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**WHAT CHANGED? AN ANALYSIS OF THE 2004 IDEA AMENDMENTS AND  
THEIR IMPACT ON MINORITY DISPROPORTIONALITY IN SPECIAL EDUCATION**

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## ABSTRACT

For the past five decades, education researchers have examined the disproportionate representation of minority students in special education. To address this issue, legislators added amendments to the Individuals with Disabilities Education Act (IDEA) that require schools to monitor and intervene in instances of minority overrepresentation. This study examines research in the twenty years leading up to the 2004 amendments. Using a specific set of coding criteria, nine studies were identified as a cross section of quantitative research that informed the 2004 amendments. This best evidence synthesis showed that the research examined missed several components, such as the inclusion of achievement data and rigorous quantitative analysis methods. Using these weaknesses, this study examines National Assessment of Educational Progress (NAEP) data from 2003, 2005 and 2007 to study the effects of the 2004 amendments. Using two logistic regression models—one that includes only race and one that includes achievement and socioeconomic variables—the study produces odds ratios for the likelihood of having an Individual Education Plan (IEP) as a measure of placement into special education. The study specifically examines to see if southern states with longstanding histories of segregation and racial discrimination differed from national data and the data of one mid-Atlantic state. The results of the models show that when possible confounds were added to Model 2 for all data sets, minority students were significantly less likely to have an IEP than white children of similar backgrounds. Although the odds ratios declined between 2003 and 2007 for minority students descriptively, which suggests that the IDEA amendments reduced the number of minority children in special education, legislators need to take a comprehensive view of the disproportionality issue and shift focus on preventing underrepresentation of students in need to additional support.

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## **Chapter 1**

### **Introduction**

Researchers have acknowledged a skewed proportion of minority students in special education since Lloyd Dunn's 1968 report "Special Education for the Mildly Retarded: Is Much of it Justifiable?" Consistently, minority students are identified and enrolled in special education at higher rates than White children (Artiles & Trent, 1994). In 2004, revisions to the Individuals with Disabilities Education Act (IDEA) addressed this disproportionality federally. These revisions, which were enacted in 2005 and later finalized in 2006, included requirements for all schools across the nation to include measures to identify and monitor minority disproportionality in their special education programs. Under 20 U.S. Code § 1418, a Local Education Agency (LEA) must allocate funds to a school with significant disproportionality to implement early intervention programs and later report on the changes of the special education population (Individuals with Disabilities Education Act of 2004, 2004).

This study attempts to measure the effects of these amendments using regression models to analyze changes in National Achievement of Educational Progress (NAEP) data from 2003 to 2005 and again from 2005 to 2007. Using several socioeconomic variables, this study uses odds ratios to understand disproportionality and

descriptively, its effects of the 2004 amendments on disproportionality in special education. In addition to examining the issue from a national level, the study compares 4 different states (Alabama, Texas, Pennsylvania and Mississippi) to highlight regional differences and how states vary from national data.

The second chapter provides a literature review of disproportionality in special education before the IDEA 2004 revisions. In addition to general information about overrepresentation in special education, this chapter is in the form of a best-synthesis evidence using studies implementing quantitative methods to study racial disproportionality from 1984 to 2004. The best-evidence synthesis identifies several key components missing from the research that informed the 2004 revisions, including controls such as academic achievement and strong quantitative methods. This study uses these weaknesses to build the modeling and analysis structure to analyze special education rates from 2003 to 2007.

In addition, after using the coding method outlined in the meta-analysis, only one study incorporates geographic location into the analysis. Because overrepresentation is often stated in previous literature as a form of racial discrimination and de-facto segregation, southern states—which are often thought to be most influenced by school segregation policies—are included in the analysis to examine this variable that has not been studied in depth in previous research.

Chapter 3 explains the methodology of the study. This chapter explains the rationale for choosing NAEP data and the specific variables within the set, as well as the years and grades chosen. The controls chosen for the second model include gender, free and reduced lunch status, English-language learner status and math achievement. It also

explains the chosen models, two logistic regression models, to show the probability of those with certain characteristics having an Individualized Education Program (IEP). Specifically, three southern states and one mid-Atlantic state were chosen to be analyzed to examine the possible effects of historical de facto and de jure segregation on racial disproportionality in special education.

Chapter 4 examines the results of this study. In Model 1, the odds ratios for special education placement for minority children decreased from 2003 to 2007 for the national sample on a descriptive level. For the state samples, the minority odds ratios also decreased or stayed relatively the same. From this measure, the 2004 IDEA amendments may have been successful in reducing overrepresentation of minority students in special education. In Model 2, the odds ratios for special education placement also decline from 2003 to 2007. However, in the second model with controls, minorities appear to be drastically underrepresented in special education when compared to their white counterparts. This shift suggests that the efforts to reduce overrepresentation led to minority children actually being underrepresented in special education when compared to white children of a similar status. Similarly, although southern states appear to have higher rates of minority children in special education in Model 1, minorities are also underrepresented when controls are applied. This shows that even in states where segregation and racial discrimination were often widely accepted, minority children were still less likely than similar White children to be receiving special education services.

Chapter 5 explores the implications of these results and their broader relation to special education policy. This study affirms the findings of other researchers, such as Morgan and Farkas, who consistently found that minority children are

underrepresented in special education when statistically controlling for likely confounds. With the replication of these results in this study and a closer look at regional results, future researchers and policymakers need to look at disproportionality in special education as both an issue of overrepresentation and underrepresentation. If future policy continues to move in the direction of attempting to prevent minority overrepresentation, students with need for additional support could be overlooked and miss critical academic support.

## **Chapter 2**

### **Literature Review**

Since the late 1960s, researchers and administrators have reported on the disproportionality of minority students in special education. Disproportionality in this instance often means the number of minority and white children in special education when compared to the total population of minority and white students in the general school-aged population. Disproportionality can also be compared to the population with controls for individual achievement and behavior. (National Research Council, 2002). Thus, research looks at a multitude of factors, including socioeconomic status and achievement, in attempt to understand the disproportionality at hand.

#### **Possible Causes of Disproportionality**

Researchers generally suggest three different factors that likely contribute to racial disparities in special education. According to the 2002 report from the National Research Council, these three areas are not mutually exclusive and can interact. One of the suggestions for possible explanation is that by the time children reach school age, children of different races and ethnicities already differ in cognitive and behavioral characteristics. Another possible suggestion is that schools may independently influence academic behavior of students. Finally, standards and the implementation of assessments, teaching methods, and policy may be biased, which would affect the placement of minority students (National Research Council, 2002).

## **Biological Causes**

One of the proposed causes through research are cognitive and developmental differences between children of different races. Some researchers cite differences in biological and environmental factors as influences on this disproportionality problem. With minority children, particularly Black children at a higher risk of living in poverty, there are more likely to be exposed risk factors that can affect their cognitive and physical development (Vallas, 2009). Although there are dozens of possible environmental and biological influences on academic achievement, the 2002 National Report compiled several of the most prominent factors examined in relevant research. One possible contributing factor to the higher rate of disability identification in special education is the occurrence of low birth-weights amongst minority populations. Low birth weight in children can lead to lower IQs, cerebral palsy, and less emotional maturity and competence. Black mothers are twice as likely to have a child that is underweight than White mothers (National Research Council, 2002). Researchers suggest that women of color may have children with lower birth weights because of socioeconomic issues, such as lack of proper medical care (Dubay et. al., 2002). As such, this may be a contributor to the disproportionality of minority students identified with a disability.

Other factors explored in research deals with exposure to a variety of harmful substances, such as tobacco, alcohol, and lead. Native Americans mothers are found to be the demographic most likely to smoke during pregnancy, which can hinder a child's development. At ages 5 to 6, those exposed to prenatal tobacco showed lower language scores and performance on memory tasks than children who were not exposed to tobacco (Fried et. al., 1992). Exposure to alcohol during pregnancy can also hinder cognitive

development; higher rates of heavy drinking during pregnancy are found more amongst Black and American Indian women than Hispanic, Asian or Pacific Islander women (National Research Council, 2002). According to Weinberg, prenatal alcohol exposure is cited as the most common, non-genetic cause of mental retardation in terms of IQ (1997). One of the possible reasons for this prenatal misuse of alcohol is that liquor stores are most concentrated within low-income, segregated minority communities (Greunwald et al., 2000). This high density of liquor sales, paired with cultural expectations and norms, could explain some of why minority children are most affected by developmental delays due to alcohol. With both tobacco and alcohol as agents of developmental delays, minority children may be at a risk for more delays and cognitive issues due to prenatal consumption.

Another environmental influence that may contribute to higher rates of minority referral and placement into special education is exposure to lead. Lead exposure can significantly obstruct a child's development and deteriorate various aspects of health. Children absorb lead at approximately 4 times the level of adults, which makes them more susceptible to its ill-effects. In a study examining the effects of lead found in the bloodstream on children's academic achievement, researchers found that per 1  $\mu\text{g}/\text{dL}$  increase of lead in a child's blood, reading, memory, and arithmetic skills proportionally decreased. Additionally, children with elevated levels of lead in their blood have been shown to have lower IQ scores and language skills, as well as be identified with more behavioral problems (Emory et al., 2003).

Lead exposure often affects minority children because of the lack of safe, affordable housing. With more minority children living in poverty than white children,

minority children are more likely to be exposed to these harmful environmental factors. Researchers have found that in the United States, about nine million low-income renters compete for about three million affordable and available renting units. The United States' longstanding history of housing discrimination and instances of decentralized racism, such as "white flight", towards minorities has also affected where minority families live (Newburger et. al., 2011). As a result, minorities in the United States are more likely to live in substandard housing than white individuals. According to a 2005 Housing Survey, 7.5 percent of non-Hispanic blacks were living in moderately substandard housing and 2.9% were living in severely substandard housing. On the other hand, 2.8% of non-Hispanic whites live in moderately substandard housing and 1.6% in extremely substandard housing—or blacks are twice as likely to live in substandard housing than whites (Leech et al, 2016).

Lead exposure shows how poverty and race intersect with cognitive and emotional childhood development. With minorities exposed to lead at higher rates due to socioeconomic factors like poverty and the housing crisis, disproportionality in special education may not exclusively be an issue of school-driven bias. In this line of thinking, these students may need additional services in school.

### **School and Teacher Related Influences**

Another possible set of explanatory factors for minority disproportionality in special education are school- and teacher-based influences. One contribution may be the population of teachers who teach minority students. As outlined in Vallas and the National Research Council's 2002 report, poor and minority students are more likely to

have teachers with less expertise and experience. According to a 2001 study from the Department of Education, fifteen percent of elementary school and twenty-one percent of high school teachers in high-poverty schools had taught for less than three years, as opposed to eight percent and nine percent of teachers in low-poverty districts. In a similar vein, a study in 1996 showed that Black students were nearly twice as likely to be assigned ineffective teachers when compared to their White counterparts (Sanders & Rivers, 1996). Thus, ineffective teachers may contribute to deficits in fundamental learning that could lead to higher rates of placement in special education.

The proportion of minority teachers in the United States has also been cited as possibly contributing to disproportionality. Since the 1990s, the percentage of minority teachers has been decreasing, while the number of minority students in American classrooms has been rising. In 1998, non-Hispanic Black students made up 17% of students in schools, but made up only 7.3% of the teacher population (National Research Council, 2001). This discrepancy can contribute to a mismatch between educators and students, which could foster biased attitudes and a lack of cultural understanding that could result in higher referrals and placements in special education.

The third set of explanatory factors of disproportionality deals with bias in assessments, which could affect the academic outcomes of students. Researchers have marked concerns with high-stake testing being used as a possible indicator of disability. High-stakes testing has roots in discriminatory IQ testing and eugenics, and could continue to carry bias even today (Au, 2014). Overall, communities of lower socioeconomic status and students of color are more likely to struggle with testing of higher stakes, adding pressure on these populations more significant than mostly-White

populations (Knoester & Au, 2017). Thus, testing may skew the referrals and placement into special education. In addition, federal legislation provides little guidance in the assessment, referral and placement processes for students identified as needing additional support in the classroom. As such, states and districts are often set their own “cut-offs,” which can cause a large variation and discrepancy in what constitutes a referral to special education. Thus, students only receive special education services if their disabilities are negatively affecting their school performance (Vallas, 2009).

Teacher bias is another variable that could play a role in disproportionality in special education. According to the National Research Council report, several researchers in the 1980s and 1990s used simulated situations to test bias in the classroom. Researchers, such as Irvine in 1990, found that teachers formed impressions of students’ academic abilities that were inaccurate, particularly in regard to Black males, in response to viewing photographs or profiles of children of different ethnicities. Additionally, students whose culture matches that of the school are more likely to possess an immediate advantage in that school’s setting over students whose identifying culture seems to clash. In many districts, these students typically benefiting from aligning with the schools’ culture are White students (National Research Council, 2002). History and societal expectations also play a role here. Recalling decades of stereotypes claiming that minority children are less intelligent than White students, teachers may—knowingly or not—underestimate students of color and elicit behavior that perpetuates these stereotypes (National Research Council, 2002). With historical discrimination as a part of United States culture, bias can present itself in the classroom and, in some cases, affect disability identification and special education placement.

Another factor highlighted the National Research Council Report is academic achievement. According to the report, unexpected academic achievement is the most central component in diagnosing a child with a learning disability (National Research Council, 2002). Thus, academic achievement is critical to identification and placement into special education. Additionally, a factor important to note is the achievement gap that exists between minority students and their White peers. According to 2004 and 2005 studies from Fryer and Levitt, there was a 0.66 gap in math scores and 0.40 in reading beginning in Kindergarten, favoring White students. This gap grew over time, based on their analysis of Early Childhood Longitudinal Study (ECLS) data. Subsequently, the achievement gap, especially when academic achievement is a core aspect of disability identification, should be accounted for when studying disproportionality.

One variable that is considered as a possible influence in disproportionality is history of de facto and de jure racial segregation. In 1954, the landmark case *Brown v Board of Education* established that “separate but equal” schools for black and white schools are unconstitutional. Although this officially marked the end of federal allowance of de jure school segregation, schools continued--and still continue today--to be segregated because of housing policies, as well as discriminatory school policies. According to Highsmith and Erickson, school districts, such as Flint, Michigan, have maintained segregated schools by implementing “exclusionary employment rules, racially biased school location, pupil transfer policies, discriminatory construction and real estate policies, and deliberately gerrymandered student attendance boundaries” (2015). With the elimination of bussing and desegregation policies in many areas,

researchers such as Reardon and Owens assert that rates school segregation was once again rising in 1990, particularly in southern states and metro areas (2014). As a result of these policies, minority children are placed into low-income schools at significantly higher rates than white students. According to the 2018 Annie E. Casey KIDS COUNT report, about three-fourths of all black and Latino students are in low-income schools. As such, minority children may not receive the necessary services to succeed.

Other researchers point to special education as a means of segregating minority students within a school. As early as Dunn's 1968 report, social scientists such as Mercer stated that black students were diagnosed at alarming rates as "Educable Mentally Handicapped" in order to segregate students from the general classroom (MacMillian et al, 1994). This line of thinking falls into discriminatory policies and faculty that incorrectly places students into special education.

This list is not exhaustive for the possible variables that contribute to disproportionality. Just as racial relations in the United States are influenced and dictated by history and an abundance of resulting socioeconomic factors, racial disproportionality in special education is influenced and caused by a complex series of variables. In this analysis, the articles examined explore some of these factors, but fail to account for others that could provide further insight into this phenomenon.

### **History of Individuals with Disabilities Education Act**

In the early 1970s, only 20% of children with disabilities in the United States were educated in public schools. Following the Civil Rights Movement, the number of

court cases pertaining to the rights of disabled students increased in frequency. By 1974, over 48 right-to-education cases were heard in 28 states. On November 29, 1975, Congress and President Gerald Ford took significant strides to provide education to those with special needs by signing the Education for All Handicapped Children Act of 1975 into law. EACHA combined a set of rights for children with disabilities and financial incentives to states who accepted the terms of the law (Yell, 2013). EACHA was reauthorized 1978, 1983 and 1986. The legislation was renamed the Individuals with Disabilities Act (IDEA) when the law was amended in 1990.

Individuals with Disabilities Education Act, or Public Law 94-142, ensures that all children with disabilities or special needs have access to “free appropriate public education.” According to Section 504 of the Rehabilitation Act of 1973 someone labeled as disabled is “any person who: (i) has a physical or mental impairment which substantially limits one or more major life activities, (ii) has a record of such an impairment, or (iii) is regarded as having such an impairment” (U.S. Department of Education, 2010). Just as children not identified as having a disability, IDEA protects disabled children’s rights to a free education that meets their individual potential. To accommodate for the “appropriate” aspect of “free appropriate public education” (FAPE), schools are required to meet the individual needs, place students in the least restrictive environment--which often means integration into general classroom settings-- and proper evaluation and placement procedures with due process (U.S. Department of Education, 2010).

In addition, IDEA act protects the rights children and families, provides financial assistance to states to aid in implementation, and assesses these efforts. (Rotatori,

Obiakor & Bakken, 2011). This financial assistance is granted through discretionary grants--which are granted to states, higher education institutions, and non-profit agencies to advance the status of special education through research, awareness and interventions--and formula grants, which are given to states for special education interventions (U.S. Department of Education, 2018). IDEA is the largest federal legislation regarding special education, and it guides the procedures and practices of all 50 states.

IDEA in 1997 addressed minority disproportionality in special education. Within the text of the law, Chapter 2 identifies that “Greater efforts are needed to prevent the intensification of problems connected with mislabeling and high dropout rates among minority children with disabilities.” Using statistics related to minority disability identification and drop-out rates for minority students, IDEA creates guidelines of how to receive funding for minority-driven initiatives, including the training of school professionals. IDEA 1997 also required states to collect data on minority students, including disability identification rates, the number of children receiving special education, number of graduates and performance of these minority students in special education (Individuals with Disabilities Education Act, 1997). The provisions are as such:

“(1) IN GENERAL- Each State that receives assistance under this part, and the Secretary of the Interior, shall provide for the collection and examination of data to determine if significant disproportionality based on race is occurring in the State with respect to -- (A) the identification of children as children with disabilities, including the identification of children as children with disabilities in accordance with a particular impairment described in section 602(3); and (B) the placement in particular educational settings of such children.

“(2) REVIEW AND REVISION OF POLICIES, PRACTICES, AND PROCEDURES- In the case of a determination of significant disproportionality with respect to the identification of children as children with disabilities, or the placement in particular educational settings of such children, in accordance with paragraph (1), the

State or the Secretary of the Interior, as the case may be, shall provide for the review and, if appropriate, revision of the policies, procedures, and practices used in such identification or placement to ensure that such policies, procedures, and practices comply with the requirements of this Act” (Individuals with Disabilities Education Act, 1997).

Unlike other provisions in IDEA with more specifics, IDEA 1997 states that students, including minority students, need to be placed in the least restrictive environment possible. Additionally, if disproportionality is identified, the State or Secretary of Interior could choose to enact change.

Though provisions in IDEA addressed disproportionality in IDEA 1997, they were generally considered inefficient. Due to the lack of effect from the 1997 amendments and the general nature of the provisions, the issue received greater emphasis for the 2004 reauthorization (Albrecht, 2012). In addition, the problem received more attention in the years before the 2004 reauthorization. One source that drew attention to the issue was the 2002 National Council Report on minority disproportionality in special and gifted education, which compiled extensive research on the issue and its socioeconomic context. In a May 2, 2002, statement to the House of Representatives, the chairman of the subcommittee on Education Reform, Michael Castle, directly specified that “identifying and eliminating the root causes of overidentification, especially among minority children” (Rethinking special education, 2002). In the same hearing, Katherine Beh Neas of the Consortium for Citizens with Disabilities Education Task Force stated, “IDEA should give increased attention to racial, ethnic, and linguistic diversity to prevent overrepresentation or under representation of minority children in special education. Some overrepresentation of minorities in special education may be due to the well-documented link between poverty and disability. However, overrepresentation of

minority students in some categories of disability significantly exceeds what would have been predicted by the impact of poverty” (Rethinking special education, 2002). The hearing on special education particularly highlighted bias and teacher inefficiencies as part of the disproportionality problem. Dr. Tynan of Disruptive Behavior Clinic at A.I DuPont Hospital stated, “In my own practice in the last year, I have seen three or four children, all African American, referred for ‘hyperactivity,’ and when I test them I find out they are gifted intellectually, a thought that never occurred to the teacher as this little boy was buzzing around the room. So identification is a problem, and good early screening and assessment are problems, and there are some biases still out there.” (Rethinking special education, 2002). This testimony, along with others from research and the education sphere, helped prompt a school-based approach, which emphasized bias as a large factor in disproportionality.

President George W. Bush reauthorized IDEA by signing the Individuals with Disabilities Education Improvement Act on December 3, 2004. The provisions of IDEA took effect on July 1, 2005 and was finalized regulations were published in August of 2006. Within these provisions, the disproportionality of minority students in special education in directly addressed. IDEA 2004 focuses on four main points to address and reduce disproportionality:

- Require states to have policies and procedures regarding disproportionality or misidentification
- Requires collection and examination of data regarding disproportionality
- Establishes requirements when reviewing policies and procedures
- Authorizes technical assistance, demonstration projects, dissemination of information and implementation of scientifically based research (IDEA Reauthorized Statue, 2005)

As with other sections of IDEA, Section 618(d) ensures that states create an infrastructure of policies and procedures to protect students from inappropriate disproportionate identification and placement in special education. This requirement encompasses the other goals of the 2004 amendments. One amendment requires Local Education Agencies (LEAs) to collect data on students in special education and identify disproportionality. IDEA requires disproportionality to be measured in terms of the identification of students with disabilities, the placement of children in educational settings, and disciplinary action. If from this data, disproportionality is detected, a formal review, and if necessary, revision of policies is required within the LEA to address the disproportionality. These revisions include the requirement to allocate the maximum amount of funds under 613(f) of IDEA to implement early intervention programs. 613(f) specifies:

A local educational agency may not use more than 15 percent of the amount such agency receives under this part for any fiscal year, less any amount reduced by the agency pursuant to subsection (a)(2)(C), if any, in combination with other amounts (which may include amounts other than education funds), to develop and implement coordinated, early intervening services, which may include interagency financing structures, for students in kindergarten through grade 12 (with a particular emphasis on students in kindergarten through grade 3) who have not been identified as needing special education or related services but who need additional academic and behavioral support to succeed in a general education environment

Finally, the revision to IDEA aim to provide professionals with the skills and support to ensure the best support of children with disabilities and proper identification and placement of students. It also aims to provide the infrastructure for education for school professionals on minority and English language learner disciplinary practices (IDEA Reauthorized Statue, 2005).

### **Coding Methods**

In order to examine research that informed the 2004 Individuals with Disabilities Education Act, I used a best evidence synthesis. A best-evidence synthesis identifies articles with both high external and internal validity that can inform scholarly debate. Because it uses articles selected using a predetermined criteria--either using previous narratives or conducting a preliminary search. For this best-evidence synthesis, the priori inclusion criteria used in the identification was based off of “Are Black Children Disproportionately Overrepresented in Special Education? A Best-Evidence Synthesis,” a 2017 study published in *Exceptional Children* (Morgan, Farkas, et. al, 2017). This study was selected as a guiding example for the criteria selected for this study, because it was a peer-review best evidence synthesis examining similar types of research on disproportionality.

A best-evidence synthesis was selected as the form of analysis because it attempts to examine several of high internal and external validity (Slavin 1986). In the case that not all the demonstrate high levels of internal and external validity, Slavin describes that a best evidence synthesis could cautiously examine the less well-designed as long as it was adequately unbiased. With less quantitative research existing during the time period selected for this analysis, some of the included studies in the analysis were selected with a more limited degree of internal and external validity when compared to other educational best synthesis analyses. This limit to validity stems mostly from the use

of descriptive statistics to make causal inferences, as well less sophisticated forms of statistical analysis than future studies. However, to counter any limitations in validity, this analysis attempts to address weaknesses in the research methods and the results presented.

Four databases were used in selecting articles for analysis: ERIC, Proquest, PsycInfo, and Web of Science. These databases were selected because they house a large collection of peer-reviewed social science and education research. Each of these databases also includes the option for advanced search, which helps with the inclusion of the criteria in the search process. In each of these databases, I searched the phrases “Disproportionality of minority students in special education” and “Overrepresentation of minority students in special education.” I chose to use the “overrepresentation” in one of the search phrases to mimic the language of IDEA 2004 and prior Congressional hearings. The results of these two searches in each of the selected databases was the primary pool of articles to implement the other criteria. In addition, the priori inclusion criteria were used to identify articles from Waitoller’s review, which analyzed research in disproportionality research from the 1960s through 2010 (2010).

For this coding, 7 criteria were used after using two particular searches-- “Disproportionality of minority students in special education: and “overrepresentation of minority students in special education”--in the four databases. Each of the criteria aims to seeks to identify studies that show if minority disproportionality in special education were significant, as well as hone in on the research that informed the 2004 IDEA revisions. Thus, the 7 criteria are as follows

- separates sample by race

- peer reviewed
- students are enrolled or identified as having special needs
- the study uses a regression or ANOVA model
- published between January 1, 1984 and December 31, 2004
- analyzes K-12 schools
- takes place within the United States.

Because the experience of different races varies in the United States, each study included in this synthesis needed to separate the studied sample into different racial groups. This not only helps with the identification of significant instances of disproportionality, but show the nuances of minority placement in special education. To study these racial groups, all studies selected used either regression models or ANOVA to determine the statistical significance of the disproportionality. Originally, only regressions were to be included in the analysis. However, after coding articles from all 4 databases, it was apparent that ANOVA was a common form of analysis for this area of research during the designated time period. Thus, to expand the number of articles included in the analysis, using ANOVA to determine the significance of disproportionality were included.

Because referral into special education does not ultimately guarantee placement or inclusion in special education services, this study does not include that only look at referral rates. Although referrals play a major role into the ultimate disproportionality issue, this analysis looks exclusively at those enrolled in services, which is often the scope in which disproportionality is most often expressed on the national scale. Similarly, other criteria were selected to mirror the influence of IDEA. All

of the included look at grades Kindergarten through 12th grade in the United States; this is the population affected most by IDEA. Each article was published between 1984 to 2004--the 20 years leading up to the 2004 IDEA revisions. This time period was selected to summarize the information available in the 2 decades leading up to the revisions, which likely informed and influenced the changes. Finally, to determine research with high standards and rigor, all articles are peer reviewed.

Using this coding method, 102 unique articles were coded from the search results of the four databases. Across the 4 databases, repeated articles existed. From this 102, 8 met the criteria outlined previously in the section. In addition, Waitoller's bibliography was used as an additional resource and the 64 citations were also coded. From this, 1 additional article not previously included was identified.

## **Results**

To understand the results of this analysis, this chapter centers around several research questions. First, what comprises these studies and what methods are used to study disproportionality? To answer this questions, I will be "taking inventory" of the types of data used, the year of publication, type of statistical analysis used, and types of disabilities studied. Additionally, this analysis will indicate which studies show measures of significant disproportionality. Secondly, how sound was the evidence from these studies, and did they properly inform the 2004 amendments to IDEA? As such, I examine weaknesses, such as the lack of studies that account for individual academic achievement,

the use of descriptive statistics to inform casual inferences, as well as the direction and implications that the studies suggest for policy and further research.

In the case of this analysis, all studies show some measures of disproportionality and interactions of special education placement or identification with race. However, different variables are measured and analyzed. Three articles from Coutinho and Oswald (2001, 2002, 2002) look at gender in conjunction with socioeconomic factors such as housing, poverty and per-pupil expenditure in relation to disability identification. In this case, not all minorities were noted as overrepresented. Female minority students, along with male Asian/Pacific Islanders were not over represented. The 1999 article from the same authors does not take gender into account, but analyses two types of disability as opposed to one as in the other studies. Hosp and Reschly (2004) also examine the interactions race and gender with economic, academic and demographic factors.

Two of the studies' focus mostly on behavioral data in conjunction with descriptive statistics. Artiles, Munoz and Abedi (1998) identify placement predictors for students with learning disabilities. Some of the behavioral variables include student self-esteem, locus on control and perception of social status. These factors, particularly perception of social status, student locus on control and perception of academic standing were significant for black and white students, but not for Latino students. Hosp and Reschly (2002) also measured factors related to behavior and student perception, but through the lens of predictors of restrictiveness. In this case, some of the factors, such as ratings of poor anger control, interacted with race for Black students. However, the overwhelming majority—5 of 100 comparisons--indicated that there was no interaction

with race and generally showed that white and black students with learning disabilities were treated the same.

The last two articles in this analysis look at structural and regional effects on disproportionality. Zhang and Katsiyannis (2002) analyzes the differences in disproportionality in different areas of the United States. Using descriptive statistics to show disproportionality as a national trend, the study investigates whether disproportionality and overrepresentation varies for Black and Hispanic students depending on region. In the analysis, which used poverty rates as a covariate, the authors find that when compared to the North East, students in the South and West were more likely to experience disproportionality. In Eitle (2002), the author argues that school and community factors, such as have a court order to desegregate, is significant in influencing the number of black students in mentally handicapped programs.

The nine studies included in the analysis implemented several types of statistical analyses, including several types of regressions and ANOVA. As described in the methods section, the original intention was to include only studies that used regression modeling, but after examining studies from this period of time, it became apparent that ANOVA was a common form of analysis and was included in the analysis.

One important characteristic to note within the research examined are the types of disabilities included in the study. Because identification and placement in services varies based on the type of disability, the types of disability examined—learning disability, emotional disturbance and mental retardation/intellectual disability—are outlined by study. Three of the studies, Zhang (2002), Hosp (2004), and Oswald (1999), examine multiple forms of disabilities and separate them as such.

Similar data were used across all of the studies. In this analysis, eight of the nine studies analyzed national data and seven of these eight studies used the national data in conjunction with another national dataset or district-based data. Six of the nine draw from the Common Core of Data, which the Department of Education's primary database on public education in the United States. The CCD uses data from over 100,000 schools and 49.8 million students. These six studies also use data from the Office of Civil Rights, which includes information about civil rights compliance in schools and districts across the nation ("Common Core Data (CCD)").

One study, Zhang and Katsiyannis (2002), used several sources of data that are not used by the other studies included in this analysis. This study combined data from *the 22nd Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act*, National Center for Education Statistics: Statistics and Poverty in the United States. This difference in data sets should be noted when analyzing the results of this study and how they differ from the other studies included. Artiles, Aguirre and Abedi (1998) also use national data, but they use the National Education Longitudinal Study database. This is the only Longitudinal data set used in this best synthesis analysis. Longitudinal data provides information drawn from the same individuals, which enables the documentation of stable patterns, as well as new trends (German National Academy, 2016).

Finally, one study, Hosp and Reschly (2002) only used district data from several districts in Delaware. Although the national datasets drew from district data, it should be noted that this data was drawn from a court case rather than information drawn from the Department of Education.

### **Lack of Achievement Data**

One of the most significant weaknesses of this pool of research is that only two articles, both written by Hosp and Reschly, account for academic achievement in their study by using percentages of students in each proficient in math and reading. Academic achievement is one of the most common and significant indicators of a need for special accommodations and special education placement (National Research Council, 2002). Thus, failing to account for academic achievement is a major flaw that could significantly alter the findings of other seven included in this analysis.

In their 2002 article, Hosp and Reschly take achievement into account and it shows that many factors of placement are not significant in interaction with race. While there were some variables that interacted with race and academic achievement, such as the discrepancy between instructional level and grade level in reading; similarly, the study shows that black students with larger discrepancies spend less time in the traditional classroom setting than white students. Several other factors, such as behavioral rating scale data about poor anger control and dependency, also show an interaction with race, However, other academic factors and behavioral issues show no significant interaction with race; only 5 out of the 100 variables analyzed showed significant interaction with race, which suggests that the differences between referral, identification and special education programming between white and black students are not due to bias.

Although this study is stronger in the sense that it accounts for academic achievement, there are several weaknesses that affect the validity of this research. One of

the key weaknesses to note is that this study only accounts for white and black students. As such, this information may not be applicable to other racial groups. In addition, the study was conducted from a sample of students from 4 school districts in Delaware that were part of a 1995 civil rights lawsuit, *Coalition to Save Our Children v. State Board of Education of Delaware*. Because the sample only consists of 230 students from Delaware and only studies those with a learning disability, this study only examines a small cross-section of the nation and replications would be necessary to test the generalizability of the findings.

Hosp and Reschly also take academic achievement into account in their 2004 article “Disproportionate Representation of Minority Students in Special Education: Academic, Demographic and Economic Predictors.” The authors included aggregate academic achievement scores. The academic predictor variable is percentage of students proficient in math and reading with white students used as the comparison group. Although academic predictors were differential amongst different types of disabilities, it contributed to prediction of eight to the twelve models included in the study. In Hosp and Reschly, academic predictors were the weakest of the three used—academic, demographic and economic. However, several factors, including that the academic information was aggregated, could contribute to this relative weakness, and analyses of aggregate-only data can give spurious estimates when compared to individual-level data (Robinson, 1950). Because the studies that did include academic achievement only used aggregate information, the data used could have lost critical details that were found in the individual-student based data.

Artiles, Aguirre-Munoz and Abedi also included academic achievement into their analysis of placement in learning disability programs. In this particular study, math achievement was assessed as a possible placement predictor and reading achievement was controlled. Reading achievement was used as a covariate in the analysis; however, math achievement was only a statistically significant predictor for Latino students in this analysis. However, achievement information is aggregated from the sample taken from the National Education Longitudinal Study.

One weaknesses of all of the articles included in this analysis is that all articles fail to account for individual student academic achievement. As highlighted in Hosp and Reschly, referral is a strong predictor of ultimate placement into special education services and academic differences are related to disproportionality (2002). To fully understand the discrepancies between special education placement, individual academic information would be beneficial. As highlighted earlier in this study, academic achievement is one of the largest factors in referral to special education, especially for learning disabilities. Additionally, special education eligibility is based on individual-based clinical need. Incorporating individual-level academic data would not only expand the understanding of academics' role in disproportionality, but also show how achievement interacts with other socioeconomic factors from student to student.

### **Use of Descriptive Statistics**

Another issue within this analysis is that some of the articles use descriptive statistics to support a general phenomenon of disproportionality in the special education.

In four of the nine articles, overall disproportionality of minority students was determined by basic percentages. Even in studies that later use ANOVA or regression models to determine the influence of sociodemographic and academic variables on identification and placement—which was a requirement for selection for this analysis—using basic descriptive characteristics is problematic because it claims overrepresentation of minority students without taking demographic factors into account or running statistical models that may control for alternative explanatory variables that could influence the disproportionality outside of the classroom.

In three studies by Oswald and Cutinho, percentages were used at the beginning of the results section to demonstrate disproportionality. For example, in their 2001 study, the authors claim that because the mental retardation identification rates ranged from 0.44% for Asian females and 3.15% for Black males, there is a clear disproportionality. This study also uses a chi-square analysis to create odds ratios of identification rates for different racial and gender groups. Although the study later uses logistic regression analysis to account for variables such as poverty and student-teacher ratio, descriptive statistics are the main form of showing disproportionality in the study based on each subgroup. Because these studies by Oswald and Cutinho use Pairwise Spearman Rank Correlations to show the influence of variables on special education identification, the variables included in the study are not built into a model that controls for other explanations to show disproportionality for each group. Even when models were used to account for the interactions of these variables, the results are not clearly expressed because they are plotted the rates on a graph rather than a traditional chart that

marks statistical significance. Thus, the descriptive statistics are the clearest indicators of group disproportionality in these two studies.

Another study that used descriptive statistics to try to support the claim of overrepresentation is Zhang and Katsiyannis' 2002 study. Before using ANOVA to determine the differences in disproportionality variation between regions of the United States, the authors support concerns regarding the percentage of black students in special education using only percentage differences between black students and white students. Although these ratios are true, they are elementary in nature and do not account for other explanatory factors that interact with race in the United States. By using only descriptive statistics to label minority placement in special education as problematic, developmental and socioeconomic factors, which may contribute to a legitimate need for special education services, are not accounted for within the study. Dealing with a complicated sociological phenomenon, the results describing overall measures of disproportionality for this study only scratch the surface about the phenomenon and make broad claims about policy implications.

### **Framing of Implications**

Although misidentification is largely negative and fails to meet the need of students, special education can be vital for student success when appropriate. In this analysis, the studies frame the implications for further research differently. While some highlight the importance of developmental discrepancies between children of different races and the need for increased research, others mark disproportionality as an inherently

harmful problem that needs to be corrected by reducing overrepresentation.

Acknowledging these differences are important to understanding the perception of disproportionality in research at this time and how these ideas may have affected policy changes surrounding the phenomenon.

Only one of the studies suggested measures to directly reduce overrepresentation. In Zhang and Katsiyannis (2002), the authors suggest changes that would result “in the general reduction of special education referrals.” However, the other eight studies acknowledge a need for overall special education referral and placement protocol. In Oswald and Coutinho (2001) and Coutinho and Oswald (2002), the authors mention a need for further research not covered in their study, including investigating under identification of white students, investigation of the identification process, and examination of age differences. By acknowledging research that needed to be focused on, the authors also acknowledged weaknesses within their own research.

Two of the studies included in the analysis suggested structural changes to special education protocol in general. Artiles, Munoz and Abedi (1998) do not mention race or ethnicity in any of the four suggestions presented. Rather, the focus was on training and preparation of families, encouragement of healthy work habits and teaching educators to be sensitive to students’ perspectives. Although this study differs from the majority of studies included in this analysis because it focuses on placement, these implications frame solutions as not simply reducing any perceived overrepresentation or more restrictive placement, but rather, strengthen the entire system. Eitle (2002) also gave suggestions relating to the special education system as a whole, but they centered district structuring, school desegregation and more objective forms of identification. Through

these suggestions, these authors imply that disproportionality is not caused exclusively by bias or discrimination, and the issue should be viewed as such.

The studies also indicated a need for different data set to use for analysis. Both Cutinho and Oswald (2002) and Oswald and Cutinho (1999) acknowledge the need for district, school and system information to analyze along with national data for additional information and support. Hosp and Reschly (2004) highlight the need for individual-level data, which was acknowledged previously in this analysis as one of the greatest deficits of this cross section of research. By extending research to more of the individual rather than focusing exclusively aggregate data, research is more well-rounded and displays a narrative that is not apparent in the nine selected for this analysis. By highlighting the need for different data, these studies help show that the findings from the studies selected are not definitive. It also shows that researchers believe that the issue is not exclusively driven by bias, which was a concern in the hearings prior to the 2004 authorization.

Finally, Hosp and Reschly (2002) suggest that more quantitative research should be conducted about disproportionality, which at the time, was mostly analyzed through qualitative methods. This lack of quantitative research before 2004 is apparent in this synthesis; after searching through hundreds of studies over four major databases, only nine studies met the criteria of a relatively strong statistical analysis of the issue. As such, mostly qualitative research informed the decisions of the 2004 revisions as a opposed to quantitative assessments of the issue.

Acknowledging the proposed implications and needs for action are critical to understanding both the direction of research, as well as the weaknesses of research

previously conducted, at the time of the IDEA revisions. Although most indicators in these studies believed that minorities were overrepresented in special education, eight out of the nine studies express the complexity of the issue—both in the way it is studied and the way policy should address it. Thus, even in the research itself, most of the authors included in this study recognize that attempts to simply reduce overrepresentation are not necessarily appropriate and a greater understanding of the phenomenon is necessary to provide the proper services and environment for all children.

Recognizing weaknesses and a call for more extensive research, the 2004 amendments required action that was not backed by empirical research. With provisions to allocate funds to reducing disproportionality, the IDEA amendments mandated more action than what this research suggested—likely due to the political opinion that bias is an underlying current of the disproportionality problem. Based on the results of the empirical research analyzed—including the weaknesses in methods--and the implications suggested by these articles, the 2004 revisions were not appropriate based off of the information prior to 2004 reauthorization.

### **Discussion**

This synthesis finds that although research between 1964 and 2004 showed measures of disproportionality amongst different racial groups, the research methods lacked elements that are important to understanding to the phenomenon of disproportionality in special education. First and foremost, the coding involved in this synthesis revealed that quantitative research in this area of research was lacking in the

period leading up to the 2004 IDEA revisions. With the criteria included for the coding—which in many ways was not rigorous in regards to accounting for other explanatory factors—the outcome of only nine studies meeting the requirements for the analysis shows and that diving further than descriptive statistics or qualitative accounts were scarce during this time period. This shows that although unadjusted ratios may show disproportionality in much of the research at the time did not account for other variables that could explain disparities in special education identification and placement and made inferences on how bias could affect disproportionality.

Along with a lack of sophisticated quantitative studies during the 20 years leading up the 2004 revisions, research that controlled for socioeconomic variables often did not include academic achievement in their research. In the studies that included measures of academic achievement, aggregate data was used. With academic issues as one of the most significant reasons for referral for special education services, the lack of studies including individual achievement data is a weakness of the research of the time. As shown in more recent publications, such as Morgan and Farkas (2017), controlling for individual academic achievement can have significant effects on the outcomes of studies of disproportionality.

Finally, nearly all of the research analyzed in this study provided recommendations and implications that suggested for a need for increased data and overarching reforms to special education. Although the IDEA reforms aim to gather more data on disproportionality in school districts, the requirements to reduce disproportionality in schools stray from the recommendations of the analyzed research leading up to the changes.

## Limitations

Like any analysis, there are several limitations of this synthesis. One of the major limitations is that four of the nine studies share the same primary authors: Oswald, Coutinho and Best. With having nearly half of the studies conducted by the same researchers, one can expect that the methods and outcomes would be similar to one another. As such, the descriptive statistics and general analysis of methods are skewed towards the methods of these authors and effects the overall analysis. However, this also reveals that most researchers analyzing disproportionality were not using either ANOVA or regression models to investigate the issue and that more statistically rich studies were published by only a handful of authors. Nonetheless, acknowledging the pool of empirical studies included in the analysis is important to understanding the applicability and validity of the results.

One another difficulty of this analysis is the variation of research methods within the nine studies analyzed. With both studies focusing on the identification of students with special needs and the restrictiveness of placements, there is differences in what the research is analyzing. In addition, the methods of analysis differ, which makes it difficult to compare the results. For example, Zhang and Katsiyannis (2002) analyze the differences in regional disproportionality while Coutinho and Oswald (2002) analyze the effect of gender in addition to other socioeconomic factors. Thus, this analysis may not be as strong as other best synthesis analyses that look at more similar research. In future research, the criteria for selection could be altered to create a pool of more similar research. In addition, this sample of size of this study is small. With only nine, the applicability of the study is not as strong as analyses with larger samples. This weakness

is primarily influence by the lack of research available during the selected time period, but it still affects the outcome of this study.

### **Implications**

Although this study analyzes research that influenced the past, it is critical to understand how and why decisions were made in regard to national education policy to understand the effects in schools today. This analysis shows that although disproportionality continues to occur, the research available to policy makers leading up to the IDEA amendments regarding the issue was flawed in several areas. The available evidence base did not provide strong evidence that over-representation was the result of systemic bias, which was also noted by the National Research Council (2002) expert panel.

As highlighted in the results in this analysis, eight out of the nine studies studied did not directly recommend measures that would directly reduce disproportionality. Rather, the research suggests a need for more broad sweeping reforms—such as increased parental involvement in special education—as well as acknowledgment that more research incorporating more forms of data and variables was needed to fully explain the issue. However, IDEA 2004 centers its amendments on requiring deliberate efforts to reduce disproportionality. As outlined in a guide to IDEA 2004, Local Education Agencies must work to implement “models of personnel preparation to ensure appropriate placements and services for all students, and to reduce disproportionality in eligibility, placement, and disciplinary actions for minority and limited English proficient

children and disseminating information on how to reduce inappropriate racial and ethnic disproportionalities identified under Section 618” (“Disproportionality and overidentification”). The 2004 IDEA amendments, rather than focus on better understanding the issue and implementing changes that improve identification and placement in a more comprehensive way, strayed from the suggestions of research.

Additionally, IDEA fails to succinctly express the definition of “significant disproportionality.” In the provisions, there is no marker of what constitutes a need for LEA intervention. According to the Council for Exceptional Children, significant disproportionality only applies to instances of overrepresentation and numerical findings. However, this cross-section of research demonstrates that disproportionality is not defined by a simple ratio, but rather a complex set of variables that contribute to the phenomenon. Described earlier in this analysis, the National Research Council report highlighted the extensive list of variables—from low birth weight to parental drug use—that could affect disproportionality. Thus, there is a need to account for these individual variables when studying the issue, including prior to inferring that significant disproportionality is resulting from systemic bias. Not only does the 2004 IDEA revisions run against the limited findings and proposed suggestions of research, but the criteria for disproportionality mirror the weaknesses of the analysis, which relies heavily on descriptive statistics to make broad claims. As such, the basis of these amendments and requirements for intervention are weak. The lack of not only research with strong quantitative methods to fully understand the issue, but also a definition of what is “significant disproportionality,” shows that the IDEA 2004 amendments regarding

minority disproportionality in special education had serious limitations, despite being well intentioned.

Over a decade later, more research has explored disproportionality in American schools using more advanced methods. In recent years, research has begun to fill the gaps identified in the literature published in the 20 years leading up to IDEA 2004, including the inclusion of individual-level academic achievement data and more rigorous regression models. The federal government also clarified more information about how to classify “significant disproportionality” and incorporate risk ratios into determining disproportionality with a publication addressing questions about IDEA Part B published in March 2017. These changes show that work in the area of disproportionality is expanding and moving towards a more comprehensive view.

However, as the United States moves towards a reauthorization of IDEA or expansion of federal legislation in education, legislators should look to the faults in the 2004 reauthorization to better serve students. Even as research continues to implement more sophisticated methods, it is critical for lawmakers to evaluate the validity and strength of research before allowing it to inform policy decisions that affect students. As this synthesis shows, the empirical research that was available around the time of IDEA 2004 lacked essential elements and sophistication needed to best explain a complex issue; however, legislation confidently moved forward with reforms. The results of this synthesis indicate that the 2004 amendments may not have been properly informed, and as such, the direction of policy regarding disproportionality should be reconsidered moving forward to best reflect what is known—and not known—about the phenomenon.

As this study shows, policymakers need to be critical of research that examines disproportionality and look for studies that account for the complex socioeconomic thread that are sewn into the problem. Without accounting for other explanations for the disparities, policymakers may be exacerbating racial disparities in disability identification, including by limiting access to specialized services by students of color with disabilities. As such, students of every race may not receive the most appropriate education for their needs. With reauthorization on the horizon, lawmakers and researchers should learn from the weaknesses of the past and work to inform the best possible changes to provide for all students (Kushnir, 2018).

## **Chapter 3**

### **Methods**

#### **Research Questions**

The following study aims to answer several questions regarding minority disproportionality in special education before, during and after the implementation of IDEA 2004 and the disproportionality-oriented amendments. First and foremost, did the 2004 amendments achieve the goal of reducing minority disproportionality in special education? To investigate this question, two models were used; one model exclusively looks at the relationship between race and students assigned Individual Education Plans, a main indicator of placement in special education services. The second model incorporates various socioeconomic variables, some of which were identified in the best synthesis analysis in Chapter 2, to understand how the relationship to race is affected when factors such as poverty, language and gender are examined as separate variables. This study looks for descriptive indication in the odds ratios that overrepresentation decreased from 2003 to 2007.

In addition, this study views disproportionality from a regional perspective, particularly looking at southern states and comparing the results to the national results and a northeastern state. With the southern region of the United States having faced high profile instances of historical racial segregation and discrimination, such as the Montgomery Bus Boycott and the Little Rock desegregation efforts in Arkansas, this study aims to examine the possible effects of racial bias while accounting for other potential explanatory variables, such as academic achievement. The study also aims to

choose large southern who still face issues regarding school segregation to understand possible effects on current legislation. This is to determine if historical and current social differences found in different areas of the United States contribute to disproportionality in the midst of IDEA 2004..

### **Sample**

For this study, the sample was derived from National Assessment of Educational Progress data (NAEP). NAEP is distributed to school districts across the United States to create a representative sample for both national and statewide achievement and is often described as “the nation’s report card” (Institute of Education Statistics, 2018). NAEP was chosen for this study, because of its large sample, repeated assessments, and student-level data. Because NAEP is distributed every two years, this dataset allows for examination before, during and after the implementation of IDEA 2004 revisions. NAEP also includes information on student details, which allows for the inclusion of socioeconomic variables in the analysis.

For the purpose of this study, the national sample and the samples of 4 states, Pennsylvania, Texas, Mississippi and Alabama, are examined. In order to understand disproportionality in relation to the related IDEA amendments, these 5 samples are examined in 2003, 2005 and 2007. The 2003 sample attempts to capture disproportionality before the passage of IDEA 2004. The 2005 sample was in the midst of IDEA implementation, but the disproportionality amendments were not finalized until 2006. Finally, 2007 is meant to capture the effects of the full implementation.

In addition to studying samples over several years to understand possible changes in disproportionality, this study includes 3 southern states (Alabama, Mississippi, and Texas), as well as one northeastern state (Pennsylvania). The southern states were chosen because of their prominent history of racial segregation and discrimination. Alabama and Mississippi are two southern eastern states that still feel the reverberations of de jure segregation in schools today. For example, Sumter County, Alabama’s first “integrated school” was opened in 2018, a public charter school in Livingston, Alabama that almost mirrors that racial split in the area (Farzan, 2018). Mississippi also has faced similar issues with school segregation, and settled with a U.S. federal court to desegregate the Cleveland School District in 2017 (McLaughlin, 2017).

Texas, another large southern state, has also historically faced conflict with school segregation, such as the Mansfield School Segregation Incident of 1955, in which an angry mob of white citizens attacked black students and law enforcement to oppose desegregation efforts (Hanna, 2016). Although Pennsylvania also experienced segregation and discrimination, this state was used because it falls in the Northeastern United States and can be used as a point of comparison along with the national samples.

### **Measures**

This model implements two logistic regression models to calculate odds ratios for the probability of having an individual learning plan (IEP), an indicator of special education placement. As described, the first model only includes race as an explanatory

variable. Five races are included in the models: Black, Hispanic, Asian, Native American and Other Race. These five classification are all compared to the White, which is the reference group in this study. Race is reported through both school-recorded race/ethnicity variable (SDRACE) and student self-reported race/ethnicity (DRACE). First, school-recorded race/ethnicity is used to report; if the school is missing data, the student reported data is used. Students fall into the “Other Race category” if student records list them as “other race”, students did not have school data and did not complete the self-identification section, or were missing school information and self-identified as mixed race and not Hispanic (National Center of Education Statistics, 2018).

The second adjusted model incorporates achievement and socioeconomic controls in addition to racial groups. The socioeconomic variables included are English Language Learner status, Gender (with females as the control group), Free and Reduced-Lunch status, and Math Achievement. These variables were chosen as research has shown that these sociodemographic and achievement factors can contribute to educational placement. Like the first model, the regression model calculates odds ratios for each of these groups.

### **Free and Reduced Lunch**

In this analysis, free and reduced lunch is incorporated into the second model as an indicator of socioeconomic status. The National School Lunch Program is a federal program run through the Department of Agriculture. There are several avenues for Free

and Reduced Lunch eligibility, with most of the criteria focusing on family income or eligibility in other federal programs. Families enrolled in programs such as the Supplemental Nutrition Assistance Program (SNAP) can be categorically eligible for Free or Reduced Lunch. Students may also be eligible if their family income at or below 130 percent of the poverty threshold for free lunch, or a reduced lunch not exceeding 40 cents if the family income falls between 130 and 185 percent of the federal poverty threshold (U.S. Department of Agriculture, 2017).

Although Free and Reduced Lunch is not a comprehensive measure of socioeconomic status as it is only based on family-income and federal thresholds, it is a measure of poverty that can be reported through the school.

## **Gender**

The second regression model includes gender as one of the variables in placement into special education. In this case, students identified as females are the control. I have chosen to include gender in this analysis because of previous research that shows gender disparity in special education. Repeated studies have shown that males are placed in special education at rates two to three times more often than females (Coutinho & Oswald, 2005). In 2003, The National Longitudinal Transition Study identified that 73% of those identified with Learning Disabilities were males (Harvey, 2003).

Although overrepresentation of males has been an issue, the underrepresentation of females is also a concern in special education. According to Coutinho and Oswald,

females in special education typically have more extensive disabilities and are placed later into special education services later than males in special education (Coutinho & Oswald, 2005). As such, gender—along with race—faces a similar situation of disproportionality in special education. Gender is included as a control to separate gender and racial disproportionality; in the first model, gender disproportionality could contribute to the odds ratios of each racial group, but gender is parsed out of race in the second model. This, along with the other controls included, allows for a more accurate estimate of the risk for special education service receipt attributable to race or ethnicity.

### **Math Achievement**

As outlined in the literature review of this study, academic achievement is a strong confound of the risk attributable to race or ethnicity. Students referred to special education are also more likely to struggle academically (Vanneman, et al, 2009). However, research has often overlooked academic achievement as outlined in this study's best evidence synthesis. As such, achievement is used as a control in this study. For this specific study, the 4th grade math assessment is used as the indicator of academic achievement. Since 1996, the NAEP math assessment allows for special accommodations, such as extra-time and individual test distribution, which allowed more students with special needs to participate (Institute of Education Statistics, 2018).

### **Analytical Method**

The data above was analyzed using two logistic regression models in SAS. The models were coded to predict the likelihood of having an Individual Education Plan (IEP) based on the academic and sociodemographic variables outlined previously in this section. The odds ratios were calculated for the 2003, 2005 and 2007 national data and selected state data sets using both Model 1, which only included race and produced unadjusted odds ratios, and Model 2, which included the other selected possible explanatory variables and produced adjusted odds ratios. As such, there are 30 sets of odds ratios included in this study. The odds ratios are considered significant with a p-level below .05.

The sample sizes reported in Appendix A were rounded to the nearest 10 to comply with regulations from the Institute of Education Statistics. For the analysis, the true sample size was used to calculate the odds ratios.

## Chapter 4

### Results

This chapter examines the results of the odds ratios generated from the two models used in this study. 5 different data sets were used in the two models—national data and then data from the states Alabama, Mississippi, Pennsylvania, and Texas. As such, there are 30 sets of odds ratios regarding placement into special education by race.

As discussed in the Methods chapter, the first model exclusively examines the distribution of Individual Education Plans by race without controls. In the national sample, black and American Indian students in particular appear to be overrepresented in special education. In 2003, which is the sample prior to the implementation of the IDEA 2004 amendments, Table 1 shows that the odds ratios for black and American Indian students are 1.048 and 1.358 respectively. With the implementation of IDEA, these odds ratios drop in 2005 and again in 2007. In Table 1, black students had an odds ratios of special education of 1.039 in 2005 and then 0.909 in 2007. Similarly, American Indian students had an odds ratio 1.292 in 2005 and then 1.269 in 2007. The other racial categories are not overrepresented in this sample, and the odds ratios are all slightly below those of white students. These odds ratios were all significant at the .05 p-level, with the exception of Hispanic students in 2003.

However, when controls were added to the model for national data, all racial groups—including Black and American Indian students—were dramatically

underrepresented. For example, the odds ratios for Black students in special education was 0.448 in 2003 in Table 3. This value rose slightly in 2005, but lowered in 2007 to .403 in 2007. Across all years studied, all racial groups are underrepresented when compared to white students of similar backgrounds. Each of these odds ratios are statistically significant at the .05 level. Only male students are significantly overrepresented each year of the second model; from 2003 to 2007, males were over two times more likely to be identified.

From the results of the second model using the national NAEP data, the odds ratios show that when socioeconomic controls are added to the regression, minority students are actually placed in special education at dramatically lower rates than white students. Nonetheless, the odds ratios for some Black, Asian and American Indian students from 2003 to 2007 continue to generally decline. With minority students possibly being overlooked for special education when other factors are considered, the 2004 IDEA amendments may have maintained and encouraged a culture of overlooking minority children for special education in fears of overrepresentation.

The individual states included in this study mirror the differences between Model 1 and Model 2 found in the national data which shows a dramatic drop in odds ratios when controls were added into the regression. However, the state data does not follow the gradual drop in odds ratios across both models from 2003 to 2007. For example, in both Pennsylvania, Alabama and Mississippi in Model 2, the odds ratios for black students dipped between 2003 and 2005, but increased again between 2005 and 2007; however, these two states still had lower odds ratios for black students in 2007 than in 2003. This suggests that IDEA 2004 had an impact on disproportionality, but not as steadily as on

the national scale. Texas, on the other hand, more closely mirrors the national trend of decline. This may be a result of a larger sample population.

One of the research questions of this study was the effect of geographic location on disproportionality—did traditionally racially segregated states in the southern portion of the United States differ from national trends of disproportionality? The results of this study are mixed. Three of the four states—Alabama, Texas, and Pennsylvania—had statistically significant higher odds ratios for Black, Asian, and American Indian students in Model 1 in 2003. Although Alabama and Texas are southern states, Pennsylvania is a mid-Atlantic state that had similar odds ratios demonstrating disproportionality. In fact, Pennsylvania’s 2003 odds ratios for Model 1 (just race) for Black, Asian and American Indian students in special education is higher than the three southern states included and the national sample. From these results, southern states are not inherently more likely to over represent minority students in special education and, following adjustments for controls, were consistently less likely to have identified minority students.

### **Limitations**

One of the biggest limitations of this study is the sample size that was available for the individual states in the NAEP data set. Particularly for Alabama, Mississippi and Pennsylvania, several races had samples under 100 students. As a result, these odds ratios are more likely to fluctuate and differ from the national data. The sample size should be taken into consideration when analyzing the results of this study and additional

replications are needed to support the results. Another weakness of the study is that NAEP is a cross-sectional sample, and is not longitudinal. As mentioned previously in the examination of previous studies, longitudinal data allows for the same subjects to be studied over time. For future research, using a longitudinal data set with the same analysis method would help support the findings of this study.

Another limitation of this study is the lack of differentiation between disabilities. In this study, the odds ratios examine the change of having a IEP based on the available NAEP data. This is a general indicator of special education services, and does not delve into the nuances of the different types of disabilities. For further research, examining referral rates based on types of disability, such as learning disability, behavioral disability and intellectual disability rates, would be helpful for a deeper understanding of disproportionality. Additionally, some possible explanatory variables were not included in the study. For example, other sociodemographic variables, such as family structure, and achievement variables, such as reading achievement, were not accounted for in this study.

## Chapter 5

### Discussion

This study examined the effect of the 2004 IDEA amendments that aimed to reduce the overrepresentation of minority students in special education program in using 2003, 2005 and 2007 NAEP data. Initially, the first model shows that nationally, minority students are overrepresented in special education, but the odds ratios decline from 2003 to 2007. This change implies that the policy reduced overrepresentation across the country. However, model 2 includes socioeconomic and achievement controls which significantly alter the results; in Model 2, minorities are actually underrepresented when compared to their white counterparts. However, national data shows that these odds ratios continued to drop between 2003 to 2007, which shows that minorities were gradually being placed less into special education during the amendment implementation, even though they were already underrepresented. The individual state data also shows underrepresentation in Model 2, and generally decreased between 2003 to 2007.

In addition to looking to odd ratio changes before, during and after the implementation, this study looks at southern states to analyze if there is a difference between the national odds ratios and the odds ratios of a Mid-Atlantic state. The results of the regression models show that Alabama and Texas generally had higher rates of IEPs for Black, Hispanic and American Indian students, Pennsylvania had odds ratios of similar rates of the southern states on a descriptive-statistic level. Additionally, Model 2

produces significantly lower odds ratios of minority students in southern states. For example, in Model 2 for 2005 and 2007, Alabama's odds ratios were .245 and .298 respectively for black students.

This study once again shows the overrepresentation of minority children in special education is evident but prior to accounting for alternative explanatory factors. However, the inclusion of socioeconomic controls, such as academic achievement and gender, indicate that minority children may be underrepresented in special education when compared to similar White students. Because of the federal attempts to reduce overrepresentation, odds ratios for minority children generally dropped between 2003 and 2007, even while underrepresented. This suggests that minority children with disabilities may not be receiving the necessary help and support that they need. Even in southern states where racial discrimination was often at the forefront, minority students are less likely to be receiving services than similar White students.

These findings support and replicated the previous findings of other researchers such as Morgan, Farkas, Hillemeier and Maczuga, which investigated disproportionality in early intervention and early special education, and found that minority children were underrepresented when factors such low birth weight, gender, and socioeconomic status were included in their analysis and controlled as possible confounds (2013). Morgan and Farkas continued to replicate these results using different controls and population groups such as the Early Childhood Longitudinal Study (ECLS-K) in their 2005 study and National Assessment of Educational Progress in 2017. Repeatedly, Morgan and Farkas have found that minorities are underrepresented in special education placement when possible confounds are controlled.

As such, replicated research has shown the importance of rigorous statistical methods, as well as the inclusion of academic achievement alongside other socioeconomic variables. When these research methods are implemented, results consistently show minority students are underrepresented in special education when compared to white students of similar backgrounds. With these replications in mind, policymakers need to consider the effect of using regression-based models when making critical decisions about the direction of policy regarding minority disproportionality.

This study also shows that southern states' disproportionality rates do not, at least descriptive, dramatically differ from national data and the data of the mid-Atlantic state included, Pennsylvania. Particularly for Black and Hispanic students, these findings do not prove that southern states, which historically enacted racially-discriminatory policies, face higher rates of disproportionality. However, because NAEP was the source of data for this study, the states have small sample sizes, which can limit the results. As such, additional research is needed with larger sample sizes to confirm these findings.

What this study shows is that the original approach to creating more equitable special education for all children may have been misguided. Although unadjusted ratios of minority children and white children shows the overrepresentation of minority children in special education, the inclusion of socioeconomic and academic measures into the regressions shows a dramatic shift where minority children are dramatically underrepresented when compared to white children with similar backgrounds.

As the literature review of this study shows, the research that informed the 2004 amendments examined in this study did not include measures like regression-based analysis and achievement data. With the inclusion of these measures, this study replicates

the findings of similar research, and indicates a need for a change in approach to racial disproportionality. As recently as March 2017, the Department of Education published information about IDEA Part B and recognized that disproportionality may result from the underrepresentation of specific minority groups. The Department of Education also encouraged states and Local Education Agencies (LEAs) to use multiple sources of information to inform decisions regarding disproportionality, including academic, school and environmental data. These clarifications, which were not originally in the 2004 amendments, are vast improvements that includes findings and suggestions from more recent research on the subject. However, further policy needs to address the consistent underrepresentation of minority groups in special education and view special education placement in a comprehensive way.

Moving forward, policy should focus on the underrepresentation of student of all-backgrounds. Because IDEA already requires that students be placed into the Least Restrictive Environment while supporting their needs, many students could benefit from additional support and an Individual Learning Plan that does not hinder their academic and personal growth. As this study shows, minority children are dramatically less likely to be assigned an IEP when compared to white children of a similar status. Future policy should mandate that schools use comprehensive methods to look for underrepresentation of any group of students, and begin interventions that adhere to the guidelines for Least Restrictive Environment previously outlined in IDEA.

This study, as well as the studies that it mirrors and serves as a replication of results, shows that controlling factors such as academic achievement, gender and ELL status, minority students were consistently underrepresented in special education before

and after the implementation of IDEA 2004. As such, future policy must use these methods to control possible confounds when examining school districts and frame policy to tackle general disproportionality, rather than exclusively minority overrepresentation. If federal policy continues to approach disproportionality as only an issue of overrepresentation using only descriptive statistics, groups of children may be overlooked for critical support.

## Appendix

### Tables

Table 1: Logistic Regression Odds Ratios, National Education Assessment of Progress, National 2003, 2005 and 2007 Data

	2003		2005		2007	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Black	<b>1.048</b>	<b>0.448</b>	<b>1.039</b>	<b>0.455</b>	<b>0.909</b>	<b>0.403</b>
Hispanic	0.997	<b>0.524</b>	<b>0.865</b>	<b>0.566</b>	<b>0.846</b>	<b>0.535</b>
Asian	<b>0.697</b>	<b>0.592</b>	<b>0.578</b>	<b>0.581</b>	<b>0.504</b>	<b>0.529</b>
American Indian	<b>1.358</b>	<b>0.808</b>	<b>1.292</b>	<b>0.827</b>	<b>1.269</b>	<b>0.78</b>
Other Race	<b>0.917</b>	<b>0.818</b>	<b>0.885</b>	<b>0.803</b>	<b>0.863</b>	<b>0.805</b>
Math Achievement		<b>0.389</b>		<b>0.392</b>		<b>0.397</b>
Gender		<b>2.363</b>		<b>2.3</b>		<b>2.278</b>
Free and Reduced Lunch		<b>0.95</b>		<b>0.944</b>		<b>0.957</b>
English Language Learners		1.033		<b>0.44</b>		<b>0.048</b>

\*bold indicates significant at 0.05 p-level

□

Table 2: National Education Assessment of Progress Sample Sizes, National Data

	<b>2003</b>	<b>2005</b>	<b>2007</b>
White	88700	78430	90920
Black	26200	21960	25120
Hispanic	43380	42040	50330
Asian	7200	6760	8100
American Indian	5830	5270	6980
Other Race	8530	8250	9330

Table 3: Logistic Regression Odds Ratios, National Education Assessment of Progress, Alabama 2003, 2005 and 2007 Data

	2003		2005		2007	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Black	<b>1.26</b>	<b>0.398</b>	<b>0.734</b>	<b>0.245</b>	<b>1.091</b>	<b>0.298</b>
Hispanic	<b>2.047</b>	<b>0.559</b>	<b>1.868</b>	<b>0.7</b>	<b>1.616</b>	<b>0.463</b>
Asian	<b>0.533</b>	<b>0.126</b>	<b>1.484</b>	0.833	1.268	0.521
American Indian	<b>1.908</b>	0.946	<b>1.781</b>	0.875	<b>2.08</b>	<b>1.449</b>
Other Race	<b>0.635</b>	<b>0.682</b>	0.865	<b>0.737</b>	<b>1.44</b>	0.996
Math Achievement		<b>0.236</b>		<b>0.25</b>		<b>0.245</b>
Gender		<b>2.358</b>		<b>1.677</b>		<b>2.759</b>
Free and Reduced Lunch		0.963		0.967		<b>1.28</b>
English Language Learners		<b>6.9</b>		0.116		<b>0.429</b>

\*bold indicates significant at 0.05 p-level

Table 4: Alabama National Education Assessment of Progress Sample Sizes, 2003, 2005 and 2007 Data

	<b>2003</b>	<b>2005</b>	<b>2007</b>
White	1740	1180	1660
Black	990	800	1070
Hispanic	490	360	450
Asian	30	20	40
American Indian	110	70	80
Other Race	180	120	150

□

Table 5: Logistic Regression Odds Ratios, National Education Assessment of Progress, Mississippi 2003, 2005 and 2007 Data

	2003		2005		2007	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Black	<b>0.818</b>	<b>0.525</b>	<b>0.764</b>	<b>0.344</b>	<b>0.879</b>	<b>0.535</b>
Hispanic	<b>1.334</b>	<b>0.792</b>	0.907	<b>0.37</b>	0.801	<b>0.492</b>
Asian	0.919	<b>0.497</b>	<b>0.534</b>	<b>0.507</b>	<b>1.755</b>	1.343
American Indian	1.07	0.708	<b>1.332</b>	0.763	1.179	0.852
Other Race	<b>0.568</b>	<b>0.532</b>	<b>0.338</b>	<b>0.345</b>	0.946	1.052
Math Achievement		<b>0.644</b>		<b>0.388</b>		<b>0.563</b>
Gender		<b>2.525</b>		<b>2.366</b>		<b>2.347</b>
Free and Reduced Lunch		<b>1.141</b>		0.996		<b>1.064</b>
English Language Learners		<b>17.272</b>		<b>2.258</b>		<b>0</b>

\*bold indicates significant at 0.05 p-level

Table 6: Mississippi National Education Assessment of Progress Sample Sizes, 2003, 2005 and 2007 Data

	<b>2003</b>	<b>2005</b>	<b>2007</b>
White	1080	1040	1270
Black	1400	1100	1400
Hispanic	420	420	460
Asian	40	40	30
American Indian	70	60	80
Other Race	100	90	90

Table 7: Logistic Regression Odds Ratios, National Education Assessment of Progress, Pennsylvania 2003, 2005 and 2007 Data

	2003		2005		2007	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Black	<b>1.391</b>	<b>0.418</b>	<b>1.124</b>	<b>0.372</b>	0.942	<b>0.409</b>
Hispanic	<b>1.761</b>	<b>0.722</b>	<b>0.909</b>	<b>0.461</b>	<b>0.874</b>	<b>0.573</b>
Asian	<b>1.231</b>	1.31	1.096	0.979	<b>0.41</b>	<b>0.331</b>
American Indian	<b>2.096</b>	1.015	<b>2.305</b>	0.963	1.06	<b>0.903</b>
Other Race	0.889	<b>0.801</b>	1.021	0.937	0.999	<b>1.167</b>
Math Achievement		<b>0.276</b>		<b>0.266</b>		<b>0.352</b>
Gender		<b>2.303</b>		<b>2.212</b>		<b>2.15</b>
Free and Reduced Lunch		<b>0.669</b>		<b>0.583</b>		<b>0.769</b>
English Language Learners		<b>3.24</b>		<b>0.359</b>		<b>0.224</b>

\*bold indicates significant at 0.05 p-level

Table 8: Pennsylvania National Education Assessment of Progress Sample Sizes 2003, 2005 and 2007 Data

	<b>2003</b>	<b>2005</b>	<b>2007</b>
White	2130	2090	2200
Black	450	450	400
Hispanic	590	660	620
Asian	70	70	90
American Indian	50	60	60
Other Race	160	120	160

Table 9: Logistic Regression Odds Ratios, National Education Assessment of Progress, Texas 2003, 2005 and 2007 Data

	2003		2005		2007	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Black	<b>1.353</b>	<b>0.89</b>	<b>0.97</b>	<b>0.432</b>	0.761	<b>0.382</b>
Hispanic	<b>1.065</b>	<b>0.732</b>	<b>0.675</b>	<b>0.479</b>	<b>0.817</b>	<b>0.557</b>
Asian	<b>0.805</b>	<b>0.888</b>	0.557	<b>0.672</b>	<b>0.445</b>	<b>0.587</b>
American Indian	<b>1.147</b>	0.963	<b>0.707</b>	<b>0.537</b>	2.311	<b>1.524</b>
Other Race	<b>0.615</b>	<b>0.66</b>	0.58	<b>0.523</b>	0.612	<b>0.69</b>
Math Achievement		<b>0.563</b>		<b>0.387</b>		<b>0.461</b>
Gender		<b>1.97</b>		<b>2.146</b>		<b>2.304</b>
Free and Reduced Lunch		1.003		<b>0.778</b>		<b>1.096</b>
English Language Learners		<b>1.37</b>		<b>0.495</b>		<b>0.731</b>
*bold indicates significant at 0.05 p-level						

Table 10: Texas National Education Assessment of Progress Sample Sizes 2003, 2005 and 2007 Data

	<b>2003</b>	<b>2005</b>	<b>2007</b>
White	1290	2180	2140
Black	960	1160	1370
Hispanic	2880	4380	5130
Asian	170	250	280
American Indian	110	130	120
Other Race	180	300	270

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