | 310 | 50.376 | 10.309 | 30.67 | 69.75 | 4720 | 51.641 | 9.482 | 27.86 | 71.04 |
| Edu Exp | 6090 | 2.732 | 1.114 | 0 | 4 | 410 | 2.820 | 1.169 | 0 | 4 | 5680 | 2.725 | 1.110 | 0 | 4 |
| Prompt Matric | 6250 | 0.596 | 0.491 | 0 | 1 | 420 | 0.558 | 0.497 | 0 | 1 | 5830 | 0.598 | 0.490 | 0 | 1 |
| Ed Attain | 6240 | 2.637 | 1.135 | 1 | 4 | 420 | 2.603 | 1.121 | 1 | 4 | 5830 | 2.639 | 1.136 | 1 | 4 |

Table 40: Descriptive Statistics, Asian Sample Members

| | Overall | | | | | Magnet | | | | | Comprehensive | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max |
| Magnet | 350 | 0.134 | 0.341 | 0 | 1 | 50 | 1 | 0 | 1 | 1 | 300 | 0 | 0 | 0 | 0 |
| Male | 350 | 0.491 | 0.501 | 0 | 1 | 50 | 0.532 | 0.504 | 0 | 1 | 300 | 0.485 | 0.501 | 0 | 1 |
| Urban | 350 | 0.329 | 0.470 | 0 | 1 | 50 | 0.638 | 0.486 | 0 | 1 | 300 | 0.281 | 0.450 | 0 | 1 |
| Assign by Race | 350 | 0.100 | 0.300 | 0 | 1 | 50 | 0.234 | 0.428 | 0 | 1 | 300 | 0.079 | 0.271 | 0 | 1 |
| SES | 350 | 0.147 | 0.864 | -2.08 | 1.85 | 50 | -0.424 | 0.801 | -2.08 | 1.10 | 300 | 0.235 | 0.841 | -1.96 | 1.85 |
| Reading Test | 350 | 53.967 | 10.200 | 32.87 | 70.55 | 50 | 53.282 | 11.034 | 32.87 | 70.55 | 300 | 54.073 | 10.079 | 33.88 | 70.55 |
| Math Test | 350 | 57.844 | 10.719 | 35.10 | 77.20 | 50 | 57.429 | 9.939 | 37.78 | 77.20 | 300 | 57.908 | 10.849 | 35.10 | 77.20 |
| Other HS | 350 | 0.317 | 0.466 | 0 | 1 | 50 | 0.298 | 0.462 | 0 | 1 | 300 | 0.320 | 0.467 | 0 | 1 |
| College Prep HS | 350 | 0.434 | 0.496 | 0 | 1 | 50 | 0.319 | 0.471 | 0 | 1 | 300 | 0.452 | 0.499 | 0 | 1 |
| Voc HS | 350 | 0.140 | 0.347 | 0 | 1 | 50 | 0.213 | 0.414 | 0 | 1 | 300 | 0.129 | 0.335 | 0 | 1 |
| General HS | 350 | 0.074 | 0.263 | 0 | 1 | 50 | 0.149 | 0.360 | 0 | 1 | 300 | 0.063 | 0.243 | 0 | 1 |
| Special HS | 350 | 0.034 | 0.182 | 0 | 1 | 50 | 0.021 | 0.146 | 0 | 1 | 300 | 0.036 | 0.187 | 0 | 1 |
| Talk about School | 350 | 0.543 | 0.499 | 0 | 1 | 50 | 0.404 | 0.496 | 0 | 1 | 300 | 0.564 | 0.497 | 0 | 1 |
| Talk HS Plans | 350 | 0.300 | 0.459 | 0 | 1 | 50 | 0.255 | 0.441 | 0 | 1 | 300 | 0.307 | 0.462 | 0 | 1 |
| Talk After HS | 350 | 0.306 | 0.461 | 0 | 1 | 50 | 0.277 | 0.452 | 0 | 1 | 300 | 0.310 | 0.463 | 0 | 1 |
| Other Language | 330 | 0.579 | 0.495 | 0 | 1 | 50 | 0.733 | 0.447 | 0 | 1 | 290 | 0.554 | 0.498 | 0 | 1 |
| P Spoken Eng | 340 | 3.960 | 1.206 | 1 | 5 | 50 | 3.370 | 1.372 | 1 | 5 | 300 | 4.050 | 1.154 | 1 | 5 |
| P Speaks Eng | 350 | 3.801 | 1.255 | 1 | 5 | 50 | 3.170 | 1.388 | 1 | 5 | 300 | 3.900 | 1.206 | 1 | 5 |
| P Reads Eng | 350 | 3.887 | 1.306 | 1 | 5 | 50 | 3.174 | 1.510 | 1 | 5 | 300 | 3.997 | 1.238 | 1 | 5 |
| P Writes Eng | 340 | 3.814 | 1.309 | 1 | 5 | 50 | 3.106 | 1.521 | 1 | 5 | 300 | 3.926 | 1.239 | 1 | 5 |
| P Eng Ability | 350 | 15.470 | 4.863 | 4 | 20 | 50 | 12.739 | 5.539 | 4 | 20 | 300 | 15.893 | 4.617 | 4 | 20 |
| P Exp HS or < | 350 | 0.069 | 0.253 | 0 | 1 | 50 | 0.106 | 0.312 | 0 | 1 | 300 | 0.063 | 0.243 | 0 | 1 |
| P Exp 2 Yr | 350 | 0.086 | 0.280 | 0 | 1 | 50 | 0.085 | 0.282 | 0 | 1 | 300 | 0.086 | 0.281 | 0 | 1 |
| P Exp Bach | 350 | 0.846 | 0.362 | 0 | 1 | 50 | 0.809 | 0.398 | 0 | 1 | 300 | 0.851 | 0.356 | 0 | 1 |
| P Ed HS or < | 350 | 0.214 | 0.411 | 0 | 1 | 50 | 0.404 | 0.496 | 0 | 1 | 300 | 0.185 | 0.389 | 0 | 1 |
| P Ed Some PSE | 350 | 0.297 | 0.458 | 0 | 1 | 50 | 0.340 | 0.479 | 0 | 1 | 300 | 0.290 | 0.455 | 0 | 1 |
| P Ed Bach + | 350 | 0.489 | 0.501 | 0 | 1 | 50 | 0.255 | 0.441 | 0 | 1 | 300 | 0.525 | 0.500 | 0 | 1 |
| Majority Minority | 350 | 0.269 | 0.444 | 0 | 1 | 50 | 0.723 | 0.452 | 0 | 1 | 300 | 0.198 | 0.399 | 0 | 1 |
| Propensity Score | 350 | 0.134 | 0.183 | 0.00 | 0.94 | 50 | 0.388 | 0.250 | 0.02 | 0.94 | 300 | 0.095 | 0.132 | 0.00 | 0.67 |
| Block | 350 | 1.717 | 1.172 | 1 | 6 | 50 | 3.234 | 1.478 | 1 | 6 | 300 | 1.482 | 0.916 | 1 | 5 |
| ATE Weight | 350 | 2.031 | 5.124 | 1.00 | 65.73 | 50 | 7.741 | 12.656 | 1.07 | 65.73 | 300 | 1.145 | 0.286 | 1.00 | 3.06 |
| ATT Weight | 350 | 0.260 | 0.395 | 0.00 | 2.06 | 50 | 1.000 | 0.000 | 1.00 | 1.00 | 300 | 0.145 | 0.286 | 0.00 | 2.06 |
| Test Score | 280 | 56.517 | 9.559 | 31.72 | 70.88 | 30 | 55.838 | 12.048 | 31.72 | 69.75 | 250 | 56.609 | 9.196 | 32.16 | 70.88 |
| Edu Exp | 340 | 3.224 | 1.026 | 0 | 4 | 50 | 3.319 | 0.980 | 0 | 4 | 300 | 3.209 | 1.033 | 0 | 4 |
| Prompt Matric | 350 | 0.806 | 0.396 | 0 | 1 | 50 | 0.809 | 0.398 | 0 | 1 | 300 | 0.805 | 0.397 | 0 | 1 |
| Ed Attain | 350 | 3.269 | 0.997 | 1 | 4 | 50 | 3.319 | 0.980 | 1 | 4 | 300 | 3.261 | 1.001 | 1 | 4 |

Table 41: Descriptive Statistics, Black Sample Members

| | Overall | | | | | Magnet | | | | | Comprehensive | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max | n | Mean | SD | Min | Max |
| Magnet | 570 | 0.161 | 0.368 | 0 | 1 | 90 | 1 | 0 | 1 | 1 | 470 | 0 | 0 | 0 | 0 |
| Male | 570 | 0.414 | 0.493 | 0 | 1 | 90 | 0.418 | 0.496 | 0 | 1 | 470 | 0.414 | 0.493 | 0 | 1 |
| Urban | 570 | 0.342 | 0.475 | 0 | 1 | 90 | 0.725 | 0.449 | 0 | 1 | 470 | 0.268 | 0.443 | 0 | 1 |
| Assign by Race | 570 | 0.253 | 0.435 | 0 | 1 | 90 | 0.297 | 0.459 | 0 | 1 | 470 | 0.245 | 0.430 | 0 | 1 |
| SES | 570 | -0.446 | 0.760 | -2.23 | 1.76 | 90 | -0.404 | 0.701 | -1.82 | 1.15 | 470 | -0.454 | 0.771 | -2.23 | 1.76 |
| Reading Test | 570 | 46.601 | 9.070 | 31.98 | 70.55 | 90 | 47.869 | 9.227 | 34.00 | 70.55 | 470 | 46.358 | 9.029 | 31.98 | 70.55 |
| Math Test | 570 | 45.522 | 8.324 | 34.43 | 73.39 | 90 | 46.532 | 9.328 | 34.43 | 72.54 | 470 | 45.328 | 8.114 | 34.99 | 73.39 |
| Other HS | 570 | 0.313 | 0.464 | 0 | 1 | 90 | 0.275 | 0.449 | 0 | 1 | 470 | 0.321 | 0.467 | 0 | 1 |
| College Prep HS | 570 | 0.292 | 0.455 | 0 | 1 | 90 | 0.275 | 0.449 | 0 | 1 | 470 | 0.295 | 0.457 | 0 | 1 |
| Voc HS | 570 | 0.230 | 0.421 | 0 | 1 | 90 | 0.275 | 0.449 | 0 | 1 | 470 | 0.222 | 0.416 | 0 | 1 |
| General HS | 570 | 0.124 | 0.330 | 0 | 1 | 90 | 0.121 | 0.328 | 0 | 1 | 470 | 0.124 | 0.330 | 0 | 1 |
| Special HS | 570 | 0.041 | 0.198 | 0 | 1 | 90 | 0.055 | 0.229 | 0 | 1 | 470 | 0.038 | 0.191 | 0 | 1 |
| Talk about School | 570 | 0.740 | 0.439 | 0 | 1 | 90 | 0.725 | 0.449 | 0 | 1 | 470 | 0.743 | 0.438 | 0 | 1 |
| Talk HS Plans | 570 | 0.536 | 0.499 | 0 | 1 | 90 | 0.527 | 0.502 | 0 | 1 | 470 | 0.538 | 0.499 | 0 | 1 |
| Talk After HS | 570 | 0.485 | 0.500 | 0 | 1 | 90 | 0.495 | 0.503 | 0 | 1 | 470 | 0.483 | 0.500 | 0 | 1 |
| Other Language | 560 | 0.018 | 0.132 | 0 | 1 | 90 | 0.022 | 0.147 | 0 | 1 | 470 | 0.017 | 0.129 | 0 | 1 |
| P Spoken Eng | 560 | 4.988 | 0.193 | 1 | 5 | 90 | 4.989 | 0.105 | 4 | 5 | 470 | 4.987 | 0.206 | 1 | 5 |
| P Speaks Eng | 560 | 4.989 | 0.146 | 2 | 5 | 90 | 4.956 | 0.330 | 2 | 5 | 470 | 4.996 | 0.065 | 4 | 5 |
| P Reads Eng | 560 | 4.993 | 0.133 | 2 | 5 | 90 | 4.956 | 0.330 | 2 | 5 | 470 | 5.000 | 0.000 | 5 | 5 |
| P Writes Eng | 560 | 4.988 | 0.193 | 1 | 5 | 90 | 4.934 | 0.467 | 1 | 5 | 470 | 4.998 | 0.046 | 4 | 5 |
| P Eng Ability | 570 | 19.957 | 0.541 | 9 | 20 | 90 | 19.835 | 1.223 | 9 | 20 | 470 | 19.981 | 0.247 | 16 | 20 |
| P Exp HS or < | 570 | 0.120 | 0.326 | 0 | 1 | 90 | 0.099 | 0.300 | 0 | 1 | 470 | 0.124 | 0.330 | 0 | 1 |
| P Exp 2 Yr | 570 | 0.294 | 0.456 | 0 | 1 | 90 | 0.275 | 0.449 | 0 | 1 | 470 | 0.297 | 0.458 | 0 | 1 |
| P Exp Bach | 570 | 0.586 | 0.493 | 0 | 1 | 90 | 0.626 | 0.486 | 0 | 1 | 470 | 0.578 | 0.494 | 0 | 1 |
| P Ed HS or < | 570 | 0.358 | 0.480 | 0 | 1 | 90 | 0.374 | 0.486 | 0 | 1 | 470 | 0.354 | 0.479 | 0 | 1 |
| P Ed Some PSE | 570 | 0.492 | 0.500 | 0 | 1 | 90 | 0.484 | 0.502 | 0 | 1 | 470 | 0.494 | 0.500 | 0 | 1 |
| P Ed Bach + | 570 | 0.150 | 0.358 | 0 | 1 | 90 | 0.143 | 0.352 | 0 | 1 | 470 | 0.152 | 0.359 | 0 | 1 |
| Majority Minority | 570 | 0.425 | 0.495 | 0 | 1 | 90 | 0.835 | 0.373 | 0 | 1 | 470 | 0.346 | 0.476 | 0 | 1 |
| Propensity Score | 570 | 0.161 | 0.177 | 0.01 | 0.88 | 90 | 0.355 | 0.193 | 0.02 | 0.88 | 470 | 0.124 | 0.147 | 0.01 | 0.71 |
| Block | 570 | 2.483 | 1.574 | 1 | 7 | 90 | 4.110 | 1.337 | 1 | 7 | 470 | 2.171 | 1.417 | 1 | 6 |
| ATE Weight | 570 | 2.002 | 4.446 | 1.01 | 58.75 | 90 | 6.228 | 10.092 | 1.14 | 58.75 | 470 | 1.191 | 0.309 | 1.01 | 3.47 |
| ATT Weight | 570 | 0.321 | 0.411 | 0.01 | 2.47 | 90 | 1.000 | 0.000 | 1.00 | 1.00 | 470 | 0.191 | 0.309 | 0.01 | 2.47 |
| Test Score | 440 | 45.684 | 9.103 | 30.47 | 66.31 | 70 | 46.297 | 8.929 | 32.22 | 65.50 | 370 | 45.575 | 9.141 | 30.47 | 66.31 |
| Edu Exp | 540 | 2.695 | 1.198 | 0 | 4 | 90 | 2.965 | 1.111 | 0 | 4 | 460 | 2.644 | 1.208 | 0 | 4 |
| Prompt Matric | 570 | 0.504 | 0.500 | 0 | 1 | 90 | 0.462 | 0.501 | 0 | 1 | 470 | 0.513 | 0.500 | 0 | 1 |
| Ed Attain | 570 | 2.458 | 1.084 | 1 | 4 | 90 | 2.440 | 1.087 | 1 | 4 | 470 | 2.462 | 1.084 | 1 | 4 |

Table 42: Descriptive Statistics, White Sample Members

| | Overall | | | | | Magnet Students | | | | | Comprehensive Students | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | n | Mean | SD | Min | Max | n | Mean | Std. Dev. | Min | Max | n | Mean | Std. Dev. | Min | Max |
| Magnet | 4530 | 0.036 | 0.185 | 0 | 1 | 160 | 1 | 0 | 1 | 1 | 4370 | 0 | 0 | 0 | 0 |
| Male | 4530 | 0.471 | 0.499 | 0 | 1 | 160 | 0.441 | 0.498 | 0 | 1 | 4370 | 0.472 | 0.499 | 0 | 1 |
| Urban | 4530 | 0.129 | 0.336 | 0 | 1 | 160 | 0.472 | 0.501 | 0 | 1 | 4370 | 0.117 | 0.321 | 0 | 1 |
| Assign by Race | 4530 | 0.058 | 0.233 | 0 | 1 | 160 | 0.124 | 0.331 | 0 | 1 | 4370 | 0.055 | 0.229 | 0 | 1 |
| SES | 4530 | -0.025 | 0.685 | -2.23 | 1.91 | 160 | 0.054 | 0.630 | -1.35 | 1.56 | 4370 | -0.028 | 0.687 | -2.23 | 1.91 |
| Reading Test | 4530 | 52.496 | 9.767 | 32.01 | 70.55 | 160 | 54.235 | 9.897 | 33.92 | 70.55 | 4370 | 52.432 | 9.757 | 32.01 | 70.55 |
| Math Test | 4530 | 52.746 | 9.805 | 34.67 | 77.20 | 160 | 54.140 | 10.337 | 37.38 | 75.62 | 4370 | 52.695 | 9.782 | 34.67 | 77.20 |
| Other HS | 4530 | 0.312 | 0.463 | 0 | 1 | 160 | 0.280 | 0.450 | 0 | 1 | 4370 | 0.313 | 0.464 | 0 | 1 |
| College Prep HS | 4530 | 0.327 | 0.469 | 0 | 1 | 160 | 0.354 | 0.480 | 0 | 1 | 4370 | 0.326 | 0.469 | 0 | 1 |
| Voc HS | 4530 | 0.155 | 0.362 | 0 | 1 | 160 | 0.161 | 0.369 | 0 | 1 | 4370 | 0.155 | 0.362 | 0 | 1 |
| General HS | 4530 | 0.154 | 0.361 | 0 | 1 | 160 | 0.137 | 0.345 | 0 | 1 | 4370 | 0.155 | 0.362 | 0 | 1 |
| Special HS | 4530 | 0.051 | 0.220 | 0 | 1 | 160 | 0.068 | 0.253 | 0 | 1 | 4370 | 0.051 | 0.219 | 0 | 1 |
| Talk about School | 4530 | 0.828 | 0.377 | 0 | 1 | 160 | 0.789 | 0.409 | 0 | 1 | 4370 | 0.830 | 0.376 | 0 | 1 |
| Talk HS Plans | 4530 | 0.426 | 0.495 | 0 | 1 | 160 | 0.478 | 0.501 | 0 | 1 | 4370 | 0.424 | 0.494 | 0 | 1 |
| Talk After HS | 4530 | 0.354 | 0.478 | 0 | 1 | 160 | 0.335 | 0.474 | 0 | 1 | 4370 | 0.355 | 0.479 | 0 | 1 |
| Other Language | 4530 | 0.023 | 0.151 | 0 | 1 | 160 | 0.031 | 0.174 | 0 | 1 | 4370 | 0.023 | 0.150 | 0 | 1 |
| P Spoken Eng | 4530 | 4.993 | 0.105 | 2 | 5 | 160 | 4.994 | 0.079 | 4 | 5 | 4370 | 4.993 | 0.106 | 2 | 5 |
| P Speaks Eng | 4530 | 4.988 | 0.149 | 2 | 5 | 160 | 4.975 | 0.222 | 3 | 5 | 4370 | 4.989 | 0.146 | 2 | 5 |
| P Reads Eng | 4530 | 4.990 | 0.153 | 1 | 5 | 160 | 4.988 | 0.158 | 3 | 5 | 4370 | 4.990 | 0.153 | 1 | 5 |
| P Writes Eng | 4530 | 4.981 | 0.223 | 1 | 5 | 160 | 4.950 | 0.367 | 2 | 5 | 4370 | 4.982 | 0.216 | 1 | 5 |
| P Eng Ability | 4530 | 19.950 | 0.594 | 7 | 20 | 160 | 19.907 | 0.740 | 12 | 20 | 4370 | 19.951 | 0.588 | 7 | 20 |
| P Exp HS or < | 4530 | 0.106 | 0.308 | 0 | 1 | 160 | 0.099 | 0.300 | 0 | 1 | 4370 | 0.106 | 0.308 | 0 | 1 |
| P Exp 2 Yr | 4530 | 0.296 | 0.457 | 0 | 1 | 160 | 0.236 | 0.426 | 0 | 1 | 4370 | 0.299 | 0.458 | 0 | 1 |
| P Exp Bach | 4530 | 0.597 | 0.490 | 0 | 1 | 160 | 0.665 | 0.474 | 0 | 1 | 4370 | 0.595 | 0.491 | 0 | 1 |
| P Ed HS or < | 4530 | 0.278 | 0.448 | 0 | 1 | 160 | 0.211 | 0.409 | 0 | 1 | 4370 | 0.281 | 0.449 | 0 | 1 |
| P Ed Some PSE | 4530 | 0.448 | 0.497 | 0 | 1 | 160 | 0.435 | 0.497 | 0 | 1 | 4370 | 0.448 | 0.497 | 0 | 1 |
| P Ed Bach + | 4530 | 0.274 | 0.446 | 0 | 1 | 160 | 0.354 | 0.480 | 0 | 1 | 4370 | 0.271 | 0.445 | 0 | 1 |
| Majority Minority | 4530 | 0.019 | 0.135 | 0 | 1 | 160 | 0.106 | 0.308 | 0 | 1 | 4370 | 0.015 | 0.123 | 0 | 1 |
| Propensity Score | 4530 | 0.036 | 0.045 | 0.01 | 0.53 | 160 | 0.091 | 0.099 | 0.01 | 0.53 | 4370 | 0.033 | 0.040 | 0.01 | 0.41 |
| Block | 4530 | 1.597 | 0.974 | 1 | 6 | 160 | 2.677 | 1.443 | 1 | 6 | 4370 | 1.557 | 0.929 | 1 | 6 |
| ATE Weight | 4530 | 1.983 | 6.571 | 1.01 | 116.36 | 160 | 27.678 | 23.113 | 1.89 | 116.36 | 4370 | 1.037 | 0.053 | 1.01 | 1.70 |
| ATT Weight | 4530 | 0.071 | 0.186 | 0.01 | 1.00 | 160 | 1 | 0 | 1 | 1 | 4370 | 0.037 | 0.053 | 0.01 | 0.70 |
| Test Score | 3690 | 52.440 | 9.253 | 27.86 | 71.04 | 120 | 53.828 | 9.247 | 30.67 | 68.99 | 3570 | 52.395 | 9.251 | 27.86 | 71.04 |
| Edu Exp | 4430 | 2.706 | 1.099 | 0 | 4 | 160 | 2.836 | 1.163 | 0 | 4 | 4270 | 2.701 | 1.096 | 0 | 4 |
| Prompt Matric | 4530 | 0.608 | 0.488 | 0 | 1 | 160 | 0.615 | 0.488 | 0 | 1 | 4370 | 0.607 | 0.488 | 0 | 1 |
| Ed Attain | 4530 | 2.661 | 1.148 | 1 | 4 | 160 | 2.776 | 1.090 | 1 | 4 | 4370 | 2.657 | 1.150 | 1 | 4 |

Table 43: Descriptive Statistics, Hispanic Sample Members

| | Overall | | | | | Magnet | | | | | Comprehensive | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | n | Mean | SD | Min | Max | n | Mean | Std. Dev. | Min | Max | n | Mean | Std. Dev. | Min | Max |
| Magnet | 800 | 0.147 | 0.354 | 0 | 1 | 120 | 1 | 0 | 1 | 1 | 680 | 0 | 0 | 0 | 0 |
| Male | 800 | 0.471 | 0.499 | 0 | 1 | 120 | 0.513 | 0.502 | 0 | 1 | 680 | 0.464 | 0.499 | 0 | 1 |
| Urban | 800 | 0.377 | 0.485 | 0 | 1 | 120 | 0.752 | 0.434 | 0 | 1 | 680 | 0.312 | 0.464 | 0 | 1 |
| Assign by Race | 800 | 0.094 | 0.292 | 0 | 1 | 120 | 0.171 | 0.378 | 0 | 1 | 680 | 0.081 | 0.273 | 0 | 1 |
| SES | 800 | -0.537 | 0.749 | -2.23 | 1.56 | 120 | -0.842 | 0.670 | -2.23 | 1.03 | 680 | -0.485 | 0.749 | -2.23 | 1.56 |
| Reading Test | 800 | 47.713 | 8.885 | 32.16 | 70.55 | 120 | 45.601 | 8.549 | 32.56 | 70.55 | 680 | 48.077 | 8.897 | 32.16 | 70.55 |
| Math Test | 800 | 47.379 | 8.528 | 34.24 | 77.20 | 120 | 46.762 | 8.073 | 34.73 | 70.69 | 680 | 47.486 | 8.605 | 34.24 | 77.20 |
| Other HS | 800 | 0.391 | 0.488 | 0 | 1 | 120 | 0.453 | 0.500 | 0 | 1 | 680 | 0.380 | 0.486 | 0 | 1 |
| College Prep HS | 800 | 0.230 | 0.421 | 0 | 1 | 120 | 0.179 | 0.385 | 0 | 1 | 680 | 0.239 | 0.427 | 0 | 1 |
| Voc HS | 800 | 0.232 | 0.423 | 0 | 1 | 120 | 0.274 | 0.448 | 0 | 1 | 680 | 0.225 | 0.418 | 0 | 1 |
| General HS | 800 | 0.099 | 0.299 | 0 | 1 | 120 | 0.060 | 0.238 | 0 | 1 | 680 | 0.106 | 0.308 | 0 | 1 |
| Special HS | 800 | 0.048 | 0.213 | 0 | 1 | 120 | 0.034 | 0.182 | 0 | 1 | 680 | 0.050 | 0.218 | 0 | 1 |
| Talk about School | 800 | 0.653 | 0.476 | 0 | 1 | 120 | 0.590 | 0.494 | 0 | 1 | 680 | 0.664 | 0.473 | 0 | 1 |
| Talk HS Plans | 800 | 0.503 | 0.500 | 0 | 1 | 120 | 0.496 | 0.502 | 0 | 1 | 680 | 0.504 | 0.500 | 0 | 1 |
| Talk After HS | 800 | 0.447 | 0.498 | 0 | 1 | 120 | 0.376 | 0.486 | 0 | 1 | 680 | 0.459 | 0.499 | 0 | 1 |
| Other Language | 790 | 0.478 | 0.500 | 0 | 1 | 120 | 0.709 | 0.456 | 0 | 1 | 670 | 0.438 | 0.497 | 0 | 1 |
| P Spoken Eng | 760 | 4.215 | 1.213 | 1 | 5 | 110 | 3.532 | 1.431 | 1 | 5 | 650 | 4.330 | 1.134 | 1 | 5 |
| P Speaks Eng | 750 | 4.013 | 1.365 | 1 | 5 | 110 | 3.290 | 1.530 | 1 | 5 | 640 | 4.134 | 1.299 | 1 | 5 |
| P Reads Eng | 750 | 4.004 | 1.414 | 1 | 5 | 110 | 3.168 | 1.622 | 1 | 5 | 640 | 4.143 | 1.327 | 1 | 5 |
| P Writes Eng | 750 | 3.891 | 1.495 | 1 | 5 | 110 | 3.056 | 1.645 | 1 | 5 | 640 | 4.031 | 1.422 | 1 | 5 |
| P Eng Ability | 800 | 16.131 | 5.160 | 4 | 20 | 120 | 13.242 | 5.778 | 4 | 20 | 680 | 16.629 | 4.880 | 4 | 20 |
| P Exp HS or < | 800 | 0.137 | 0.344 | 0 | 1 | 120 | 0.154 | 0.362 | 0 | 1 | 680 | 0.134 | 0.341 | 0 | 1 |
| P Exp 2 Yr | 800 | 0.320 | 0.467 | 0 | 1 | 120 | 0.350 | 0.479 | 0 | 1 | 680 | 0.315 | 0.465 | 0 | 1 |
| P Exp Bach | 800 | 0.543 | 0.498 | 0 | 1 | 120 | 0.496 | 0.502 | 0 | 1 | 680 | 0.551 | 0.498 | 0 | 1 |
| P Ed HS or < | 800 | 0.477 | 0.500 | 0 | 1 | 120 | 0.590 | 0.494 | 0 | 1 | 680 | 0.458 | 0.499 | 0 | 1 |
| P Ed Some PSE | 800 | 0.388 | 0.488 | 0 | 1 | 120 | 0.325 | 0.470 | 0 | 1 | 680 | 0.399 | 0.490 | 0 | 1 |
| P Ed Bach + | 800 | 0.134 | 0.341 | 0 | 1 | 120 | 0.085 | 0.281 | 0 | 1 | 680 | 0.143 | 0.350 | 0 | 1 |
| Majority Minority | 800 | 0.450 | 0.498 | 0 | 1 | 120 | 0.709 | 0.456 | 0 | 1 | 680 | 0.405 | 0.491 | 0 | 1 |
| Propensity Score | 800 | 0.147 | 0.154 | 0.01 | 0.71 | 120 | 0.310 | 0.192 | 0.02 | 0.71 | 680 | 0.119 | 0.128 | 0.01 | 0.70 |
| Block | 800 | 1.827 | 1.072 | 1 | 5 | 120 | 2.880 | 1.219 | 1 | 5 | 680 | 1.645 | 0.932 | 1 | 5 |
| ATE Weight | 800 | 1.989 | 3.782 | 1.01 | 48.04 | 120 | 6.732 | 8.427 | 1.40 | 48.04 | 680 | 1.172 | 0.266 | 1.01 | 3.34 |
| ATT Weight | 800 | 0.293 | 0.383 | 0.01 | 2.34 | 120 | 1.000 | 0.000 | 1.00 | 1.00 | 680 | 0.172 | 0.266 | 0.01 | 2.34 |
| Test Score | 610 | 48.194 | 8.777 | 30.34 | 68.57 | 90 | 46.862 | 9.494 | 31.19 | 68.54 | 520 | 48.425 | 8.635 | 30.34 | 68.57 |
| Edu Exp | 770 | 2.684 | 1.128 | 0 | 4 | 110 | 2.478 | 1.203 | 0 | 4 | 660 | 2.719 | 1.112 | 0 | 4 |
| Prompt Matric | 800 | 0.499 | 0.500 | 0 | 1 | 120 | 0.453 | 0.500 | 0 | 1 | 680 | 0.507 | 0.500 | 0 | 1 |
| Ed Attain | 800 | 2.349 | 1.028 | 1 | 4 | 120 | 2.205 | 1.063 | 1 | 4 | 680 | 2.374 | 1.021 | 1 | 4 |

CURRICULUM VITAE

**Maureen E. Pylman**

EDUCATION

PhD University of Wisconsin–Milwaukee, Sociology (2016)
Dissertation: "Did Magnet Schools Improve Student Educational Outcomes as Tools of Desegregation?"

MA University of Wisconsin–Milwaukee, Sociology (2009)
Thesis: "The Influence of Friends on Changes in Educational Expectations between Eighth and Twelfth Grade."

BA University of Miami, Coral Gables, FL, Sociology (2001)
With Honors, Minors in Architecture and Anthropology

UNIVERSITY TEACHING EXPERIENCE

*Instructor*
Sociology 104: Social Psychology, UWM (Spring 2013–Summer 2015)

*Graduate Teaching Assistant*
Sociology 101: Introduction to Sociology
with Kent Redding, UWM (Fall 2007, Spring 2008)

Sociology 361: Research Methods in Sociology
with Marcus Britton, UWM (Spring 2009)
with Tom Moore, UWM (Fall 2008)

Sociology/Urban Studies 982: Advanced Quantitative Analysis
with Nancy Mathiowetz, UWM (Fall 2012)

PROFESSIONAL EXPERIENCE

**Assistant Director of Research and Planning**, Truman College, Chicago, IL (2015– present)

**Lawton Scholar Student Support Advocate**, University of Wisconsin–Milwaukee, WI (2013–2014)

**Research Assistant**, University of Wisconsin–Milwaukee, WI (2011–2012)

**Institutional Research Analyst**, Argosy University, Chicago, IL (2010–2011)

**Assistant QC Team Supervisor**, United States Census Bureau, Chicago, IL (2009–2010)

**Research Assistant**, University of Wisconsin–Milwaukee, WI (2009–2009)

**Institutional Research Intern**, Department of Institutional Effectiveness, Planning, and Research, College of Lake County, Grayslake, IL (Summer 2008)

**Psychology Teacher**, Lancaster High School, Lancaster, CA (2004–2007)

CONFERENCE PRESENTATIONS

Baez, Diego, Sarah Ladino, Derek Lazarski, and Maureen Pylman. 2016. "Mobilizing Cross-Curricular Connections: A Study of Written Communication." Presented at the Illinois Assessment Fair, February 26, Harper College, Palatine, IL.

Goldsmith, Pat Rubio, William Velez, and Maureen Pylman. 2015. "On the Intergenerational Transmission of Neighborhood Racial Context from Youth to Adulthood." Presented at the American Sociological Association Annual Meeting, August, Chicago, IL.

Pylman, Maureen. 2014. "Postsecondary Trajectories: With a Little Help from My Friends." Presented at the Midwest Sociological Society Annual Conference, April 3, Omaha, NE.

Pylman, Maureen and Jeffrey Smith. 2013. "Framing Success: Using Survey, Feedback, Data, and Interventions." Presented at the Association for Institutional Research Annual Forum, May 21, Long Beach, CA.

Smith, Jeffrey and Maureen Pylman. 2013. "What To Expect When You're (Not) Expecting . . . To Do Well in College." Presented at the Association for Institutional Research Annual Forum, May 21, Long Beach, CA.

Goldsmith, Pat, William Velez, and Maureen Pylman. 2012. "Discrete Choice Analysis of the Intergenerational Transmission of Neighborhood Racial Composition." Presented at the American Sociological Association Annual Meeting, August 21, Denver, CO.

Goldsmith, Pat, William Velez, and Maureen Pylman. 2012. "Everything Old is New Again: Intergenerational Transmission of Neighborhood Racial Composition," presented at the Midwest Sociological Society Annual Conference, April 1, Minneapolis, MN.

Santos-George, Arlene, Rhonda Winn, and Maureen Pylman. 2008. "Foundations of Excellence Survey Data: Going Beyond the Delivered Reports," Illinois Association for Institutional Research Annual Forum, November 7, St. Charles, IL.

PROFESSIONAL DEVELOPMENT

Statistics I, SAS Institute, Chicago, IL April 2016
Using Social Media in the Classroom, American Sociological Association Pre-Conference Workshop, August 2015
Data Scientist Series, MOOC from Johns Hopkins University, April–May 2015

Conflict Management Training, program developed at Marquette University, April–May 2015
Finding Funding/Grant Preparation Workshop Series, University of Wisconsin–Milwaukee, February 2015
Questionnaire Design, MOOC from University of Michigan via Coursera, October–November 2014
SAS Data Visualization Workshop, SAS Day, University of Wisconsin–Milwaukee, October 2014
"Civility in the Classroom," Teaching and Learning Section of the American Sociological Association Pre-Conference Workshop, August 2014
Active Learning Strategies, Center for Instruction and Professional Development, University of Wisconsin–Milwaukee, June and July 2014
$tart $mart Facilitator Training, American Association of University Women, April 2014
Dedoose Training Workshop, Center for Addiction and Behavioral Health Research, University of Wisconsin–Milwaukee, June 2013
"The First Days of Class," Center for Instruction and Professional Development, University of Wisconsin–Milwaukee, October 2012
Introduction to Stata Programming, Net Course 151, Stata Corporation, July 2012
UCInet, University of Wisconsin–Milwaukee, June 2008

MEMBERSHIPS

Midwest Sociological Society, 2011–2015
American Association of University Women, Milwaukee Branch, 2011–present
Association for Institutional Research, 2010–present
Illinois Association for Institutional Research, 2008–2009, 2010–2012, 2014–2015
Alpha Kappa Delta, University of Wisconsin–Milwaukee, inducted 2008
American Sociological Association, 2000–present

COMMITTEES AND SERVICE WORK

State Convention Planning Committee, AAUW-WI, 2014–2015
Forum Advisory Council, Association for Institutional Research, 2014–2015
Wisconsin Undergraduate Research Symposium Judge, 2014 and 2015
College Relations Committee, AAUW Milwaukee Branch, 2013–2015
Local Arrangements Committee for the 2013 Annual Forum, Association for Institutional Research, 2012–2013
Treasurer, American Association of University Women, Milwaukee Branch, 2012–2014
Forum Proposal Reviewer, Association for Institutional Research, 2011–2015
University Relations Committee, University of Wisconsin–Milwaukee, 2007–2009
Small Learning Communities Grant Development Team, Lancaster High School, 2005–2006

AWARDS

University of Wisconsin–Milwaukee Graduate School Travel Grant, 2014
Midwest Sociological Society Travel Award, 2012 and 2014
Chancellor's Graduate Student Scholarship, 2011–2012