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Separate and Unequal: To What Extent Do Student Demographic Characteristics Predict School Accountability Ratings?

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SEPARATE AND UNEQUAL: TO WHAT EXTENT DO STUDENT DEMOGRAPHIC CHARACTERISTICS PREDICT SCHOOL ACCOUNTABILITY RATINGS?

by

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ABSTRACT

SEPARATE AND UNEQUAL: TO WHAT EXTENT DO STUDENT DEMOGRAPHIC CHARACTERISTICS PREDICT SCHOOL ACCOUNTABILITY RATINGS?

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This thesis examines the extent to which one can predict school accountability ratings based only on the demographic make-up of their student bodies, especially their racial/ethnic composition. Analyses were conducted on all elementary schools in the Milwaukee metropolitan region using data from the National Center for Education Statistics, the Wisconsin Department of Public Instruction, and the U.S. Department of Education. Ordered logistic regression analyses showed that one can largely predict accountability ratings assigned to schools by state report cards without knowing anything about various measures of improvement over time. Using only the racial/ethnic and socioeconomic composition of schools' students, the model correctly predicted schools' ranking more than 60 percent of the time. Simulation results indicated that predominately white schools have almost a 95 percent predicted chance of being ranked as meeting or exceeding expectations, while predominately black schools have more than a 95 percent predicted chance of being ranked as meeting few expectations or failing to meet expectations. These findings raise serious questions about the report card system. After decades of educational reform that have promised equal education to all students, accountability systems appear to reify inequality rather than effectively measure how schools' serve their student populations.

To

my sister,

and my mentors

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LIST OF ABBREVIATIONS

NCLB	No Child Left Behind Act of 2001
NCES	National Center for Education Statistics
CCD	Common Core Data
AYP	Adequate Yearly Progress
FAY	Full Academic Year
LE	Less Than or Equal To
MSA	Metropolitan Statistical Area
MPS	Milwaukee Public School District
OLS	Ordinary Least Square

Separate and Unequal: To What Extent Do Student Demographic Characteristics Predict School Accountability Ratings?

This thesis assesses the extent to which school ranking systems merely reflect existing patterns of racial/ethnic and socioeconomic inequality in U.S. public schools and neighborhoods. Recent evidence shows that publicizing school achievement (Friesen, Javdani, Smith and Woodcock, 2012) and school ranking data (Nunes, Balcão Reis and Seabra, 2015) directly affects family decisions and school closures. However, school ranking systems may be problematic if they primarily indicate which groups of students attend which schools instead of how effectively schools serve their student populations. Despite several decades that have passed since the Supreme Court declared that racial separation in schools is inherently unequal (Brown v. Board of Education of Topeka, 1954), scholars continue to find that segregation is still present in U.S. public schools (Logan, 2010; Logan, Minca and Adar, 2012; Reardon and Owens, 2014). Even more, studies consistently document racial inequality in achievement (Frankenberg and Orfield, 2012) and show that an overwhelming majority of black and Latino students attend inferior schools nationwide (Kozol, 1991; Kozol, 2005; Logan et al. 2012). Given these findings, the present study aims to answer the following research question: To what extent can one predict school accountability ratings assigned to schools based only on the demographic composition of their students?

School performance has been a great concern since No Child Left Behind (NCLB) in 2002. In theory, school accountability systems were implemented to raise achievement for all students. Yet, in recent years, all states have advanced their accountability systems in an effort to evaluate "essential indicators" as such, all states now employ a comprehensive index which produces school ratings relative to others (Education Commission of the States, 2016;

Mikulecky, and Christie, 2014). Since each state now has its own precise system of categorization (e.g., A-F, 0-100, 1-5, etc.), accountability rankings are seemingly interpretable by legislators, school officials and importantly, by home buyers (Education Commission of the States, 2016; Nunes, et al. 2015). Ultimately, the intended goal of accountability was to ensure that all students received quality education by restructuring or shutting down poor performing schools (Gaddis and Lauen, 2014; Ravitch, 2010).

Yet, much of the controversy surrounding the epoch of accountability has centered on standardized testing. Achievement on standardized exams varies significantly not only by state and by year, but by school and importantly by student sub-group[1] (Sims, 2013, Ravitch, 2010). For instance, black and Latino students have considerably lower achievement on standardized exams compared to non-Latino white students (Kozol, 2005; Kuscera, Siegel-Hawley and Orfield, 2015; Stiefel, Schwartz and Ellen, 2006). Consequently, school report card ratings may reflect the mechanisms that produce these disparities, such as racial/ethnic inequality in financial, cultural, and social capital, as much or more than the extent to which schools are making efficient use of available resources. Since sub-group performance often "fails" the entire school (Gaddis and Lauen, 2014; Sims, 2013), school segregation, which concentrates disadvantaged students in a relatively small number of schools, may be among the main factors affecting school evaluation under accountability systems.

These measures of accountability were developed by all states throughout the accountability era, and as part of most states' indices, they account for improvements in test scores over time (Mikulecky and Christie, 2014). As such, proponents could argue that most states' school accountability systems appropriately account for the extent to which some schools have disadvantaged students, while still maintaining high expectations for all schools (Mikulecky and Christie, 2014). However, some schools that have higher test scores and are already positioned to be successful may benefit from such "accountability," while schools with students who tend to score worse are sanctioned by their state (No Child Left Behind Act of 2001; Ravitch, 2010), and broadly, by potential families (Frankenberg, 2013; Nunes, et al. 2015) and community members.

In this era of accountability, there are many reasons to suspect that this disadvantage not only persists, but is reified by the ranking process. To assess this, this thesis employed data on school-level characteristics drawn from the National Center for Education Statistics (NCES) Common Core Data (CCD), as well as data on schools' performance and rankings based on data gathered by the Wisconsin Department of Public Instruction. Ranking data were obtained from the state accountability report cards, while performance data were drawn from state standardized exams in mathematics (compiled by NCES). Studying school segregation and its relationship to school rankings in America's most segregated region (Frey, 2015) may be particularly beneficial to evaluate progress since *Brown,* as it was one of the first northern districts forced to implement a within district desegregation plan (Dougherty, 2002; Harris, 1983). Overall, this study raises serious questions about school accountability systems.

LITERATURE REVIEW

School Segregation and School Accountability

In 1954, the Supreme Court declared that segregation is inherently unequal. Thus, the court specifically noted that *de jure* segregation had no place in public education (Brown v. Board of Education of Topeka, 1954). Despite this recognition as well as the subsequent Supreme Court efforts (e.g., *Green v. County School Board of New Kent County*, 1968) to desegregate schools throughout the 20th century, the court has failed to recognize *de facto* segregation as grounds to mandate that districts use measures such as bussing to racially balance schools (Parents Involved in Community Schools v. Seattle School District No. 1, 2007). Today, research continues to find the prevalence of *de facto* segregation in schools (Kozol, 2005; Logan et al. 2012; Ong and Rickles, 2004). In fact, many schools are entirely white, black or Latino (Rubio, 2011). Frankenberg (2013) attributes this to neighborhood segregation wherein school composition mirrors neighborhood demographics. In essence, school segregation is largely shaped by neighborhood segregation (see also Frankenberg and Orfield, 2012; Rothstein, 2015) and is maintained (Frankenberg, 2013) by its zoned location. Moreover, *neighborhood* attendance zones replaced *racial* attendance zones that further allowed states and districts to legally maintain segregation, even after *Brown* (Gotham, 2002). Further, the boundaries of school attendance zones have frequently been drawn—and redrawn, or gerrymandered, as the neighborhood demographics around them change—in ways that exacerbate and compound school segregation (Gotham, 2002; Richards and Stroub, 2013; Nelson, 2015).

To this point, school accountability systems may both reflect and even reinforce educational inequalities associated with school segregation. For instance, families in search of housing tend to develop opinions of neighborhoods and school districts that are often driven by schools' performance (Frankenberg, 2013). Yet, this notion of school performance has significantly changed since the passage of No Child Left Behind (NCLB) (Ravitch, 2014). No Child Left Behind was intended to put more accountability on teachers and principals based on the performance of their students on standardized exams (Kozol, 2005; Ravitch, 2014). Specifically, under the No Child Left Behind Act of 2001, the federal government required all states to implement their own standardized exams and to define their own standards for "proficiency." All states were required to produce a timeline for every sub-group and detail how each one would reach 100 percent proficiency by the year 2014 (No Child Left Behind Act of 2001). Within this timeline, schools were evaluated by making so-called “adequate yearly progress” (AYP) toward this goal (No Child Left Behind Act of 2001). Schools that did not make AYP were labeled as “failing” (Ravitch, 2010). Consecutive years of failure lead to corrective procedures ranging from replacing the administration to converting to a charter school—or even to being managed by a private company. Test-based accountability has had substantial impact schools. Scores on state exams became the evaluative tool for measuring academic performance and capability—quite literally, test-based accountability (Ravitch, 2014). This legislation required states to publish accountability report cards based, in part, on individual student test scores that reflect the overall school as a whole (No Child Left Behind Act of 2001).

As such, each state had the flexibility of developing a unique report card or rating system (e.g., A-F; 0-100; 1-5; etc.), as well as determining what was measured, and also what was reported (Education Commission of the States, 2016). In fact, by the 2013-2014 school year, all states constructed their accountability categories by employing some variation of an index that measured “essential indicators” (Education Commission of the States, 2016). All states measured student achievement and graduation rates, most accounted for the academic growth (42 states), and many accounted for the gap closure among sub-groups (36 states), while less than half included postsecondary readiness (20 states) (Mikulecky, and Christie, 2014).

Consistent with these national trends, in 2011 the Wisconsin Department of Public Instruction replaced its previous AYP system and by the 2013-2014 school year also began its own comprehensive accountability index. It focuses on four priority areas: student achievement, student growth, closing gaps, and readiness (Wisconsin Department of Public Instruction, 2016). Yet, over a dozen measurements are taken into account for these “essential indicators” that translate into the schools' accountability ranking within one of five distinct categories: "significantly exceeds expectations," "exceeds expectations," "meets expectations," "meets few expectations," and "fails to meet expectations" (Wisconsin Department of Public Instruction, 2016). Ostensibly, the overall goal of these rating systems was to ensure a more equal education; yet in practice, it has been shown to often disproportionately affect majority minority and high poverty schools (Berliner, 2013). For instance, in Wisconsin, school ratings determine the level of support from the state, such that schools with low performance are at risk of intervention and even closure, as has been the case of several across the country (Brummet, 2014; Logan et al. 2012; Darling-Hammond, 2010; Gaddis and Lauen, 2014; Ravitch 2010; NCES, 2015a; Wisconsin Department of Public Instruction, 2016).

Nationally, schools that do not produce high and annually improved test scores in the NCLB era are likely to be labeled as failing. "Failure of any subgroup was defined as failure of the entire school" (Gaddis and Lauen, 2014: 17), and "failing" or even "under-performing" ranked schools are unattractive to families in search of housing (Frankenberg, 2013). Failing schools tend to have stark patterns of minority concentration and lower academic performance (Logan, 2010). Additionally, segregated black and Latino schools tend to have deep racial/ethnic and economic gaps in school size, resources, and importantly, worse performance than majority white schools on standardized exams (Kucsera et al. 2015; Logan et al. 2012). In shifting accountability from the individual-level to the school-level, this labeling process may reinforce racial/ethnic and socioeconomic segregation and inequality in both schools and neighborhoods. White families already tend to avoid schools with high proportions of non-white and especially black students (Kozol 2005; Billingham and Hunt, 2016); even more, there is reason to suspect that school labels may further perpetuate white and middle class families' avoidance of neighborhoods where these schools are located (Frankenberg, 2013). As such, it is reasonable to expect that school segregation may be a main factor that affects how schools are ranked on the states' report cards. In other words, schools' accountability rankings may mirror the inequalities associated with school segregation.

Racial/Ethnic Composition: Predicting School Rankings

A large body of research has examined the relationship between school segregation and educational outcomes. Black and Latino children are more likely than white children to attend high-poverty schools (Logan, 2002; Orfield and Lee, 2005; Saporito and Soni, 2007), urban schools (Orfield and Lee, 2005), as well as inferior schools (Kozol, 1991; Logan et al. 2012). More generally, the achievement on standardized exams varies by NCLB student sub-group (Gaddis and Lauen, 2014; Sims, 2013). For instance, "some groups… inevitably enter the educational system being much better equipped to learn; this is not necessarily about ability or resilience—it's about resources and initial advantage" (Furlong, 2012: 69). Accordingly, there exists an abundant literature that has sought to understand the effect of inequality on academic achievement (Frankenberg and Orfield, 2012; Kozol, 1991; Hanushek, 1997; Logan et al. 2012; Reardon and Owens, 2014), for example, by studying the aforementioned impact of school segregation (Kuscera et al. 2015; Logan 2010; Logan et al. 2012), as well as by studying the mechanisms that lead to the disparities within standardized testing (Battey, 2013; Ebanks, Toldson, Richards and Lemmons, 2012; Ravitch 2013; Stiefel, Schwartz and Ellen, 2006). Although the proficiency levels for standardized exams are just one piece of the index used to establish a schools' ranking, the labeling process may largely reflect existing forms of inequality, effectively penalizing an already disadvantaged groups of students and schools.

Achievement on standardized exams has been linked to parental achievement (Reardon, 2011) and thus, cultural capital (Bourdieu, 1998). Students that have parents unfamiliar with the educational system are more likely to receive lower scores on standardized exams (Jacob and Linkow, 2011). Yet this relationship intimately intersects with race/ethnicity (Reardon, 2011), such that research documents racial/ethnic inequality in overall academic achievement (Frankenberg and Orfield, 2012) and specifically, in standardized test scores (Bifulco and Ladd, 2006; Gaddis and Lauen, 2014; Hogrebe and Tate, 2010; Logan, 2010; Logan et al. 2012). While the black-white (Quinn, 2015; Yeung and Pfeiffer, 2009), and Latino-white (Reardon and Galindo, 2009) test score gaps have slightly narrowed in recent decades, they have persisted since *Brown*. Importantly, black and Latino students often enter the school system with lower readiness than their non-Latino white peers (Quinn, 2015; Reardon and Galindo, 2009; Yeung and Pfeiffer, 2009). Specifically, Reardon and Galindo (2009) indicate that in the fall semester of kindergarten there exists large gaps in mathematics and reading among black and Latino students when compared to white students. Even further, these gaps tend to fluctuate as students' progress through school, such that the Latino-white gap narrows and the black-white gap widens (Quinn, 2015; Reardon and Galindo, 2009). These measurements tend to be more pronounced at the elementary level, such that black and Latino students are overrepresented at the bottom of the distribution of test scores and underrepresented at the top (Stiefel et al. 2006). Consequently, school ratings may indirectly reflect existing inequalities outside the school system. For instance, racial/ethnic background (Sirin, 2005) tend to influence individual academic outcomes (Hogrebe and Tate, 2010; Quinn, 2015; Reardon and Galindo, 2009; Stiefel et al. 2006; Yeung and Pfeiffer, 2009) and the racial/ethnic composition of schools tend to influence overall academic achievement (Bankston and Caldas, 1997; Logan, 2010; Logan et al. 2012).

Importantly, in the epoch of high stakes testing, schools as a whole are being ranked and held accountable, in part, for individual student achievement on standardized exams.

While the research indicates that standardized test scores tend to be lower for black and Latino children, it is precisely these outcomes or "essential indicators" that are used in the construction of the accountability ranking index. In fact, previous findings have indicated that the racial/ethnic concentration within schools is a significant predictor of schools' being low performing rather than higher performing status under the Texas-style accountability system (Heilig and Holme, 2013). More to the point then, racial/ethnic composition is expected to predict Wisconsin schools' ranking:

Hypothesis 1: As the total percent of black students within a school increases, the schools' categorical report card ranking will decrease.

Hypothesis 2: As the total percent of Latino students within a school increases, the schools' categorical report card ranking will decrease.

Assessing Why Racial/Ethnic Composition Predicts School Accountability Ratings

In addition to testing the central hypotheses discussed above about the extent to which school accountability rankings may be predicted by the racial/ethnic composition of their student bodies, this study also explored why student racial/ethnic composition and school accountability rankings might be related. Below, I consider several factors that might be implicated in the association between student racial/ethnic composition and school accountability ratings.

Student Socioeconomic Status. Schools are historically and culturally a middle-class institution, and there exist class differences in the "rhythms of family life" in cognitive codes (Bourdieu, 1998), early learning ability (Brice Heath, 1982), and childrearing practices (Lareau, 2002).

While middle-class parents tend to value self-direction and emphasize negotiation and reasoning, lower-class parents rely on subordinate conformity to authority (Lareau, 2002). Most often schools only provide an adequate space to be integrated within middle-class cultural customs (Bowles and Gintis, 1976; Laraeu, 2002) and rubrics of the society. Thus, there is a class disconnect between the school and students who do not understand middle-class values and norms (Bourdieu, 1998). Schools are supposed to help all children learn their social placement as well as rules and roles of power recognition; however, often minority and poor students struggle with this (Noguera, 2003; Lareau, 2003). For these individuals, the move into the school system from their home environment is quite abrupt—for middle-class students the assimilation is almost seamless (Brice-Heath, 1982). That is, the effect of poverty has been overwhelmingly supported (Hanushek, 1997; Hogrebe and Tate, 2010; Kozol, 1991; Kuscera et al. 2015; Logan, 201; Logan et al. 2012). "It affects [students] health and well-being. It affects their emotional lives and their attention spans, their attendance and their academic performance," (Ravitch 2013: 34).

Moreover, the concentration of poverty in majority minority schools is a key factor in predicting school-level academic outcomes (Logan, et al. 2012) and thus contributes to school rankings. Schools with high poverty levels, typically measured as the percentage of students eligible for the free/reduced lunch program, tend to perform worse academically than schools with low poverty levels; overwhelmingly though, racially/ethnically segregated schools tend to concentrate students from poor families in the same schools (Orfield and Lee, 2005; Saporito and Soni, 2007). Thus, it is vital to explore the aggregated patterns in effort to specifically assess these school rankings.

In 2010 Milwaukee was among the poorest cities in the United States. Specifically, it was noted as America's fourth most impoverished big city, with a poverty rate of 27 percent (Nelson, 2015). During the 2013-2014 school year, the city's poverty rate was between 29.1 percent and 29.4 percent (U.S. Census Bureau, 2009-2013). Historically, poverty has concentrated much more heavily on minority groups—specifically, blacks and Latinos. In the Milwaukee metropolitan region blacks and Latinos have higher poverty rates than non-Latino whites (U.S. Census, 2010). Additionally, Latinos and especially blacks are segregated across neighborhoods and schools which concentrates their overall poverty in a relatively small number of neighborhoods (Graphic 1) and schools. Thus, student poverty and poverty concentration may be implicated in the association of minority composition and overall school accountability rankings. Accordingly, I propose to test:

> *Hypothesis 3:* The concentration of poverty will partially account for the association between lower accountability rankings and the proportion of students belonging to racial/ethnic groups with high poverty levels.

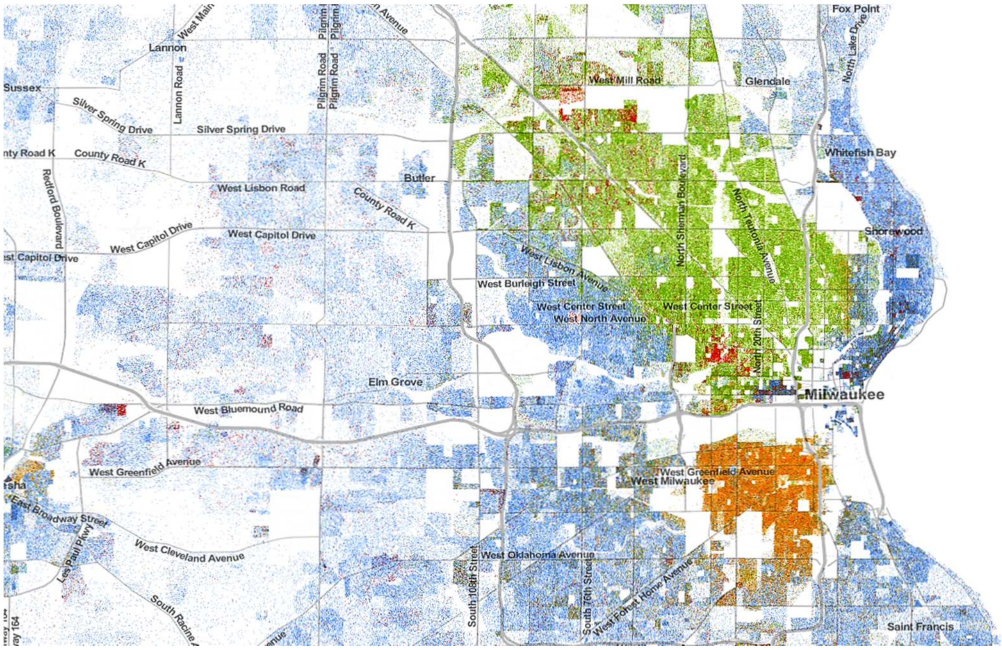

Figure 1: Milwaukee Region Racial/ethnic Composition 2010[a]

[a] Source: Census 2010 Dot Map Key: Green=Black; Orange=Latino; Red=Asian; Blue=White

Yet, the concentration of poverty may not be equally important in explaining the school ranking predictions for all racial/ethnic groups. Inarguably, much of the concentration of poverty in black neighborhoods—and thus in predominantly black schools—can be linked to the public exclusion, job discrimination, and redlining that took place in the 20th century (Nelson, 2015). The black suburbanization rate in the Milwaukee metropolitan area is among the lowest in the United States (Levine, 2003). In fact, 90 percent of all blacks that live in Milwaukee are concentrated (Figure 1) in the north west side of the city (Nelson, 2015). Purposeful actions to maintain the separation of blacks from whites were led by homebuilders, financial institutions, and realtors (Dougherty, 2002; Gotham, 2002; Nelson, 2015). In combination with white flight, blacks urban displacement resulted in their living in deteriorating homes located in neighborhoods with higher rates of poverty (Gotham, 2002), alienation, and resource deprivation (Sampson, 2012).

This has contributed to a hampered development of their financial, cultural, and social capital. While earlier research suggested that black students put less effort in school to avoid being perceived as "acting white" (Fordham and Ogbu, 1986), more recent work has attempted to unfold the complexities of black cultural capital (Carter, 2003; Noguera, 2003), arguing that it is multi-dimensional and largely varies across social settings. Cultural proclivities, such as language and behavior, can influence and leave impressions on middle-class "gatekeepers" in the school setting (Carter, 2003). Blacks are often the most marginalized group in schools; they are more likely to be mislabeled with a learning disability, more likely to be suspended, and most likely not to be in advanced placement classes (Noguera, 2003). Even further, in contrast to the Latino-white gap in achievement which tends to narrow over time spent in school, research has cautiously suggested that in elementary, the black-white gap widens (Reardon and Galindo, 2009; Yeung and Pfieffer, 2009). To this point, black inequities are historically and deeply entrenched in neighborhoods and schools—while this concentrated disadvantage alone is significant (Sampson, 2012), the disproportionate labeling impacts in schools and by school officials (Noguera, 2003) may go beyond those of poverty. Thus,

> *Hypothesis 4:* Student poverty will be less important in accounting for the association between lower accountability rankings and the percentage of black students than in accounting for the same association with the percentage of Latino students.

Institutional Aspects of School Systems. Black and Latino children are more likely than white children to attend high-poverty schools (Logan, 2002; Orfield and Lee, 2005; Saporito and Soni, 2007) and urban schools (Orfield and Lee, 2005). Importantly, research has specified that poverty tends to be concentrated more heavily in urban schools rather than in rural and suburban schools (Kozol, 2005; Kuscera, et al. 2015; Logan, 2012). Even further, urban school districts are less likely to attract and retain the most qualified teachers (Hogrebe and Tate, Hanushek, 1997, Kozol, 1991; Ravitch, 2010); they tend to serve the most disadvantaged student bodies (Zimmer and Budding, 2007), and are likely to have less funding per pupil in comparison to neighboring suburban and rural school districts (Logan and Burdick-Will, 2015; Kozol, 2005). Some critics of public school systems have suggested that large urban school systems will have lower rankings even after accounting for school poverty (Chubb and Moe, 1988; Zimmer and Buddin, 2005). In general, they suggest that public schools have restricted autonomy through structures such as teacher unions and tenure (Chubb and Moe, 1988). Additionally, some have argued that many of the issues discussed above may be due to the environment in which schools are located, such that public schools, as institutions, are dominated by local bureaucratic and democratic policies (Chubb and Moe, 1988). In other words, they operate within the framework of their surrounding institutions. Thus, controlling for whether a school belongs to a large urban district, such as the Milwaukee Public School District (MPS), should partially account for the association between racial/ethnic composition and ranking.

> *Hypothesis 5:* Schools located within urban districts will partially account for the association between lower accountability rankings and the proportion of students belonging to racial/ethnic groups with high poverty levels.

Given these multiple layers of inequality, including those of preparedness (Battey, 2013), and the indication that mathematics is more dependent and sensitive to schooling than reading (Hedges and Nowell, 1999), it is reasonable to expect that black and Latino students' will have lower mathematics proficiency scores. At the beginning of schooling, the estimated racial/ethnic gaps in math scores are more pronounced than those in reading and these gaps, particularly for blacks, tend to increase the longer students are in school (Quinn, 2015; Reardon and Galindo, 2009). Thus, it is plausible to expect that schools in the Milwaukee metropolitan region with high minority concentrations will have lower overall mathematic proficiency scores.[2] Accordingly, mathematics proficiency may capture not only the effects of pre-existing racial inequalities in families and neighborhoods, but also how effectively schools are teaching different groups of students. Put differently, math proficiency may indirectly reflect school and non-school effects of racial/ethnic inequality. Since mathematics proficiency is one measure used to construct the accountability index,

> *Hypothesis 6:* Mathematic proficiency scores will partially account for the associations of both racial/ethnic composition and poverty concentration with school rank.

Over the past few decades there has been an increase in charter schools (NCES, 2015b). Supporters have argued that they give greater opportunities for disadvantaged, and especially minority students (Zimmer & Buddin, 2005). It has been indicated that in certain areas, charter schools outperform traditional public schools in achievement results (Betts & Tang, 2011). As such, research within the state of Wisconsin has supported this claim (Witte, Weimer, Shober & Schlomer, 2007). However, there has also been research that finds no difference in academic performance between charter schools and traditional public schools (Bifulco and Ladd, 2006; Ni and Rorrer, 2012). In fact, it has been noted that charter school performance is associated with neighborhood poverty levels (Logan and Burdick-Will, 2015) and enrollment may be a function of school and district segregation (Renzulli, 2006). The mixed findings on charter schools has led researchers to find different results in varying contexts for different groups of students (Logan and Burdick-Will, 2015). Nevertheless, most children in the United States attend traditional public schools (Goldsmith, 2016; Richards and Stroub, 2013), as such, all analyses will control for schools with charter designation to specifically assess the association of traditional public schools' demographics and accountability rankings.

Milwaukee is among the poorest and most segregated metropolitan areas (Figure 1) in the United States (Frey, William, 2015; Nelson, 2015). Thus, Milwaukee is an extreme case to study how neighborhood demographics shape school composition patterns and may influence school rankings. By studying this extreme case, findings may offer fruitful compliments and/or alterations to the established theories, even more, as Golightly (1963) said, "Milwaukee [region] schools provides a rare opportunity to observe an ideal case of de facto segregation (Pp. 27).

METHOD

Data

This study uses all public schools in the Milwaukee metropolitan area in Wisconsin for which all relevant data are available from state and national sources. Following previous studies (Logan, 2010; Logan et al. 2012), the data for this study come from the 2013 National Center for Education Statistics (NCES) Common Core (CCD) that reports school-level characteristics for individual public schools. These data include information regarding the total number of students eligible for free/reduced lunch; as well as grade specific characteristics, such as the racial/ethnic composition. The school accountability data come from the Wisconsin Department of Public Instruction 2013-14 accountability school report cards. Lastly, the school achievement data come from the SY 2013-2014 U.S. Department of Education achievement results for mathematics nationwide. These data are reported by all states and distributed through EdFacts (http://www2.ed.gov/). For the state of Wisconsin, these federal reports are derived from the test results provided by the Wisconsin Department of Public Instruction.

The focus of this thesis is on the Milwaukee eight-county, Milwaukee-Racine-Waukesha, WI Combined Statistical Area. Broadly defining the metropolitan area to include both urban as well as suburban school districts is necessary to capture the larger housing segregation pattern that began in Milwaukee during the late 20th century immediately following the unmatched growth of the black population (Nelson, 2015). Specifically, these data include Milwaukee County, Waukesha County, Ozaukee County, Washington County, Jefferson County, Racine County, Walworth County and Dodge County. Only relevant data for Wisconsin is kept. The total number of schools within the Milwaukee MSA region is 586 (N=586).

Elementary, middle, and high school data are available from the NCES data set; however, only grades third through eighth are tested and recorded in these data. Schools that make up grades third through eighth may be a variety of elementary schools (e.g. grades k through 8), middle schools (e.g. grades 5 through 8), or even some high schools (e.g. grades 6 through 12). To be certain that the comparison of schools is consistent, meaning that the study is only comparing schools on the same level (elementary to elementary), this analysis only includes school rankings of all schools that enrolled kindergarten through fourth graders (N=365). Overall, the majority of students in America attend traditional public schools close to their home (Goldsmith, 2016; Richards and Stroub, 2013), and given that the specific linkage between school segregation and neighborhood segregation is most evident at the elementary level (Ong and Rickles, 2004), this level of analysis is appropriate. Importantly, many components of the accountability index for elementary schools are based on measurements and data that are only available from third and fourth grade students. For instance, only grades three through eight take state standardized exams; as such, it's concerning if the overall schools' demographics are highly predictive of the schools' ranking.

Dependent Variable

In Wisconsin, the school accountability report card system ranks schools within five distinct categories: "significantly exceeds expectations," "exceeds expectations," "meets expectations," "meets few expectations," and "fails to meet expectations" (Wisconsin Department of Public Instruction, 2016). Each category has a range in which the accountability score can fall and are based on goals set by statewide data. For instance, in order for a school to receive "significantly exceed expectations" as its rank, the schools' accountability score must range between 83 and 100. For a school to receive "meets expectations" as its rank, the schools' accountability score must be between 63 and 72.9. Accordingly, in order for a school to receive "fails to meet expectations" as its rank, the schools' accountability score ranges between 0 and 52.9 (Wisconsin Department of Public Instruction, 2016). This accountability score is the result of the accountability index, which is a combination of at least twelve different measurements (Education Commission for the States, 2016) primarily centered on four priority areas: student achievement, student growth, closing gaps, and readiness (Wisconsin Department of Public Instruction, 2016). For instance, student achievement is one area of concern that includes scores from both reading and mathematics standardized exams (Wisconsin Department of Public Instruction, 2016). Additionally, schools' accountability scores can have points deducted from the state for various reasons, such as absenteeism, and even test participation[3] (Wisconsin Department of Public Instruction, 2016).

Six elementary schools in the Milwaukee MSA received a ranking of "alternative rating—making satisfactory progress." Since this label is temporary and substantively not informative, the six schools with this label are excluded from the analysis.[4] Additionally, two schools were identified as influential outliers and are thus omitted (N=357).[5]

Table 1. Frequency Distribution of School Accountability Categories (N= 357)

	Frequency	*Percent*
Fails to Meet Expectations	*39*	*10.92*
Meets Few Expectations	*61*	*17.09*
Meets Expectations	*95*	*26.61*
Exceeds Expectations	*125*	*35.01*
Significantly Exceeds Expectations	*37*	*10.36*
Total	357	100

Focal Independent Variables

The focal independent variables for H_1 and H_2 are percentages of minority students who attend each school. To capture this, I use the percent of (H_1) black students and the percent of (H_2) Latino students in kindergarten through fourth grade for all 357 elementary schools with reported ranking. These variables were constructed from the NCES Common Core data that records the raw count of students' racial/ethnicity by gender. Male and female counts were added together for each grade by racial/ethnicity and divided by the total grade size respectively. The corresponding figure was then transformed into percent for black and Latino students in grades kindergarten through fourth. According to Table 2, the average percent of black and Latino students in elementary school, grades kindergarten through four, in the Milwaukee MSA are 23.8 percent and 15.3 percent, respectively. Exploratory analyses revealed that a quadratic specification (i.e., percent black squared and percent Latino squared) provided the best fit to the data. This suggests that large proportions of black and Latino students are more predictive of school ratings rather than other variations of student populations in schools where black and Latino students represent relatively small proportions of the student body.

Additional Control Variables

Current research has identified that resources and school environmental factors, such as poverty matter as well (Greenwald et al. 1996; Hanushek, 1997; Hogrebe and Tate, 2010). Estimating additional models that take poverty into account may allow one to assess different speculations about why racial/ethnic composition predicts school ranking. The record of reduced or free lunch has long been used as an indication of school level poverty (Hogrebe and Tate, 2010; Logan et al. 2012). This variable was constructed from the NCES CCD count of the total number of students eligible for the program divided by the total student population. The resulting figure provides an indication of overall school poverty. According to Table 2, the average elementary school poverty level in the Milwaukee MSA region is 51 percent. This variable will be used to test Hypothesis 3 and Hypothesis 4.

Table 2. Descriptive Statistics (N= 357)

	M	*SD*	*Definition*
Black Student Rate	*23.78*	*34.09*	*Percent of black kindergarten-fourth graders*
(Percent Black^2)/100	*17.25*	*32.11*	*(Percent of black kindergarten-fourth graders)^2/100*
Latino Student Rate	*15.29*	*20.15*	*Percent of Latino kindergarten-fourth graders*
(Percent Latino^2)/100	*6.39*	*16.71*	*(Percent of Latino kindergarten-fourth graders)^2/100*
Poverty Rate	*51.19*	*31.33*	*Percent of students in school eligible for free-reduced lunch*
School Size	*420.59*	*163.106*	*Total number of students in a school*
4th Grade Size	*56.98*	*24.245*	*Total number of students in fourth grade*
3rd Grade Size	*55.84*	*23.363*	*Total number of students in third grade*
2nd Grade Size	*54.61*	*24.43*	*Total number of students in second grade*
1st Grade Size	*55.83*	*24.58*	*Total number of students in first grade*
Kindergarten Size	*55.63*	*24.34*	*Total number of students in kindergarten*

Additionally, research has indicated that urban schools tend to have higher concentrations of poverty (Kozol, 2005; Kuscera, et al. 2015; Logan, 2012), they are more likely to lack access to high quality teachers (Hogrebe and Tate, Hanushek, 1997, Kozol, 1991) and most importantly, are likely dominated by local bureaucratic policies (Chubb and Moe, 1988). However, studies show that black and Latino children are more likely than white children to attend high poverty and urban schools (Logan, 2002; Orfield and Lee, 2005; Saporito and Soni, 2007). Accordingly, a dummy variable that controls for elementary schools in an urban district (coded=1) along with those outside of the urban district (coded=0) will be added to the analysis in order to assess different theoretical reasons about why racial/ethnic composition and poverty levels accurately predict school rankings.

The challenges that tend to face urban districts have led many cities to implement and expand charter school programs in an attempt to improve student achievement (Zimmer and Buddin, 2007). Since 1991 the charter school movement began to offer a multitude of choice and novel approaches that compete with traditional public education (Ni and Rorrer, 2012; Vergari, 2007; Zimmer and Buddin, 2005). Some findings have suggested that charter schools outperform traditional public schools in academic achievement (Betts and Tang, 2011; Witte et al. 2007), and others have found no difference (Bifulco and Ladd, 2006; Ni and Rorrer, 2012). These mixed findings suggest that some charter schools may actually be outperforming traditional public schools, or are at least being credited as such. Accordingly, a dummy variable that controls for schools with charter distinction (coded=1 for charter, coded=0 for traditional public schools) will be added to all the analyses.

The inclusion of both these dummy variables may allow one to assess the extent to which schools' district and importantly, its political, financial, and institutional differences (Ni and Rorrer, 2012; Vergari, 2007; Witte et al. 2007) may account for the relationship between racial/ethnic composition and school rankings.

Table 3. Urban Suburban/Rural District and Charter Frequency Distribution (N= 357)

District	*Fails*	*Meets Few*	*Meets*	*Exceeds*	*Sig. Exceeds*	*Charter Designation*
Milwaukee City Schools (N=108)	35	47	18	8	-	14
Percent	*(32.4%)*	*(43.5%)*	*(16.7%)*	*(7.4%)*	*(0%)*	*(12.96%)*
Suburban/Rural Schools (N=249)	4	14	77	117	37	23
Percent	*(1.6%)*	*(5.6%)*	*(30.9%)*	*(47.0%)*	*(14.9%)*	*(9.24%)*

Academic achievement, along with gap size, enrollment, and many additional variables are all part of index used to measure “essential indicators” that create accountability scores used to evaluate and rank schools on the state report card (Wisconsin Department of Public Instruction, 2016). Importantly, part of this index is mathematics proficiency—that is, schools that are not performing at “proficiency” levels are at risk of receiving a lower accountability rank and even being shut down (Darling-Hammond, 2010; Wisconsin Department of Public Instruction, 2016). Given the racial/ethnic disparities in math scores that are present when children first begin schooling, it is problematic if one can largely predict school ratings from test scores without accounting for improvement over time and/or the extent to which schools are closing test gaps. However, since math proficiency is one component of the index used to calculate each schools’ accountability score, it is not particularly informative if school math proficiency is predictive of school ranking. It may be informative however, if controlling for school math proficiency substantially accounts for the association between racial/ethnic composition and school rankings. To evaluate this, this thesis employs only one aspect of the school accountability index to test the fifth hypothesis in predicting school rank.

The mathematics data is from the Edfacts data, which are reported for the entire school and on a grade-specific basis and are also reported on both the overall and grade-specific basis by race/ethnicity.[6] These data provide the total number of students that took the exam as well as the percent proficient, by grade, by race/ethnicity, and overall. These data do not perfectly reflect all students for every single school; for some schools, they are not reported due to confidentiality concerns. For instance, schools with relatively small class sizes and/or small numbers of minority students are often omitted because of the concern that students could be individually identified. Also, the proficiency report is frequently reported in a range, unless the schools' grade enrollment was greater than 300. In such situations the midpoint was used as an estimation of proficiency (e.g. 75-80, proficiency score 77.5 will be used; see Appendix C for more data cleaning detail).

During the 2013-2014 school year, Wisconsin set its proficiency level for mathematics at 68.5 percent (Wisconsin Department of Public Instruction, 2016). The school proficiency index is calculated by the State of Wisconsin using Figure 2.

$$\frac{\text{(number of FAY Proficient or Advanced x 1.0) + (number of FAY Basic x 0.5)}}{\text{number of FAY students tested}} = \text{Proficiency Index}$$

Figure 2: Proficiency Index [b]

[b] Source: Wisconsin Department of Public Instruction, 2016

Accordingly, "proficient" and "advanced" is equal to the total number of students that demonstrated a comprehensive or solid understanding of the subject. "Basic" corresponds to the total number of students that partially understood the material and Wisconsin's fourth category, "minimal performance," indicates the total number of students that demonstrated limited knowledge of the material. Students that scored "minimal performance" are not part of the calculation depicted above. Lastly, FAY refers to the total number of students that were enrolled for the full academic year (9.25 months prior to testing), which can be calculated differently for each district (Wisconsin Department of Public Instruction, 2016).

The overall school proficiency index was provided in the data for each school. It is used in this study as the measure of the percent proficient of both grade three and grade four for the

Milwaukee MSA level and more importantly as a predictor of school ranking. Within these data there are 359 ranked schools (N=359) with reported mathematics data for grade three and grade four. As briefly stated above though, reports of proficiency often conflict with privacy concerns. For instance, for some of the data, proficiency scores are reported as estimates such as LE 20, LE 50 etc. In cases that indicated a meaningful estimate such as LE 10, it was treated as a reported range and the midpoint was used (e.g. LE 10 = 5 percent proficiency). For instances that the report was rather arbitrary such as dates the test would be taken or LE 50, those schools were excluded. Additionally, much of the data are reported in proficiency ranges (e.g. 70-80 percent). For all situations where a range was reported, code was generated in Stata.14 to utilize the midpoint as a reflection of the percent proficiency (e.g. 75 percent, see Appendix C). The total number of elementary schools with meaningful mathematics proficiency data for both third and fourth grade is 292 (N=292).

Table 4. Descriptive Statistics (N=292)

	M	***SD***	***Definition***
Mathematics Proficiency	*51.60*	*21.55*	*Percent proficient 3rd and 4th graders*

Importantly, the minimum is 5 percent proficiency and the maximum is 89.75 percent proficiency. On average, the percent proficiency for elementary schools with grade three and grade four is 51.6 percent —well below the states' marker of 68.5 percent (Table 3).

Analysis

The goal of this thesis is to assess the extent to which one can predict schools' categorical ranking based only on the racial/ethnic composition of their students. Using these data, and especially given the rating system imposed by the categorical ranks (Table 1), the nonlinear probability model is assumed to be

$$\ln\boldsymbol{\Omega}_{\leq m|>m}(\mathbf{x}) = \boldsymbol{\tau}_m\text{-}\mathbf{x}\boldsymbol{\beta}$$

such that the dependent variable, school ranking, is ordinal. Specifically, this model predicts the natural log of the odds of being in a category less than or equal to *m*, as a function of a vector of independent variables **x** and the $k - 1$ cutpoints or thresholds (τ_m). Since the ranking system set forth in the state of Wisconsin and implemented by the Department of Public Instruction assigns each school to one of five categories, *k* is equal to 5 and thus, there are k-1 = 4 thresholds, τ_1 through τ_4. This is the most parsimonious approach, given these data and research questions (Herringa et al. 2010; Long and Freese, 2014). However, one caveat to ordered logistic regression is that it relies on the proportional odds assumption—that is, that the parameters do not change for different categories (Long and Freese, 2014). Using the `brant` and `oparallel` commands in Stata.14 revealed that these data do not violate the proportional odds assumption. Importantly, although the precise distances between categories remain unknown (Long and Freese, 2014) in ordered logistic regression, it is a commonly used method for data with ordered categorization. In the epoch of accountability, schools are receiving such distinction and are interpreted by legislators, home buyers, and community members to be on an ordinal scale. For example, schools with the ranking, “significantly exceeds expectations” are not just more favorable than “fails to meet expectations,” but higher ranked schools are also at less risk of closure and reduction of funding (Darling-Hammond, 2010; Ravitch, 2010; Ravitch, 2014). Thus, by using ordered logistic regression analysis, model 1 tests Hypothesis 1 and Hypothesis 2 about the extent to which the racial/ethnic composition of a school can predict school rank. All models control for charter designation. Model 2 tests hypothesis 5, and controls for institutional factors such as the school location within an urban district. Model 3 tests Hypothesis 3 on whether the concentration of poverty will account for lower accountability ranking among schools with high proportions of minority students. Model 3 also tests Hypothesis 4 on whether the concentration of poverty will be less important for the proportion of black students. Lastly, model 4 accounts for all variables to allow us to better assess why racial/ethnic composition in combination with school poverty levels may be predictive of school rankings (Aneshensel, 2013). In effort to rule out the possibility that changes in the logit coefficients across model specifications reflect assumptions about the distribution of the error terms required to identify the model (see Aneshensel 2013: Chapter 12; Long and Freese 2014: 238, 239), I conducted a supplementary analysis in terms of Y* standardized coefficients (see Appendix D). The pattern of results was substantively unchanged, suggesting that assumptions about the error distribution built into the ordered logit model do not substantially bias the results obtained by directly comparing logit coefficients across model specifications.

Following the focal analysis above, I employ one aspect of the school accountability index and replicate the ordered logistic regression with schools that had valid mathematics proficiency scores. The additional analysis is limited to 292 elementary schools in the Milwaukee metropolitan region that have both a school categorical ranking as well as valid reports of mathematics proficiency for grade three and grade four. This additional analysis allows one to assess the extent to which one can predict schools ranking based on the racial/ethnic composition of their students as well as the proportion of their students' with proficient mathematics test scores. Thus, the fifth model in the replicated regression addresses

Hypothesis 6 in regards to the extent in which mathematics proficiency will partially account for the associations of racial/ethnic composition and poverty concentration with school rank.

RESULTS

Table 1, 2, 3, and 4 present all relevant descriptive statistics used in the analysis. Table 5 presents the analysis for all elementary schools in the Milwaukee metropolitan region with relevant ranking data (N=357). The coefficients in Model 1 provide support to Hypothesis 1 and 2, such that race/ethnicity are shown to be statistically significant predictors of a lower school ranking relative to a higher one.

Table 5. Ordered Logistic Regression (N=357)

Variables	*Model (1)*		*Model (2)*		*Model (3)*		*Model (4)*	
(Percent K-4th grade Black²)/100	-.074***	(.006)	-.060***	(.006)	-.023**	(.007)	-.018*	(.007)
(Percent K-4th grade Latino²)/100	-.059***	(.008)	-.042***	(.008)	.012	(.009)	.018	(.010)
Percent School Poverty	-	-	-	-	-.090***	(.009)	-.087***	(.009)
Institutional Variable								
Urban Location (MPS)	-	-	-1.711***	(.346)	-	-	-.955**	(.360)
Control Variable								
Charter Designation	1.311***	(.472)	1.059**	(.390)	.975**	(.408)	.809*	(.408)
τ_1	-5.561		-6.036		-9.969		-10.126	
τ_2	-2.829		-3.127		-7.108		-7.157	
τ_3	-0.655		-0.772		-3.882		-3.820	
τ_4	1.714		1.648		-0.438		-0.396	
Pseudo R^2	.263		.287		.404		.411	
R^2 Count	.524		.532		.608		.602	
R^2 Count (adjusted)	.267		.280		.397		.388	

NOTE: Standard errors are in parentheses; *=p<.05; **p<.01; ***p<.001

According to the first model in Table 5, the coefficient for percent of black students indicate that schools with higher proportions of black students have lower odds of being ranked in a higher category relative to a lower one. Specifically, for a one standard deviation increase in percent black, the odds of a higher rank versus a lower rank are decreased by about 91 percent, net of percent Latino ($100*(e^{-.07379*32.11245}-1) = -90.6$). Additionally, the coefficient for percent Latino students follows that same pattern while holding percent black constant. Specifically, schools with higher proportions of Latino students have lower odds of being ranked in a higher category compared to a lower one. Given a one standard deviation increase in percent Latino, the odds of a higher rank versus a lower one are decreased by about 63 percent ($100*(e^{(-.05916*16.70879)}-1) = -62.79$). The logit coefficient for the control variable shows that charter schools relative to traditional public schools have higher odds of a higher school ranking rather than a lower one. Overall, the count R^2 statistic for model 1 indicates that more than 52 percent of the elementary schools in the sample are correctly categorized based only on the racial/ethnic composition of their students. Importantly, the count R^2 did not change significantly when the dummy variable for charter schools was not included in model 1 (output not shown).

The second model controls for institutional variables, such as location within an urban district. Given these data, and in limited support of hypothesis 5, controlling for elementary schools within MPS partially accounts for the association of race/ethnicity in predicting school ranking. Importantly, there is little change in the coefficients for percent black and percent Latino; both remain statistically significant in predicting a lower school rank relative to a higher one. That is, controlling for school location within MPS does not account for most of the association between racial/ethnic composition and school ranking. Overall, controlling for if a school is part of MPS adds little to the predictive power of the model. Model 2 shows also shows that schools within the city district have lower odds of being ranked in a higher category relative to a lower one when compared to schools in the suburbs and rural communities of the Milwaukee MSA. Specifically, the odds of a higher rank relative to lower one are decreased by about 82 percent for urban elementary schools when compared to suburban/rural ones (100*($e^{(-1.711)}$-1) = -81.9).

Model 3 accounts for school poverty. As hypothesized, the logit coefficient for percent Latino significantly decreased and is rendered non-significant after controlling for the percentage of students from poor families; yet, the percent of black students, and the percent of school poverty remain statistically significant in predicting a lower school rank versus a higher school rank. Importantly, the coefficients for percent black indicate the same pattern as it did in model 1. Notable is the effect of school poverty, for just a five percent increase in school poverty, the odds of a higher school ranking versus a lower one are decreased by approximately 36 percent (100*($e^{-.0904585*5)}$-1) = -36.38), while holding race/ethnicity constant. Accounting for poverty in model 3 explains more of the association of race/ethnicity and lower school ranking than the previous model that accounted for urban location. Specifically, accounting for urban location in model 2 only decreased the logit coefficient for percent black by 18.9 percent ((.74-.060)/.074=18.9) and decreased the logit coefficient for percent Latino by 28.8 percent ((.059-.042)/.059=28.8). However, accounting for poverty in model 3, decreased the logit coefficient for percent black by 68.9 percent (.0.74-.023)/.074=68.9) and decreased the logit coefficient for percent Latino by 79.7 percent (.074-.012)/.074=79.7). Overall, the count R^2 statistic for model 3 indicate that one can correctly categorize elementary schools in the Milwaukee metropolitan region more than 60 percent of the time by only accounting for the racial/ethnic and socioeconomic characteristics of their student body.

Model 4 accounts for all variables. In this final model, all coefficients have slightly decreased, yet, percent black and school poverty remain statistically significant predictors of a lower school ranking relative to a higher one. Additionally, urban district remains statistically significant in predicting a lower school ranking relative to a higher one as compared to suburban and rural districts. Importantly, adding the dummy variable for urban district location does not substantially improve the model fit. That is, the logit coefficients for percent black and percent poverty remain exactly the same if we focus on two significant digits (i.e., -.02 for percent black and -.09 for percent poverty). Lastly, this final model, does not increase the extent to which one can correctly categorize elementary schools in the Milwaukee metropolitan region from the previous model. That is, given the inclusion of the dummy variable for location within MPS, one can still correctly categorize schools in the Milwaukee metropolitan region 60 percent of the time.

Following this focal analysis, I replicated the ordered logistic regression described above for the subset of schools that have valid mathematic proficiency scores. Since mathematics proficiency is one measure used in the construction of the accountability score, it should not be surprising or informative that it is a significant predictor of school ranking. However, this subsequent analysis will test hypothesis 6 and will allow one to assess the extent to which mathematics proficiency accounts for the associations of racial/ethnic composition and poverty with school ranking. These analyses are limited to 292 elementary schools in the Milwaukee metropolitan region that have both a school categorical ranking as well as valid reports of mathematics proficiency for grade three and grade four.

Table 6. Descriptive Statistics Independent Variables by School Ranking Categories (N=292)

Variables	*Fails*	*Meets Few*	*Meets*	*Exceeds*	*Sig. Exceeds*
Percent K-4th grade Black	93.69	38.02	11.27	5.16	5.04
	(8.46)	(30.05)	(18.57)	(11.54)	(5.26)
Percent K-4th grade Latino	3.17	32.21	22.04	10.63	5.55
	(6.75)	(27.75)	(18.60)	(13.91)	(3.58)
Percent School Poverty	95.66	82.34	52.75	30.13	15.27
	(2.81)	(15.96)	(20.97)	(18.47)	(8.28)
Percent 3rd and 4th grade Math Proficient	7.85	24.69	44.99	63.34	77.64
	(3.39)	(10.53)	(12.03)	(10.95)	(7.97)

NOTE: Standard Deviations are reported in parentheses

After examining the descriptive statistics of these variables by school rank within the restricted sample (Table 6), there is a stark pattern. Specifically, schools that are ranked as "fails to meet expectations" have on average, a student body that is overwhelmingly black (93.7 percent), a poverty rate of 95.7 percent, and a mathematics proficiency score of only 7.9 percent. This pattern follows throughout the interval. For example, schools that are ranked as "significantly exceeding," have the lowest percent black and lowest percent Latino student body. Additionally, schools ranked in this category have the lowest poverty rate, at about 15 percent (less than the failing category as well as less than the overall shown in Table 2), and yet, they have a mean mathematics proficiency score of 77.6 percent (more than the failing category as well as more than the overall shown in Table 2.

With the restricted sample (N=292), the general trend produced by the ordered logistic regression analysis remains similar to those in the previous models (N=357).[7] Specifically, the coefficients for percent black and percent Latino indicate lower odds of a higher school ranking compared to a lower ranking. The only notable change with the restricted sample is that the control for charter school designation is no longer statistically significantly different than traditional public schools in predicting school ranking, which may reflect the reduced sample size. Model 2 accounts for whether the school is part of the Milwaukee Public School district. Again accounting for poverty explains most of the association of race/ethnicity in predicting school ranking. However, model 3 still indicates that percent black is statistically significant in predicting a lower school rank versus a higher one. Model 4 parallels the preceding analysis and in this analysis, percent black and school poverty remain significant in predicting a lower ranking relative to a higher one and urban district remains significant in predicting a lower school ranking relative to a higher one when compared to suburban and rural one. Importantly, accounting for urban location has no impact on the logit coefficients for percent black, if again we focus on two significant digits (i.e., -.03) and has only a minor impact on percent poverty (i.e. -.8 to -.9)

Table 7. Ordered Logistic Regression (N= 292)

Variables	***Model (1)***		***Model (2)***		***Model (3)***		***Model (4)***		***Model (5)***	
(Percent K-4th grade Black^2)/100	-.084***	(.009)	-.070***	(.009)	-.028***	(.009)	-.027**	(.010)	-.007	(.010)
(Percent K-4th grade Latino^2)/100	-.057***	(.010)	-.042***	(.010)	-.019	(.010)	.021	(.011)	.021	(.012)
Percent School Poverty	-	-	-	-	-.087 ***	(.009)	-.083***	(.009)	-.020	(.011)
Percent 3rd and 4th grade Math Proficient	-	-	-	-	-	-	-	-	.153***	(.017)
Institutional Variable										
Urban District (MPS)	-	-	-1.701***	(.383)	-	-	-.932**	(.399)	-1.012*	(.427)
Control Variable										
Charter Designation	.834	(.503)	.923	(.471)	.578	(.506)	.573	(.499)	.730	(.519)
τ_1	-6.403		-6.841		-10.298		-10.486		-1.340	
τ_2	-3.021		-3.304		-6.977		-7.020		2.779	
τ_3	-0.756		-.869		-3.800		-3.736		7.155	
τ_4	1.678		1.630		-0.353		-0.302		11.848	
Pseudo R^2	.220		.246		.369		.375		.499	
R^2 Count	.534		.556		.616		.606		.678	
R^2 Count (adjusted)	.209		.244		.349		.331		.453	

NOTE: Standard errors are in parentheses; *=p<.05; **p<.01; ***p<.001

The fifth model includes mathematics proficiency. The likelihood ratio chi-squared is 408.79 with a statistically significant difference from the null model. Compared to the latter models, in this replicated sample, model 5 has an overall better fit as indicated by the pseudo R^2 of .499. As hypothesized, race/ethnicity and percent school poverty are no longer statistically significant in predicting school ranking. This finding suggests that much of their negative association with schools' ranking can be explained by math proficiency, a variable that measures academic achievement at one point in time. That is, the coefficients for mathematic proficiency indicate higher odds of a higher school ranking relative to a lower school ranking. More specifically, for just a one percentage point increase in overall school mathematic proficiency, the odds of a higher school ranking compared to a lower one are increased by a factor of 1.165, or by 16.5 percent. Lastly, the dummy variable for urban location remains statistical significant in predicting school ranking. Urban district location is statistically significant in predicting a lower school ranking relative to a higher one when compared to suburban and rural districts in the Milwaukee MSA. Specifically, the odds of a higher rank relative to lower one are decreased by about 64 percent for urban elementary schools when compared to suburban/rural ones $(100*(e^{(-1.012)}-1) = -63.6)$.

Table 8. Simulation of Predicted Probabilities for Traditional Public Schools' Rankings by Racial/ethnicity (N=357)

School Types	*Fails*	*Meets Few*	*Meets*	*Exceeds*	*Sig. Exceeds*
Majority White School	.004	.053	.290	.503	.150
5 *(Percent Black)*					
3 *(Percent Latino)*					
Integrated School	.007	.090	.388	.425	.090
25 *(Percent Black)*					
15 *(Percent Latino)*					
Majority Minority School	.027	.272	.490	.186	.024
50 *(Percent Black)*					
15 *(Percent Latino)*					
Predominately Black	.604	.355	.036	.004	.000
90 *(Percent Black)*					
3 *(Percent Latino)*					

As predicted, the inclusion of mathematics proficiency in the last model account for most of the racial/ethnic and socioeconomic association in predicting school ranking. Yet, essential to this paper is the extent to which racial/ethnic composition alone is predictive of school ranking. Using the results from model 1 (Table 5), that is all traditional public elementary schools with valid school demographic and ranking data (N=357), Table 8 reveals the predicted probabilities for each level of school ranking while only focusing on the racial/ethnic composition of representative values for schools in the Milwaukee metropolitan region. For example, the simulation demonstrates that for an ideal type representing a majority white school, that is a school with less than 10 percent minority students, the results show there is almost a 95 percent predicted chance of being labeled as "meeting expectations", "exceeding expectations," or "significantly exceeding expectations" (.290 + .503 + .150 = .943). Conversely, a majority black school is predicted to have more than a 95 percent predicted chance of being labeled as "meeting few expectations," or as "failing to meet expectations" (.604+.355= .959). Additionally, the simulation indicates that for an ideal type representing an integrated school in the region the predicted probability of "exceeds expectations" is much greater than the lower categories. However, once percent black is increased in the majority minority ideal type, the predicted probability of lower rankings as compared to higher rankings increase. That is, the simulation shows an increased predicted probability of categories "fails to meet expectations" and "meets few expectations."

The rest of the table can be read in a similar manner. Overall, this simulation demonstrates the substantial impacts that racial/ethnic composition have on the predicted probability of traditional public schools' accountability rankings (Long and Freese, 2014).

DISCUSSION AND CONCLUSION

This study examined the extent to which schools' demographic composition predict schools' report card ranking. The first set of analyses indicate that for schools with higher proportions of black and Latino students the odds of a higher rank relative to a lower rank decrease as the percent of black and Latino students' increase. All models controlled for charter school designation, yet after accounting for institutional differences such as urban location, there were only slight impacts to the focal model. As predicted, accounting for poverty seemed to explain most of the association for percent Latino. Yet, percent black and school poverty still predict a lower school ranking relative to a higher one. Based only on the racial/ethnic composition of schools' student body, the analyses (N=357) show that one can correctly categorize schools in the Milwaukee metropolitan region more than half the time. After including school level poverty, one can correctly rank schools within the region more than 60 percent of the time.

State report cards are constructed from accountability scores that are created from "essential indicators." Part of the purpose of this study was to assess the extent to which school rankings reify existing racial/ethnic inequalities, thus, I employed one aspect of the school accountability index. Using mathematics proficiency, I conducted a subsequent analysis that accounted for the proportion of a schools' students with proficient mathematics scores. In the secondary analysis, the same trend shown in the primary analysis remained in the first four models. In the final model that accounted for all variables, the findings showed that controlling for schools located within MPS were much less important than controlling for school level poverty when explaining the predictive power of schools' racial/ethnic composition. Once the proportion of a schools' students with mathematics proficiency are taken into account (N=292), that is, after accounting for one point in time as opposed to measures of improvement over time, it explains most of the association of race/ethnicity and school ranking.

It is not particularly surprising that mathematics proficiency is predictive of school ranking. However, the fact that controlling for it accounted for most of the negative association of racial/ethnic composition and poverty concentration with school ranking is. There is strong evidence that school composition and school environmental factors influence academic achievement (Hogrebe and Tate, 2010; Kucsera et al. 2015; Logan et al. 2012). Specifically, black and Latino students tend to have lower scores on standardized exams when compared to white students, and this gap in achievement is largest in mathematics at the start of schooling (Reardon and Galindo, 2009). To be sure of this association within these data, I originally used OLS (output not shown) and found that racial minority status, especially being black or Latino, and poverty concentration have a negative influence on mathematics proficiency. Consequently, school level mathematics proficiency may reflect pre-existing racial/ethnic and socioeconomic inequalities both within and outside of the school. As such, part of the Wisconsin accountability index supposedly accounts for achievement over time and racial gap closure (Wisconsin Department of Public Instruction, 2016). Yet, these analyses were telling, as they indicate that one can largely predict a schools' ranking without knowing anything about these other criteria.

Charter school designation was shown to be statistically significantly different than traditional public schools in predicting a higher school ranking relative to a lower one in the first set of analyses, but not in the subsample. In the first set of analyses, there were 37 charter schools included, after accounting for schools with valid mathematics proficiency, there were only 25 charter schools included in the analysis (Table 3). Of the 12 charter schools not included in the replicated analysis, 6 were ranked as "meets few expectations," or "fails to meet expectations." Importantly, the ability to predict elementary schools' ranking when considering the racial/ethnic composition of a school does not depend on charter status. In fact, neglecting to control for charter school status suppresses the predictive power of schools' racial/ethnic composition. Even further, the predicted probabilities of higher school rankings were marginally greater for all ideal types in the simulation when I did not control for charter status (Table 8). Given the relatively low number of charter schools in the sample, the policy inferences that one can draw from this finding seem rather premature and warrant future exploration.

Poverty was shown to be a statistically significant predictor of a lower school rank versus a higher one in the first sets of analyses. After it was included in the analyses, it explained a substantial amount of the association between race/ethnicity and lower school rankings. As discussed throughout, poverty has concentrated much more heavily on blacks and Latinos

(Gotham, 2002; Sampson, 2012). Throughout both sets of analyses, schools in the MPS district showed lower odds of higher school ranking versus lower school ranking when compared to schools outside of the city district. However, nearly 76 percent of all elementary schools (Table 4) within the MPS district were ranked as either "meets few expectations" or "fails to meet expectations." Even further, there were no schools within the MPS district with the ranking "significantly exceeds expectations," as opposed to the 37 schools that received such distinction in the surrounding suburban/rural districts. The analyses show that even after controlling for urban location, there was a significant negative effect of racial/ethnic composition and school ranking. That is, controlling for bureaucratic and institutional differences (Chubb and Moe, 1988) only slightly accounted for the association of racial/ethnic composition and school ranking. Poverty accounted for much more.

This study is not without limitations. Each state is responsible for constructing its own report card system and determining what is measured as part of their accountability index (Education Commission of the States, 2016). In the state of Wisconsin, the school accountability report card system ranked schools within five distinct categories during the 2013-2014 school year based of the accountability score it received; while other states relied on a numerical scale (i.e. 1-100) or even letter grades (i.e. A-F). Notably, school accountability systems, especially within the state of Wisconsin, have changed multiple times since NCLB in 2002 and their future alterations remain politicized and rather unclear. However, it is important to indicate that although the precise categories may differ by state or even by year, the categorical hierarchy of state accountability report cards allows one to compare schools' relative to others and this is a common theme across the country; therefore, similar trends are likely to exist. Lastly, this study only employed one aspect of the accountability index and although it allows one to correctly predict a schools' label a majority of the time, it remains less clear whether the pre-existing differences in math scores are a consequence of school differences such as resources, family differences such as poverty, or some various combination of both.

Accountability systems were developed to identify poor performing schools and to ensure that all children receive equal education (No Child Left Behind Act of 2001), yet these ranking systems seem to contribute to racial/ethnic and socioeconomic inequalities in access to equal education. For instance, families tend to develop beliefs about neighborhoods based on school performance (Frankenberg, 2013), and this system now allows schools to be compared relative to others. As the simulation above demonstrates racial/ethnic composition alone substantially affects the predicted probability of school ranking (Table 8). That is, school rankings are shown to vary as a function of schools' racial/ethnic composition, such that the predicted probability of falling below "meets expectations" increases as schools' demographic composition becomes less white. On average, lower ranked schools have higher minority concentration, higher poverty rates, and lower mathematics proficiency. Thus this system is problematic, as it is primarily identifying which groups of students attend which schools. Therefore, future educational policy should rethink how schools are held accountable. A more pragmatic approach to assessing how effectively schools are serving their student populations should focus on various measures of added value to the same student over time rather than on report card categories that compare schools relative to one another largely based on the demographic composition of their student populations.

Overall, the findings from this study raise serious questions about the report card system implemented by the State of Wisconsin. These school ranking systems reflect patterns of segregation, not only by penalizing an already disadvantaged group of students and schools, but also by deterring potential families from moving into certain school districts likely reinforcing patterns of segregation. Given the uncertainty of future educational policies following the appointment of a new federal administration, academic work should continue to evaluate previous legislation that may contribute and extend racial/ethnic and socioeconomic inequalities. This thesis contributes to the school segregation literature as the findings presented here suggests that report card systems set forth by accountability legislation reify inequality, rather than meaningfully assess how well schools' are serving their students. Overwhelmingly, these rankings may actually contribute to and maintain separate and unequal schools.

REFERENCES

Aneshensel, Carol. 2013. *Theory-Based Data Analysis for the Social Sciences,* 2nd edition. Thousand Oaks, CA: Pine Forge Press.

Bankston III, Carl and Stephen J. Caldas. 1997. "The American School Dilemma: Race and Scholastic Performance." *The Sociological Quarterly,* 38 (3): 423-29.

Battey, Dan. 2013. "Access to Mathematics: "A Possessive Investment in Whiteness."" *Curriculum Inquiry,* 43 (3): 332-59.

Berliner, David. 2013. "Effects of Inequality and Poverty vs. Teachers and Schooling on America's Youth." *Teachers College Record,* 115 (12): 1-26.

Betts, Julian R. and Y. Emily Tang. 2011. *The Effect of Charter Schools on Student Achievement: A Meta-analysis of the Literature.* University of Washington Bothell: National Charter School Research Project.

Bifulco, Robert and Helen F. Ladd. 2006. "School Choice, Racial Segregation, and Test-score Gaps: Evidence from North Carolina's Charter School Program." *Journal of Policy Analysis and Management,* 26 (1): 31-56.

Billingham, Chase M. and Matthew O. Hunt. 2016. "School Racial Composition and Parental Choice: New Evidence on the Preferences of White Parents in the United States." *Sociology of Education,* 89 (2): 99-117.

Brice Heath, Shirley. 1982. "What No Bedtime Story Means: Narrative Skills at Home and School." *Language in Society,* 11 (1): 49-76.

Brown v. Board of Education of Topeka, 347 U.S. 483. 1954.

Brummet, Quentin. 2014. "The Effect of School Closings on Student Achievement." *Journal of Public Economics,* 119: 108-124.

Bourdieu, Pierre. 1998. *Practical Reason on the Theory of Action*. USA: Stanford University Press.

Bowles, Samuel and Herbert Gintis. 1976. "Broken Promises: School Reform in Retrospect." *Sociology of Education: A Critical Reader*. 2015. 53-70.

Carter, Prudence L. 2003. "Black' Cultural Capital, Status Positioning, and Schooling Conflicts for Low Income African American Youth." *Social Problems,* 50 (1): 136-155.

Chubb, John E. and Terry M. Moe. 1988. "Politics, Markets, and the Organization of Schools." *The American Political Science Review,* 82 (4): 1065-1087.

Darling-Hammond, Linda. 2010. *The Flat World and Education: How America's Commitment to Equity Will Determine Our Future*. New York: Teachers College Press.

Dougherty, John. 2002. *More Than One Struggle: The Evolution of Black School Reform in Milwaukee.* USA: University of North Carolina Press.

Education Commission of the United States. 2016. *50-State Comparison: School Accountability* "report cards" December 2013. Retrieved from ecs.force.com/mbdata/MBquest3RT?Rep=ar10

Ebanks, Mercedes E., Ivory A. Toldson, Soyini Richards and Brianna P. Lemmons. 2012. "Project 2011 and the Preparation of Black and Latino Students for Admission to Specialized High Schools in New York City." *Journal of Negro Education*, 81 (3): 241-51.

Fordham, Signithia and John U. Ogbu. 1986. "Black Students' School Success: Coping with the Burden of Acting White." *Urban Review,* 18 (3): 176-206.

Frankenberg, Erica. 2013. "The Role of Residential Segregation in Contemporary School Segregation." *Education and Urban Society,* 45 (5): 548-570.

Frankenberg, Erica and Gary Orfield. 2012. *The Resegregation of Suburban Schools: A Hidden Crisis in American Education*. USA: Harvard Education Press.

Frey, William H. 2015. Census Shows Modest Declines in Black-White Segregation. Retrieved from http://www.brookings.edu/blogs/the-avenue/posts/2015/12/08-census-black-white-segregation-frey

Friesen, Jane, Moshen Javdani, Justin Smith and Simon Woodcock. 2012. "How do School 'report cards' Affect School Choice Decisions." *Canadian Journal of Economics,* 45 (2): 784-807.

Furlong, Andy. 2012. *Youth Studies: An Introduction*. Abingdon, Oxon: Routledge.

Gaddis, S. Michael and Douglas Lee Lauen. 2014. "School Accountability and the Black–White Test Score Gap." *Social Science Research,* 44: 15-31.

Goldsmith, Pat Rubio. 2011. "Coleman Revisited: School Segregation, Peers, and Frog Ponds." *American Educational Research Journal,* 48 (3): 508-535.

Goldsmith, William W. 2016. *Saving Our Cities: A Progressive Plan to Transform Urban America*. USA: Cornell University.

Golightly, Cornelius L. 1963. "De Facto Segregation in Milwaukee Schools." *Equity and Excellence in Education,* 1 (6): 27-31

Gotham, Kevin Fox. 2002. *Race, Real Estate and Uneven Development: The Kansas City Experience, 1900-2000*. USA: State University of New York.

Greenwald, Rob and Larry V. Hedges. 1996. "The Effect of School Resources on Student Achievement." *Review of Educational Research,* 66 (3): 361-96.

Hanushek, Eric A. 1997. "Assessing the Effects of School Resources on Student Performance: An Update." *American Educational Research Association,* 19 (2): 141-164.

Harris, Ian M. 1983. "Criteria for Evaluation School Desegregation in Milwaukee." *The Journal of Negro Education,* 52 (4): 423-35.

Hedges, Larry V. and Amy Nowell. 1999. "Changes in the Black-White gap in Achievement Test Scores." *Sociology of Education,* 72 (2): 111-135.

Heilig Julian V. and Jennifer J. Holme. 2013. "Nearly 50 years Post-Jim Crow: Persisting and Expansive School Segregation for African American, Latina/o and ELL Students in Texas." *Education and Urban Society,* 45 (5): 609-32.

Hogrebe, Mark C. and William F. Tate IV. 2010. "School Composition and Context Factors that Moderate and Predict 10th-grade Science Proficiency." *Teachers College Record,* 112 (4): 1096-1136.

Konstantopoulos, Spyros. 2008. "Do Small Classes Reduce the Achievement Gap Between Low and High Achievers? Evidence from Project STAR." *The Elementary School Journal,* 108 (4): 275-291.

Konstantopoulos, Spyros and Vicki Chung. 2011. "Teacher Effects on Minority and Disadvantaged Students' Grade 4 Achievement." *The Journal of Educational Research,* 104 (2): 73-86.

Kozol, Jonathon. 1991. *Savage Inequalities: Children in American Schools.* New York, NY: Broadway books.

Kozol, Jonathon. 2005. *The Shame of the Nation: The Restoration of Apartheid Schooling in America*. USA: Crown Publishing Group.

Kuscera, John V., Genevieve Siegel-Hawley and Gary Orfield. 2015. "Are We Segregated and Satisfied? Segregation and Inequality in Southern California Schools." *Urban Education,* 50 (5): 535-71.

Lareau, Annette. 2002. "Invisible Inequality: Social Class and Childrearing in Black Families and White Families." *Sociology of Education: A Critical Reader*. 2015. New York, NY: Routledge.

Levine, Marc. 2003. *The two Milwaukees: Separate and Unequal. The Milwaukee County Task Force on Segregation and Race Relations*, University of Wisconsin Milwaukee.

Logan, John. 2010. *Whose Schools are Failing?*. Brown: US2010Project.

Logan, John and Julia Burdick-Will. 2016. "School Segregation, Charter Schools, and Access to Quality Education." *Journal of Urban Affairs,* 38 (3): 323-343.

Logan, John, Elisabeta Minca and Sinem Adar. 2012. "The Geography of Inequality: Why Separate Means Unequal in American Public Schools." *Sociology of Education,* 85 (3): 287-301.

Long, J. Scott and Jeremy Freese. 2014. *Regression Models for Categorical Dependent Variables Using Stata*, 3rd Edition. College Station, TX: Stata Press.

Mikulecky, Marga and Kathy Christie. 2014. *Rating States, Grading Schools: What Parents and Experts Say States Should Consider to Make School Accountability Systems Meaningful.* Denver, CO: Education Commission of the United States.

National Center for Education Statistics. 2015. *Digest of Education Statistics*. NCES 2016-014. Washington, DC: U.S. Department of Education. Retrieved September, 2016 https://nces.ed.gov/fastfacts/display.asp?id=619 .

National Center for Education Statistics. 2015. *Digest of Education Statistics*. NCES 2015 216.30. Washington, DC: U.S. Department of Education. Retrieved March, 2017 https://nces.ed.gov/programs/digest/d15/tables/dt15_216.30.asp?current=yes

Nelson, James K. 2015. *Educating Milwaukee: How One City's History of Segregation and Struggle Shaped its Schools*. USA: Wisconsin Historical Society Press.

Ni, Yongmei and Andrea K. Rorrer. 2012. “Twice Considered: Charter Schools and Student Achievement in Utah.” *Economics of Education Review,* 31 (5): 835-49.

Noguera, Pedro A. 2003. “The Trouble with Black Boys: The Role and Influence of Environmental and Cultural Factors on the Academic Performance of African American Males.” *Urban Education,* 38 (4): 431-59.

Nunes, Luis, Ana Reis and Carmo Seabra. 2015. “The Publication of School Rankings: A Step Toward Increased Accountability.” *Economics of Education Review,* 49: 15-23.

Ong, Paul, and Jordan Rickles. 2004. “The Continued Nexus Between School and Residential Segregation.” *Berkeley La Raza Law Journal,* 19 (2): 379.

Orfield, Gary and Chungmei Lee. 2005. *Why Segregation Matters: Poverty and Educational Inequality*. UCLA: The Civil Rights Project / Proyecto Derechos Civiles.

Parents Involved in Community Schools v. Seattle School District No. 1, 551 U.S. 701. 2007.

Quinn, David M. 2015. “Kindergarten Black-White Test Score Gaps: Re-examining the Roles of Socioeconomic Status and School Quality with New Data.” *Sociology of Education,* 88 (2): 120-39.

Ravitch, Diane. 2010. *The Death and Life of the Great American School System: How Testing and Choice Are Undermining Education*. New York, NY: Basic Books.

Ravitch, Diane. 2014. *Reign of Terror: The Hoax of the Privatization Movement and the Danger to America’s Public Schools.* New York, NY: Alfred A. Knopf.

Reardon, Sean. 2011. "The Widening Academic Achievement Gap between the Rich and the Poor: New Evidence and Possible Explanations." *Whither Opportunity* pp. 91-115. New York, NY: Russel Sage Foundation.

Reardon, Sean and Claudia Galindo. 2009. "The Hispanic-White Achievement Gap in Math and Reading in the Elementary Grades." *American Educational Research Journal,* 46 (3): 853-91.

Reardon, Sean and Ann Owens. 2014. "60 years After Brown: Trends and Consequences of School Segregation." *Annual Review of Sociology,* 40: 199-218.

Renzulli, Linda A. 2006. "District Segregation, Race Legislation, and Black Enrollment in Charter Schools." *Social Science Quarterly,* 87 (3): 618-37.

Richards, Meredith P. and Kori Stroub. 2015. "An Accident of Geography? Assessing the Gerrymandering of School Attendance Zones." *Teachers College Record,* 117 (7).

Rothstein, Richard. 2015. "The Racial Achievement Gap, Segregated Schools, and Segregated Neighborhoods: A Constitutional Insult." *Race and Social Problems,* 7 (1): 21.

Sampson, Robert. 2012. *Great American City: Chicago and the Enduring Neighborhood Effect.* USA: University of Chicago Press.

Saporito, Salvatore and Deenesh Sohoni. 2007. "Mapping Educational Inequality: Concentrations of Poverty among Poor and Minority Students in Public Schools." *Social Forces,* 85 (3):1227-53.

Sims, David. 2013. "Can Failure Succeed? Using Racial Subgroup Rules to Analyze the Effect of School Accountability Failure on Student Performance." *Economics of Education Review,* 32: 262-274.

Sirin, Selcuck. 2005. “Socioeconomic Status and Academic Achievement: A Meta-analytic Review of Research.” *Review of Educational Research,* 75 (3): 417-53.

Stiefel, Leanna, Amy E. Schwartz and Ingrid G. Ellen. 2006. “Disentangling the Racial Test Score Gap: Probing the Evidence in a Large Urban School District.” *Journal of Policy Analysis and Management,* 26 (1): 7-30.

Stroub, Kori and Meredith P. Richards. 2013. “From Resegregation to Reintegration: Trends in the Racial/Ethnic Segregation of Metropolitan Public Schools, 1993–2009.” *American Educational Research Journal,* 50 (3): 497-531.

The No Child Left Behind Act of 2001 NCLB. U.S. Act of Congress.

U. S. Census Bureau. 2010. American FactFinder Fact Sheet: Milwaukee City, W.I. Retrieved September 7, 2016, from https://factfinder.census.gov

Witte, John, David Weimer, Arnold Shober and Paul Schlomer. 2007. “The Performance of Charter Schools in Wisconsin.” *Journal of Policy Analysis and Management,* 26 (3): 557-73.

Yeung, Wei-Jun and Kathryn M. Pfeiffer. 2009. “The Black-White Test Score Gap and Early Home Environment.” *Social Science Research,* 38 (2): 412-37.

Zimmer, Ron and Richard Buddin. 2006. “Charter School Performance in Two Large Urban Districts.” *Journal of Urban Economics,* 60 (2): 307-26.

APPENDIX A:

Descriptive Comparison

Table 9. Descriptive Statistics

Schools with and without 3rd and 4th Grade Mathematics Proficiency Scores

	Schools Reported Proficiency	***Schools without Reported Proficiency***	***Difference***
	N=292	*N=65*	
Black Student Rate	16.22	57.75	-41.53
Latino Student Rate	15.62	13.80	1.82
Poverty Rate	45.34	77.50	-32.16
School Size	428.99	382.89	46.1
4th Grade Size	60.40	41.63	18.77
3rd Grade Size	59.33	40.15	19.18
2nd Grade Size	58.22	44.02	14.2
1st Grade Size	58.09	45.65	12.44
Kindergarten Size	56.87	44.50	12.37

APPENDIX B:

Frequency by County

Table 10. Frequency Distribution (N= 292)

MSA Counties	***Schools Reported Proficiency***		***Schools Without Reported Proficiency***
	Frequency	*Mean Proficiency*	*Frequency*
Dodge County	*14*	*52.4*	*4*
Jefferson County	*14*	*56.2*	*-*
Milwaukee County	*128*	*41.6*	*51*
Ozaukee County	*13*	*73.7*	*-*
Racine County	*30*	*46.1*	*5*
Walworth County	*16*	*49.3*	*3*
Washington County	*20*	*63.7*	*1*
Waukesha County	*57*	*66.9*	*1*
Total	292	100	65

APPENDIX C:

Reported Proficiency Ranges

Table 11. Proficiency Report and Method for Cleaning Variables in Stata

Reported Ranges	*Lower-bound generated*	*Upper-bound generated*	*Proficiency coded in Stata.14 (midpoint)*	*Codebook Definition*
PS	-	-	Missing	Suppressed to protect student privacy
LT50	-	-	Missing	Less than 50% proficient
GE50	-	-	Missing	Greater than or equal to 50% proficient
LE20	0	20	10	Less than or equal to 20% proficient
LE5	0	5	2.5	Less than or equal to 5% proficient
LE10	0	10	5	Less than or equal to 10% proficient
GE90	90	100	95	Greater than or equal to 90% proficient
Dates: i.e. mm/dd/yyyy	-	-	Missing	Submission date
25-29	25	29	27	
35-39	35	39	37	
40-49	40	49	44.5	
50-54	50	54	52	
60-79	60	79	69.5	
85-89	85	89	87	

*NOTE: Cells with the fewest students are reported with the widest ranges; cells with more than 300 students are reported as a whole number; the ranges that include numbers in the table above are examples of how the data were cleaned—these are only few of the hundreds of different combinations treated in Stata.14 using the calculated midpoint. Proficiency ranges coded as "Missing" were not included in analysis.

APPENDIX D:

Y* Standardized Coefficients

Table 12. Y* Standardized Coefficients: Ordered Logistic Regression (N=357)

Variables	***Model (1)***	***Model (2)***	***Model (3)***	***Model (4)***
(Percent K-4th grade Black^{2})/100	-.025***	-.019***	-.006**	-.005*
(Percent K-4th grade Latino^{2})/100	-.020***	-.014***	.003	.005
Percent School Poverty	-	-	-.024***	-.023***
Institutional Variable				
Urban Location	-	-.558***	-	-.251**
Control Variable				
Charter Designation	.446**	.345**	.261*	.212*

* NOTE: bStdY: Presented here are the coefficients from when Y* is standardized and X is not. Importantly, Y* is a latent variable and not observed (Long and Freese, 2014). In sum, this table shows that the changes in coefficients presented in this thesis reflect changes in scaling and not assumptions from error terms. *=p<.05; **p<.01; ***p<.001

[1] This includes major racial/ethnic groups, economically disadvantaged students, limited English proficient (LEP) students and students with disabilities (No Child Left Behind Act of 2001).

[2] Conceptually, it would be best to consider the role of race and ethnic-specific mathematic test scores; however, schools with relatively few minority students do not necessarily report these specific scores. Of those that do, the sample size is significantly reduced and as such, would possibly introduce a pronounced sample selection bias.

[3] Absenteeism is based off ISES data, which does not distinguish between excused and unexcused absences. The rate is based off the percent of students in a school considered chronically absent (attendance of 84 percent or less), with a goal of 13 percent or less.

[4] This ranking category may include: schools with fewer than 20 full academic year (FAY) students enrolled in tested grades, schools without tested grades, schools exclusively serving at-risk student, new schools, or K-2 schools without a direct feeder pattern (Wisconsin Department of Public Instruction, 2016).

[5] Central City Cyberschool was almost entirely black and entirely eligible for free/reduced lunch yet, it produced much higher mathematics for grade 4 proficiency and none for grade 3. Wisconsin Virtual Learning is an *online* charter school.

[6] Again, although it would be best to consider the role of race and ethnic-specific mathematic test scores; this analysis will only employ the overall school mathematics performance due to schools with relatively few minority students and confidentiality concerns discussed.

[7] Including K-4 student racial/ethnic demographics as opposed to only 3rd and 4th grade demographics in the replicated regressions significantly improves the model estimates (confirmed using fitstat command in Stata.14).