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Teacher Quality and School Resegregation: A Resource Allocation Case Study

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This article uses a school finance equity framework to examine the distribution of resources across the Metropolitan Nashville Public Schools (MNPS) during a policy shift toward neighborhood-based student assignment between 1999 and 2004. Findings from this analysis confirm that MNPS schools are resegregating. Additionally, this study finds that, although Nashville students from poor and minority backgrounds received additional resources from the district in the form of reduced pupil/teacher ratios, they faced challenges in the form of higher percentages of inexperienced teachers and reduced average teacher salaries. Finally, this analysis provides evidence to suggest that these inequitable relationships worsen slightly over time.

INTRODUCTION

The purpose of this article is to examine the resource allocation implications of a shift in student assignment policy in one large urban Southern school system—the Metropolitan Nashville Public Schools (MNPS)—for poor and minority students. MNPS moved into a unitary status plan in 1999, meaning that students would no longer be assigned to schools with a policy goal of racially integrating school populations. One key component of this plan was a local commitment to provide additional resources to schools in Nashville's most segregated neighborhoods. MNPS made this move deliberately and with foresight. Therefore, MNPS represents a political "best case" for resource allocation within a framework of neighborhood-based student assignment.

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This article examines the implications of changing student assignment and attendant funding policies in MNPS for the allocation resources for a five-year period, 1999–2004. This article adopts an equity framework from the field of school finance (Berne & Stiefel, 1984, 1994) to conduct this examination by assessing levels of horizontal and vertical equity within a district (Iatarola & Stiefel, 2003). Horizontal equity measures and measures of segregation are used to assess the overall distribution of resources across MNPS students over time under an assumption that all students deserve equal treatment. Vertical equity measures are used to assess relationships between race, class, and the distribution of educational resources over time under the assumption that differential treatment of differently situated students is a desirable form of resource distribution (Guthrie, Springer, Rolle, & Houck, 2007). This article examines MNPS policies from within a school finance framework in order to determine (1) if schools in Nashville resegregated; that is, if poor and minority students in Nashville schools found themselves attending schools with higher concentrations of minority peers; and, (2) if poor and minority students in Nashville schools received the benefits of additional resources, measured in terms of pupil teacher ratios and multiple measures of teacher quality. After reviewing findings that address these two questions, this article examines policies that may serve to better allocate resources across schools, thereby contributing to larger discussions about student assignment policies, teacher allocation policies, and the field of education finance more broadly.

The sections that follow will review the historical and legal context of student assignment and school resegregation, the particular context of Nashville and its appropriateness for case study, the data collected and methods used to examine that data, and the findings, conclusions, and policy recommendations that derive from the study.

ACADEMIC AND POLICY CONTEXT

Policy Overview

There is little formal policy interaction between school finance policies, which regulate the manner in which educational revenues are distributed across schools, and student assignment policies, which regulate the options families face placing their children into a public school system. Yet, these two systems inform each other in myriad ways. For example, federal Title I funding is determined by the distributions and concentrations of economically disadvantaged students in schools. Locally, many districts attempt to provide additional resources for schools with concentrations of poor and/or minority students.

Some student assignment occurs outside of an educational policy context. Tiebout's economic theory (1956) posits that citizens shop communities for

the balance of tax rates and quality services that meets their needs. According to Tiebout, students are thereby selected into districts with peers from relatively like-minded parents. Even within school districts, parents often shop neighborhoods based on school attendance zones, thereby availing themselves of higher-quality schools. Additionally, parents may use student body composition as a marker for school quality when searching for schools (Schneider & Buckley, 2002).

Other connections between student assignment and school finance occur within an educational policy context. Historically, southern states intentionally underfunded and segregated schools in order to deprive African American students of equal educational resources and opportunities (see, for examples, Anderson, 1988). As a result, one of the intentions of school integration polices was to equalize student exposure to high(er)-quality educational facilities and resources. Although school districts of sufficient size have always confronted the policy issue of determining school attendance boundaries, the focus on integration following (with all deliberate speed) the 1954 ruling in *Brown v. Board* placed additional emphasis on student assignment polices and the methods by which those student assignments were actualized, such as busing (see, for example, Formisano, 2004).

Legal Overview

Brown v. Board set the tone and tenor for school integration in the United States. Integration was not only based upon a theory that white students would exert positive peer effects on African American students, but that politicians would be loath to underfund schools that taught white students as well as African American students. Recently, court decisions in large urban districts such as Atlanta (*Mills v. Freeman*, 1996), Charlotte, NC (*Capacchione v. Charlotte-Mecklenburg*, 1999), Denver (*Keyes v. Denver School District No. 1,* 1995), Nashville (*Kelly v. Metropolitan Board of Education*, 1998), and San Diego (*Board of Education v. Superior Court*, 1998) have declared large urban school systems to be unitary, thereby freeing them from court ordered desegregation plans focusing on the manner by which students are assigned to schools.

Legal activity at the state and local levels has culminated in the U.S. Supreme Court's decision in *Parents Involved in Community Schools v. Seattle School District #1*, barring the use of race-based student assignment in districts. Although a close parsing of Justice Kennedy's concurrence may yield room for legal maneuvering with the issue of race-based student assignment, one implication of this ruling is that more districts will move toward neighborhood-based student assignment plans and away from assignment plans built around ideas of creating, maintaining, or promoting racial integration.

Defining Unitary

Unitary status is a legal term that indicates that a given district has eliminated vestiges of discriminatory actions. Determinations of unitary status have been clarified through the use of the "Green factors" in assessing whether the effects of de jure segregation still persist (*Green v. County School Board*, 1968; see also *Freeman v. Pitts*, 1992). The seven Green factors include racial balance and elimination of discriminatory policies in the following areas: extracurricular activities, transportation, administrative staff assignments, relative quality of education, faculty assignment, facilities and resources, and student assignment. The court has noted that these factors are not binding; the certain definition of unitary status is left consciously unclear. Based on determinations of fact in assessing the residual discriminatory practices across these Green factors, a court can declare a district partially or wholly unitary.

Effects and Consequences of De- and Resegregation

One predictable outcome of changing student assignment policies is a resegregation of schools (Clotfelter, Ladd & Vigdor, 2002; Orfield, Frankenburg & Lee, 2003). It has been established that there are long-term economic and educational attainment benefits of attending desegregated schools (Trent, 1997; Wells & Crain, 1994), as well as pernicious relationships between attending resegregated schools and increased dropout rates (Orfield 1996). These studies find a relationship between resegregation and increased dropout rates for minority populations. Additionally, the literature on peer effects suggests positive links between peer integration and student achievement (Angrist & Lang, 2002; Hanushek, Rivkin, & Kain, 2009; Hoxby, 2000; Lee & Bryk, 1989).

Although the literature is suggestive of peer effects on achievement, there is also evidence to suggest that classroom effects may operate through the training and experience of teachers in schools with high concentrations of poor and/or minority students. In this sense, student peers are themselves resources that districts can allocate across schools in order to affect the provision of resources such as instructional spending and teacher qualifications. In recognition of this dynamic, and based on theories of vertical equity linked to social justice, educators and policymakers have long advocated for the compensatory funding of schools with high-needs students.

Resource Allocation in Resegregating Schools

Although one may assume that the invidious discriminatory practices of the past will no longer impact resegregated schools in MNPS, it is important to examine whether poor and/or minority students in MNPS schools are

treated in any systematically different way than their peers. Differential treatment can be both positive and negative: compensatory spending models would indicate that schools with greater perceived needs receive greater resources, while other perspectives might hold that discrimination in the allocation of resources may still be the order of the day. One method of examining this question is by examining the quality of the teachers that students interact with in classrooms. Although teacher quality is a concept increasingly linked with student performance and outcome measures, it is also a concept that can be proxied by any number of input variables, thereby allowing for discussing of the distribution of teacher qualifications across schools.[1]

Since teacher salaries are the largest single expenditure item in American public education, teacher salaries are one of the larger policy levers that educators and policymakers have when addressing the persistent academic achievement gaps in America's schools. Education is human-resource intensive, with teacher salary accounting for 81 percent of current educational expenditures nationally (U.S. Department of Education, 2006). In some manner, then, equal access to educational resources implies equal access to teacher qualifications. Due to the rigidity of the single salary schedule prevalent across most school districts, higher concentrations of less-experienced teachers actually represent a financial loss to the school. Roza and Hill (2004) report an average monetary discrepancy of $101,786 per school based on comparisons of school-level mean teacher salary to district-level mean teacher salaries. That figure was $120,612 in Baltimore County, $106,974 in Cincinnati, and $72,576 in Seattle. In each of these cases, the makeup of a school's student population bears on the level of resources at that school. Emerging research on teacher labor markets indicates that school-level student body composition affects teacher decisions about where to work, resulting in increased teacher mobility at high-poverty schools (Ingersoll, 2001), increased teacher mobility or turnover at racially isolated schools (Freeman, Scafidi & Sjoquist, 2002), decreased teacher quality in high-poverty, high-minority schools (Lankford, Loeb & Wyckoff, 2002), and increased pupil-teacher ratios (Picus, 1994).

The theory of internal labor markets (articulated by Doeringer & Piore, 1971) suggests that school district student assignment policies that allow for high concentrations of poor and/or minority students may interact with policies that enable more senior teachers to transfer schools more easily, resulting in teaching corps at high-poverty/high-minority schools that are both less prepared and less experienced than their peers across the district. As more experienced teachers leverage their way into schools with better perceived teaching environments, schools with worse perceived teaching environments are left to hire teachers that are less experienced, less credentialed, or both (Stiefel, Rubenstein, & Schwartz, 2004). The allocation of students as resources, then, has a direct implication for

the allocation of teachers for those students. Most of the studies illustrating this dynamic, however, have been conducted prior to a current move toward resegregation, or within districts with stable student assignment policies (Freeman, Scafidi & Sjoquist, 2002; Ingersoll, 2001; Lankford, Loeb & Wyckoff, 2002).

Finally, there is some question as to the exact relationship between teacher experience, credentials and teacher quality. In acknowledgement of this controversy, this study examines teacher quality through salaries, which combine an interacted effect of experience and credentials, and through the percentage of nontenured (i.e., inexperienced) teachers working in a given school.

Research Questions

Unlike other districts, the Metropolitan Nashville Public Schools (MNPS) voluntarily sought declaration of unitary status under a student assignment and districtwide funding system that provided additional resources for neighborhoods where resegregated neighborhood-based schools would develop. The context of MNPS raises interesting questions about the intersection of student assignment and school finance policies. Therefore, the purpose of this article is to describe the movement of students in MNPS over time and to further describe patterns in resource allocation associated with school types and student characteristics. This description is not causal; rather, by using a school-finance framework, it seeks to describe associations over time within a bounded policy environment (Rolle, Houck, & McColl, 2008; Rolle & Liu, 2006).

Specifically, questions addressed in this research include: (1) how did the student population in MNPS change over time, and given this change, did the system overall become more segregated once the district moved to student assignment by neighborhoods? (2) did the addition of new school types by MNPS—located specifically in impoverished neighborhoods—direct resources toward students most in need; that is, did these school types provide vertically equitable resource distributions? and, (3) controlling for these new school types, did the provision of teacher resources for poor and minority students become more or less vertically equitable over time?

Framed for policymakers, these questions become: What are the resource allocation consequences of the move toward neighborhood-based student assignment? Do the relationships between race, class, and funding change over time as this policy is fully implemented? If so, do these changes represent a vertically equitable investment in students who come from traditionally harder-to-teach populations? Or, will patterns of inequitable resource allocation based on race and/or class continue to deny equal educational opportunities—in the form of resources allocated at the school level—to these students?

THE NASHVILLE CONTEXT

History of School Segregation in Nashville

The historical context of the Metropolitan Nashville Public Schools as it moved toward desegregation between 1954 and 1991 and its subsequent move toward unitary status has been well documented (Goldring & Smrekar, 2002; Goldring et al, 2006). Some key facts follow: Nashville has a high percentage of students attending private schools, up to 30 percent by some estimates (Guthrie, Houck, & Springer, 2006; Klein, 2008), leaving the system with disproportionately high numbers of poor and minority students relative to the geographic area. Until 1998, MNPS assigned students to schools with the policy goal of racially integrating schools. Like many other districts, MNPS adhered to a percentage ratio of African American to White students in schools. The thresholds, written as goals into this policy, were 75 percent White and 25 percent African American. This policy was in effect as a result of court oversight stemming from litigation in the 1960s. During the 1990s, leaders in the Black and White communities discussed coming out from under court order. This was accomplished through petition to the court in 1998, which accepted the proposed plan to move towards neighborhood-based student assignment and declared the district to be unitary—meaning that any residual segregation was not connected to prior racially biased policy decisions. Contemporaneous to the move toward neighborhood-based student assignment, MNPS also consolidated the number of school grade configurations as well as attendance sequences.

Table 1 illustrates the impact of the move toward neighborhood-based student assignment policies between 1998 and 2004. As Table 1 indicates, MNPS moved from ten school-grade configurations in 1999 to five in 2005 (hitting a high of 18 in 2001, the middle of the transition period), and from 564 school attendance sequences in 1999 to 68 in 2005 (again, the transition brought a high of 788 in 2000).[2] The overall model of student assignment in MNPS became significantly less complex over the period of time that the district has made the transition to neighborhood-based student assignment. The system has fewer grade/school configurations, and fewer sequences of schools that students can attend.[3] This is commensurate with a move toward neighborhood-based student assignment; there are fewer school grade configurations and fewer assignments across schools.

Simultaneous to these policy changes, the student body composition of MNPS was also changing. Figure 1 presents student demographic changes over time. During the period of study, the percentage of White students in MNPS declined (from 49% to 41%) as the percentage of African American students increased slightly (from 45% to 46%). African American students eclipsed White students as a percentage of district enrollment in 2001. The trend line in Figure 1 indicates the presence of other minority students, reflecting an influx of Hispanic students between 1999 and 2004 (from 3%

TABLE 1 Grade Configurations and Student Assignment Sequences, MNPS, 1998–2004.

Year	97–98	98–99[1]	99–00	00–01	01–02	02–03	03–04
School Configurations	K–K 1–2 1–3 1–4 1–6 3–6 4–6 5–6 7–8 9–12	K–K 1–2 1–3 1–4 1–6 3–6 4–6 5–6 7–8 9–12	K–K 1–1 1–2 1–3 1–4 1–6 2–2 3–4 3–6 4–6 5–6 5–8 7–8 8–8 9–12	K–K K–2 K–3 K–4 K–6 3–4 3–6 4–4 4–6 5–5 5–6 5–8 6–6 6–12 7–7 7–8 8–8 9–12	K–K K–2 K–4 3–4 5–5 5–6 5–7 5–8 6–6 7–7 7–8 8–8 9–12	K–K K–4 3–4 5–6 5–7 5–8 7–7 7–8 8–8 9–12	K–4 5–6 5–7 5–8 7–8 8–8 9–12
School Configurations	10	10	15	18	13	10	7
School Attendance Sequences	564	564	788	514	377	280	154

[1]Although year one of implementation, the 1998–1999 school years serves as a baseline for this study. Note the structural similarities to the 1997–1998 school year.

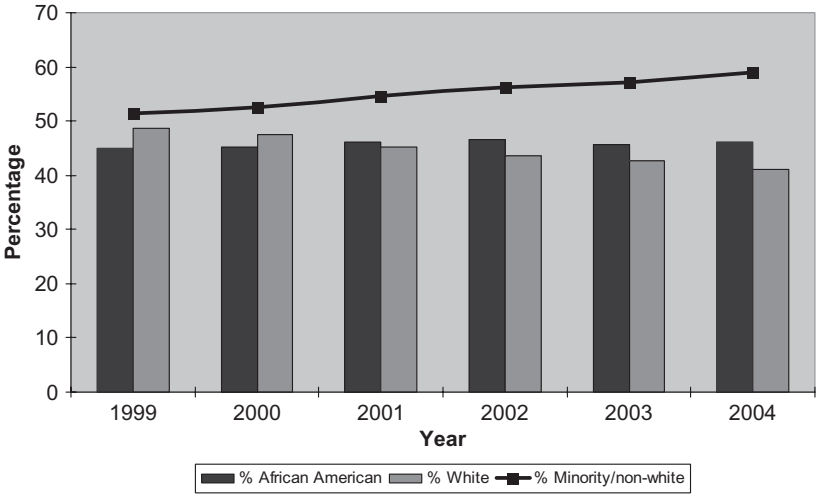

FIGURE 1 Student composition in MNPS: 1999–2004.

Source: Tennessee Department of Education annual report cards.

to 9%). It is clear that the historical loss of students to private schools and a growth in Hispanic students contributed to make MNPS a majority-minority district over the years of this study. Similarly, levels of free lunch students increased over time, from 47 percent in 1999 to 62 percent in 2004. These demographic shifts will have to be accounted for when examining levels of racial segregation in MNPS between 1999 and 2004.

In moving to neighborhood-based student assignment policies, Nashville leaders committed themselves to providing additional resources to address the anticipated negative effects on student performance of high concentrations of poor and minority students.

Anticipating resegregation, MNPS created two school types to be located in comminutes that would address the needs of poor and minority students. These school types, called enhanced option and design center schools, were to provide additional resources to a resegregating student population. These additional resources included decreased student/teacher ratios, additional school days, additional programs at the school site, and in-service training for teachers (see Goldring et al., 2006). Finally, MNPS continued to support its magnet program as a choice-based attendance option. Table 2 presents the percentages of students enrolled either in magnet schools or in design center or enhanced option schools between 1999 and 2004. These figures serve as a rough proxy for students in school types specifically designed to provide additional resources. Magnet school attendance as a percentage of overall student population increased every year from 1999 to 2003, when 11 percent of all MNPS students were enrolled in a magnet program. This percentage dropped, however, to 8.6 percent in 2004. Alternative school attendance was zero in 1999. Enhanced option and design center schools opened in 2000 and enrolled increasingly high percentages of MNPS students, reaching 4.9 percent in 2004.

As demonstrated, the percentage of MNPS students enrolled in some sort of compensatory school model increased between 1999 and 2003 before declining slightly in 2004, as the transition to neighborhood-based student assignment stabilized. Nevertheless, in 2004, 13.5 percent of MNPS students were enrolled in a school that provided additional resources.

TABLE 2 Magnet, Design Center, and Enhanced Option Attendance, as Percentage of Students in MNPS, 1999–2004.

Year	Magnet (%)	Enhanced option or design center (%)	Total (%)
1999	07.7	0	7.7
2000	10.0	2.5	12.5
2001	9.8	3.7	13.5
2002	9.8	4.3	14.1
2003	11.4	4.4	15.8
2004	8.6	4.9	13.5

Because of these relatively small enrollment numbers, it is clear that alternative school types were not enough to provide vertically equitable resource allocation for all students in MNPS. Therefore, it is important to understand resource implications for all students in MNPS as a result of (1) the changing demographics of the system; (2) the creation of new school types; and, (3) changes in the student assignment policy.

It is clear that the years between 1999 and 2004 were ones of demographic and policy change for MNPS. These currents make Nashville an interesting and appropriate case with which to study the resource allocation patterns that followed from these changes.

Nashville as a Case

Several features of Nashville make it an ideal case study through which to examine the intersection of student assignment and resource allocation. First, although MNPS become increasing majority-minority between 1998 and 2004, there is still a mix of white and minority students in-district. This distinguishes MNPS from other big-city urban districts, which are populated predominantly by minority students, with little ability to integrate. Second, unlike other districts that have been studied, MNPS consciously developed compensatory spending models to address the resegregation of schools brought on by neighborhood-based school assignment. Finally, the data available from MNPS provides the opportunity for improved analysis, thereby avoiding problems of data aggregation often found in other studies of intradistrict resource allocation. These characteristics make resource allocation within MNPS highly contextualized; with those contextual issues being important for interpretation and consideration of policy implications (see Yin, 1994). The section that follows describes the data collected and methods used in this analysis.

DATA AND METHODS

Data

Data for this study came from MNPS through two administrative databases. One database contained teacher experience and salary records for MNPS teachers across all schools from 1999–2004. These data were aggregated to the school level in order to create school-specific salary levels across years, and inflation-adjusted to 2004 levels. This type of data construction prevents every school from being assigned an "average" salary for the district. A second database contained student-level attendance records for every MNPS student with three years of attendance in district from 1999–2004, listing each school attended by students over their matriculation. This characteristic of the student-level administrative data limited analysis to a subset of all students enrolled

in MNPS, and resulted in lost observations in both 1999 and 2004. However, the large number of students represented in the database provides the ability to answer questions about the manner in which resources were allocated across students by ethnicity as well as school type.

Combining these databases allowed for student-weighted, school-based analyses of resource distribution, as well as analysis of the effect of student characteristics on resource provision over time.[4] Data were collected and analyzed longitudinally to better allow observation of change over time (Rolle, Houck, & McColl, 2008; Rolle & Liu, 2006). The Grubbs test, a maximum normed residual test, was used to detect outlying values and trim the data (Grubbs, 1969; Stefansky, 1972) of receiving school services without being in a specific school location, such as homebound students. Fewer than 5 percent of observations were deleted as outliers using this method. Variables were labeled according to concept and year. The final database contained 68,569 observations.

Three dependent variables were examined: pupil-teacher ratio, average teacher salary, and the percentage of nontenured teachers. The pupil-teacher ratio and teacher salary variables are standard school finance expenditure variables. The school-level percentage of nontenured teachers variable served as another proxy for teacher quality.

While some research indicates that teacher salaries serve as an adequate proxy for the interaction of teacher experience and degree-holding (see, for example, Darling-Hammond & Youngs, 2002), other more cautious studies support the use of nontenured or beginning teachers as a measure for these same characteristics (Hanushek, 2007). To address this issue, this study includes an examination of both variables. In this instance, a teacher salary is a proxy for the interaction of experience and credentials. This proxy is available because of the prevalence of teacher salary scales, which mandate payment by degree and by years of teacher experience. Additionally, this study examines the percentage of nontenured teachers—those who are the least experienced—across the district. This is a more conservative proxy of teacher quality and places an emphasis on the newest teachers versus all other teachers. Using these two measures in the study allowed for different conceptions of teacher quality to be examined.

Independent variables include markers for school types—design centers, enhanced option, and magnet schools—as described above. Independent variables that examined student demographics included variables that indicated an individual student's race and free-lunch status. Finally, an interaction term was created to specifically examine students who were both African American and free-lunch eligible. Using two independent variables and their interaction allows for examination of the relationships between race, class, and resources as follows: African American students who are not poor, poor students who are not African American, and African American students who are poor. Table 3 shows descriptive statistics for these dependent and independent variables for each year of the study.

TABLE 3 Descriptive Statistics of Key Variables.

		1999	2000	2001	2002	2003	2004
Pupil/Teacher Ratio	N	46,523	53,510	59,608	59,461	52,939	44,322
	Mean	14.529	14.041	14.130	14.174	13.976	15.465
	SD	3.698	2.263	4.045	2.560	2.631	2.863
Salary	N	47,265	53,510	59,608	59,461	53,096	46,632
	Mean	43,005.68	43,351.37	43,520.77	45,111.59	44,350.40	46,348.26
	SD	2,912.68	3,207.05	2,933.66	2,871.73	3,110.14	2,919.70
Non-Tenured	N	47,268	53,510	59,608	59,607	53,265	46,795
	Mean	0.242	0.261	0.247	0.202	0.238	0.178
	SD	0.106	0.115	0.107	0.103	0.111	0.084
Black	N	48,593	55,006	61,230	61,265	54,813	48,226
	Mean	0.490	0.480	0.471	0.473	0.483	0.495
	SD	0.500	0.500	0.499	0.499	0.500	0.500
Free Lunch	N	47,265	53,510	59,608	59,636	53,290	44,331
	Mean	0.470	0.456	0.448	0.468	0.486	0.621
	SD	0.226	0.229	0.233	0.232	0.224	0.253
Interaction	N	47,265	53,510	59,608	59,636	53,290	44,331
	Mean	0.319	0.298	0.283	0.287	0.301	0.313
	SD	0.466	0.458	0.450	0.453	0.459	0.464

Methods

To determine levels of segregation, this study used both the index of dissimilarity and the numbers and percentages of schools with high percentages of African American students. The index of dissimilarity is a statistic that represents the percentage of minority-group students that would have to relocate in order for every school's racial composition to match the overall racial composition of the district. As cited in Fife (1997), a dissimilarity index between 30 and 59 indicates moderate segregation. This study extends the use of the index of dissimilarity to include an examination of segregation by free-lunch status as well as segregation by race.

The index of dissimilarity is aspatial—it does not describe clusters of segregation but rather describes overall levels of segregation within a system. Therefore, this study additionally examines levels of segregation through an analysis of the number and percentage of MNPS schools with populations that were over 80% African American and over 80 percent free lunch, respectively. The use of these two measures, the index of dissimilarity and raw counts of schools segregated by race and class, allow for a picture of student segregation that accounts for the changing demographics of MNPS over the time of the study.

Horizontal equity measures were also used to examine the distribution of teacher resources over time. These measures include the coefficient of variation and the McLoone Index. The coefficient of variation is a simple measure of dispersion, calculated by dividing the standard deviation of a

distribution by its mean. A higher coefficient of variation indicates greater variation in a variable. As outlined by Odden and Picus (1992, 2000), coefficients of variation greater than 0.1 reflect some degree of undesirable inequity across the distribution of a variable.

The McLoone index is designed to provide a measure of the impact of inequity within a distribution on those located below the median within that observation. The McLoone index is a ratio of the total amount of funding allocated to the bottom 50 percent of a distribution to the total amount of hypothetical funding that same bottom 50 percent of a distribution would receive if each was funded at the median level. McLoone values reach zero in inequity and one in equity. Again, a guide from Odden and Picus is that McLoone values below 0.9 are generally considered equity concerns.

Vertical equity relationships were assessed using multiple regression via ordinary least squares (OLS). Equations for this analysis conceptualized resources as a function of school size, school type, and student demographics, as illustrated in equation one:

$$R \rightarrow E, ST, D \tag{1}$$

In order to operationaliuze equation one, enrollment and the square of enrollment for each school were used to capture school size and economies of scale (see Schwartz, Stiefel, & Amor, 2005). School type was examined through a dummy variable indicating if the school attended by a given student was an enhanced option, design center, or magnet school. Finally, three additional dummy variables were used to indicate whether a student was African American, free-lunch eligible, or both. The final functional form of the equation was:

$$\begin{aligned} Y = {} & \beta_0 + \beta_1 Enrollment + \beta_2 Enrollment^2 \\ & + \beta_3 Black + \beta_4 FRPL + \beta_5 Black / FRPL \\ & + \beta_6 DC + \beta_7 EO + \beta_8 Magnet + \varepsilon \end{aligned} \tag{2}$$

Notice that the interaction term, β_5, expresses the effect of race and poverty on Y, and modifies the combined slopes of β_3 and β_4 to reflect the overall effects of race and class on resource allocation (Harrell, 2001). The interaction provides the adjustment to the additive of the two interacted beta coefficients to determine the overall impact of the interaction. Since the regression equations used in these models were not fully specified, an adjusted R-squared statistic assesses the overall importance of all factors explaining variation in the dependent variable. Additionally, an F statistic is reported, since the purpose of this study was to examine both the size and direction of relationships, and not to "determine the accuracy of any particular predictive model" (Rolle, Houck, & McColl, 2008, p. 90).[5]

FINDINGS

Segregation in MNPS

By 2004, there were more Nashville schools in which the student body was over 80% African American than in 1999. This is demonstrated in Figure 2, and indicates an increasing number of racially segregated schools. However, the index of dissimilarity, which provides a weighting of overall student body composition, increased only slightly, from 33.1 in 1999 to 35.7 in 2004. These are presented in Figure 3, which reports dissimilarity index numbers for this study along with reported index of dissimilarity findings from Goldring and Smrekar's 2002 work to provide a nine-year picture of racial segregation levels for MNPS.

All of these indices are far below the levels of segregation reported by England and Morgan's 1986 study of segregation in Nashville, while levels from 1999 forward fall into Fife's (1997) category of "moderate segregation." Levels of racial segregation therefore appear to be moderate and to have increased slightly in Nashville during the implementation of this policy.

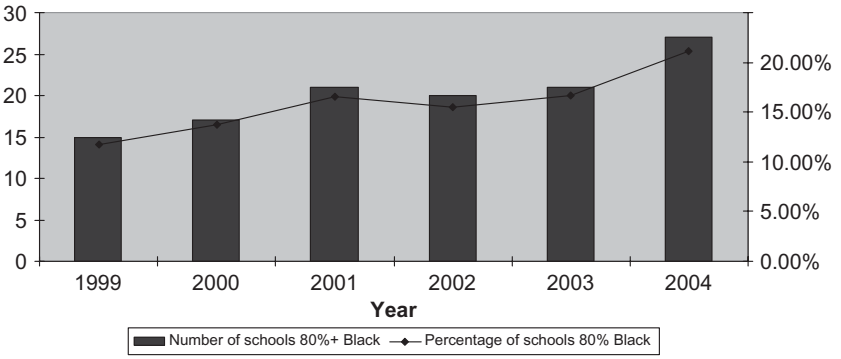

FIGURE 2 Schools with black/white ratios > 80% by number and percentage of overall schools, MNPS, 1999–2004.

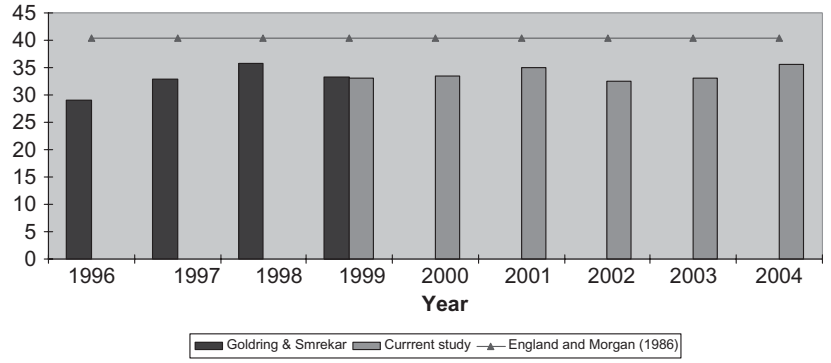

FIGURE 3 Index of dissimilarity, black and white students, MNPS, 1996–2004.

This finding is replicated when examining socioeconomic integration in MNPS schools. Figure 4 indicates the number and percent of schools with over 80 percent of the students eligible for free or reduced price lunch between 1999 and 2004. Again, over 20 percent of MNPS schools meet these criteria, up from 13 percent in 1999. However, when the index of dissimilarity is calculated for the same years, the trend is little changed over time, although overall levels of socioeconomic segregation are well above the 30 percent threshold for moderate segregation.[6] This is shown in Figure 5. It is apparent that, although similar percentages of students in MNPS schools would have to move to attain balance that reflects the overall student population, the overall student population of MNPS became systematically more diverse and poorer between 1999 and 2004. The following sections of this paper address the effects of school type and student characteristics on the provision of teacher resources in MNPS.

Horizontal Equity

Table 4 presents horizontal equity statistics for three dependent variables in the study. These figures indicate that pupil/teacher ratios and percentages

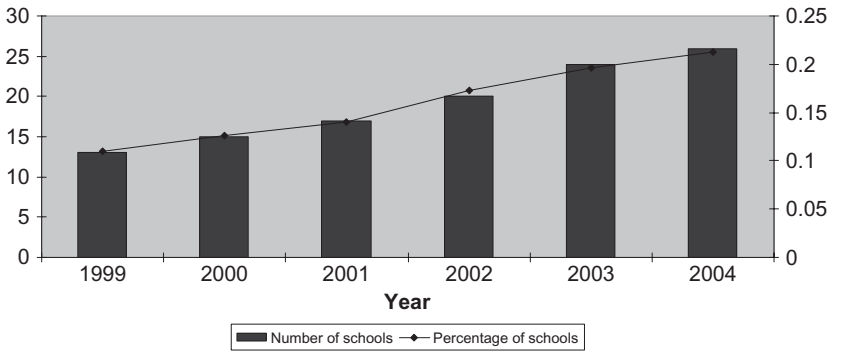

FIGURE 4 Schools with poor/nonpoor ratios > 80% by number and percent, MNPS, 1999–2004.

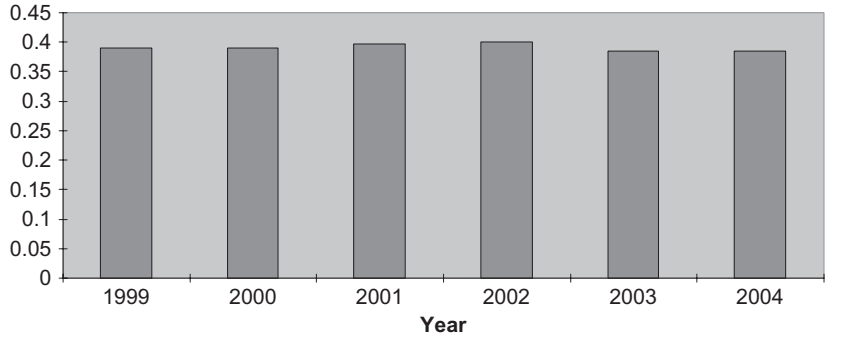

FIGURE 5 Index of dissimilarity, poor and non-poor students, MNPS, 1999–2004.

TABLE 4 Horizontal Equity Statistics for Key Variables.

	Year	1999	2000	2001	2002	2003	2004
Pupil/Teacher Ratio	Coefficient of variation	0.254	0.161	0.286	0.180	0.188	0.185
	McLoone Index	0.851	0.872	0.891	0.863	0.814	0.829
Nontenured Teachers	Coefficient of variation	0.437	0.440	0.433	0.513	0.469	0.475
	McLoone Index	0.650	0.625	0.672	0.552	0.637	0.642
Mean Teacher Salary	Coefficient of variation	0.067	0.073	0.067	0.063	0.070	0.066
	McLoone Index	0.944	0.946	0.956	0.949	0.956	0.948

of nontenured teachers were inequitably distributed in each of the years of this study. The inequitable distribution of nontenured teachers and average teacher salary did not appreciably improve or worsen over time. The distribution of pupil/teacher ratios seems to have grown more equitable over time—with a coefficient of variation dropping from 0.25 in 1999 to 0.19 in 2004—although these figures still remain well above the general inequity threshold for the coefficient of variation statistic. The McLoone index is even more stable than the coefficient of variation, indicating little change in the distribution of resources for those students in the bottom half of the distribution of key variables. This indicates that any changes seen in the coefficient of variation may be due to growing inequity in the top half of the distribution of these variables.

Findings of horizontal inequity—such as with the pupil teacher ratio and percentages of nontenured teachers—may indicate the presence of vertical equity, since the distribution of these resources in deference to student need would create horizontal inequities. Similarly, the equitable distribution of teacher salaries may indicate a lack of vertical equity in subsequent analysis.

Resource Allocation by School Type

Vertical equity analysis indicates that each of the school types used by MNPS policymakers, enhanced option, design center, and magnet, provided teacher resources differently than regular schools in MNPS. These resources were sometimes provided in a vertically equitable manner, and sometimes not. Table 5 presents standardized beta coefficients for school type variables while controlling for student characteristics and school size as outlined in equation two above. Pupil-teacher ratios were significantly associated with school types for all years of the study. For enhanced option and design center school types, the association with pupil-teacher ratios was negative; that is, these school types were associated with decreased pupil-teacher ratios, while magnet schools were associated with increased pupil teacher ratios. Design center schools seems to be associated with greater decreases in pupil-teacher ratios over time, while the associations between enhanced option and magnet schools and pupil-teacher ratios remained stable over the years of this study.

TABLE 5 Vertical Equity Statistics for Key Variables—School Type Effects.

Variable	Year	1999	2000	2001	2002	2003	2004
Pupil/Teacher Ratio	Design Center	—	–0.037**	0.050**	–0.038**	–0.091**	–0.127**
	Enhanced Option	—	–0.261**	–0.234**	–0.185**	–0.177**	–0.232**
	Magnet	0.120**	0.178**	0.111**	0.288**	0.224**	0.163**
Nontenured Teachers	Design Center	—	0.178**	0.036**	0.113**	0.091**	0.099**
	Enhanced Option	—	0.138**	0.127**	0.061**	0.004**	–0.024**
	Magnet	0.125	0.134**	0.061**	–0.014**	–0.044**	–0.101**
Mean Teacher Salary	Design Center	—	–0.127**	–0.001	–0.056**	–0.042**	–0.028**
	Enhanced Option	—	0.180**	0.225**	0.306**	0.247**	0.004
	Magnet	–0.006	–0.014**	0.007**	0.007**	0.155**	0.157**

Notes: Standardized betas; **– $p < 0.05$; *– $p > 0.05$ and < 0.10.
Fully specified results with nonstandardized betas presented in Appendix, Tables 1A–3A.

Each school type was significantly associated with increases in the percentage of nontenured teachers in 1999. However, these relationships decreased over the course of the study, to the point that 2004 betas for all enhanced option and magnet school types indicate these schools were associated with decreases in percentages of nontenured teachers.

Design center schools were associated with significant negative decreases in average teacher salary over the course of this study, although the strength of these associations diminished over time. Enhanced option schools were associated with slight increases in average school salaries, although that relationship was negligible in 2004. Finally, magnet schools, while initially associated with decreases in average school salary, came to be associated with slight increases in average school salary over the course of the study. Overall, this analysis indicates that school types were associated with slightly increased levels of vertical equity when examining pupil-teacher ratios, teacher salary, and the percentage of nontenured teachers at schools.

Resource Allocation by Student Characteristics

Vertical equity analysis indicates that student race and poverty characteristics were significantly associated with the provision of pupil-teacher ratios, percentages of nontenured teachers in schools, and average school salaries, controlling for school size and school type as outlined in equation two. While these associations were sometimes vertically equitable, they were more often not. These relationships are presented in Table 6. Race and class were associated with decreased pupil-teacher ratios in each year of the study, although these effects overall were not as strong as the effects of school type described above. The overall interaction effect, while small, strengthened over the course of the study, from –0.05 in 1999 to –0.09 in 2004.

TABLE 6 Vertical Equity Statistics for Key Variables—Student Characteristics.

Variable	Year	1999	2000	2001	2002	2003	2004
Pupil/Teacher Ratio	Free lunch	–0.089**	–0.025**	–0.014**	–0.058**	–0.051**	–0.125**
	Black	–0.021**	–0.039**	–0.051**	–0.022**	–0.017**	–0.025**
	Interaction	0.058**	–0.014*	0.006	0.023**	0.002	0.057**
	Effect	–0.052	–0.078	–0.070	–0.057	–0.068	–0.093
Nontenured Teachers	Free lunch	0.117**	0.120**	0.115**	0.121**	0.099**	0.091**
	Black	0.108**	0.115**	0.167**	0.130**	0.123**	0.158**
	Interaction	–0.073**	–0.073**	–0.071**	–0.035**	–0.047**	–0.061**
	Effect	0.152	0.162	0.211	0.216	0.175	0.188
Mean Teacher Salary	Free lunch	–0.134**	–0.125**	–0.133**	–0.115**	–0.093**	–0.161**
	Black	–0.103**	–0.086**	–0.105**	–0.097**	–0.081**	–0.179**
	Interaction	0.089**	0.090**	0.119**	0.105**	0.103**	0.130**
	Effect	–0.148	–0.121	–0.119	–0.107	–0.071	–0.21

Notes: Standardized betas; **– $p < 0.05$; *– $p > 0.05$ and < 0.10.
Fully specified results with nonstandardized betas presented in Appendix, Tables 1A–3A.

Student race and poverty characteristics were significantly associated with increases in the percentage of nontenured teachers in schools. These associations strengthened over time for race, poverty, and the interacted effect, which increased from 0.152 in 1999 to 0.188 in 2004. These are stronger than similar effects due to school type presented in Table 5.

Finally, student race and poverty variables were significantly associated with decreases in averaged teacher salaries. These associations fluctuated, ending up stronger in 2004 than in 1999. The interacted effect of race and poverty, for example, strengthened from –0.15 in 1999 to –0.20 in 2004. However, the interacted effect decreased steadily between 2000 and 2003 before strengthening again in 2004. These effects were stronger than similar associations for design center and magnet school types, but not as strong as the associations for enhanced option schools described above and presented in Table 5.

DISCUSSION AND IMPLICATIONS

As more districts face a move towards unitary status—either voluntarily or through court order—it is important to know whether and how district-level resource allocation polices impact schools with resegregated student bodies. This study has examined the relationships between school types, student race, and poverty, and three dependent variables: pupil-teacher ratios, the percentage of nontenured teachers in schools, and school-level average teacher salary. These relationships have been analyzed with reference to three research questions: (1) how did the student population in MNPS change over time and; given this change, did the system overall become

more segregated once the district moved to student assignment by neighborhoods? (2) did the addition of new school types by MNPS—located specifically in impoverished neighborhoods—direct resources toward students most in need; that is, did these school types provide vertically equitable resource distributions; and, (3) controlling for these new school types, did the provision of teacher resources for poor and minority students become more or less vertically equitable over time?

In answer to question one, this study finds that, although the overall population of MNPS changed over time, consisting of greater proportions of poor and of minority students, levels of segregation as measured by the index of dissimilarity did not. However, more schools in Nashville became segregated, with populations of African American or poor students representing over 80% of the total school enrollment. Policymakers in Nashville anticipated that the shift to neighborhood schools would create more schools with high populations of poor and/or minority students. This in turn reinforced moderate levels of segregation, which only increased slightly between 1999 and 2004.

In answer to question two, this study finds that alternate school types contributed to increased equity in MNPS schools. Enhanced option and design center schools appear to have met the policy goal of providing reduced pupil/teacher ratios to students. Design center schools in particular were associated with steep drops in pupil/teacher ratios. This indicates that these school types received more teachers than the average MNPS school after controlling for enrollment and student characteristics. Initially, these alternate school types were associated with higher percentages of nontenured teachers—the conservative proxy for low teacher quality. This indicates that these schools were being staffed by greater numbers of inexperienced teachers, perhaps causing policymakers to reflect upon the tradeoffs between teacher quality and teacher quantity. However, these relationships mediated over time, which indicates that fewer nontenured teachers worked at these alternate school types the longer the policy was implemented. Finally, design center schools seems to have smaller average teacher salaries, while magnet schools and enhanced option schools seem to have greater average teacher salaries over the course of this study. One of the reasons for these weaker relationships between salary and school type, as contrasted with stronger relationships between nontenured teachers and school type, may be that these alternate schools were drawing less experienced, more credentialed teachers into these alternate schools. This dynamic would explain greater emphasis on less experienced teachers without a concomitant drop in salaries—in the single salary schedule, additional certification pay may offset the fewer years of teaching experience.

In answer to question three, this study finds that pupil/teacher ratios were negatively and significantly associated with student race, class, and interaction variables, indicating a vertically equitable distribution of pupil/

teacher ratios once school size and school types have been accounted for. In addition, this study finds evidence of associations between student race and class variables and average salary as well as the percentage of nontenured teachers in schools.

As outlined by Berne and Stiefel (1984), any statistically significant relationship between race and resources needs to be carefully examined, since school resource allocation systems are designed to be race neutral. Additionally, although some funding is based on student poverty, relationships between poverty and resources must be carefully interpreted. In this case, we see that, although the resource allocation strategies designed to provide additional resources to poor and minority students were successful in providing additional teachers (and thereby reduced pupil/teacher ratios), those teachers tended to be less experienced and were on average paid less than teachers at other MNPS schools. This indicates that these teachers were less experienced than their colleagues across the district and perhaps less credentialed as well.

These patterns of relationships raise important questions about the tradeoff between teacher quantity and teacher quality, as well as questions abut the ability of district policy to influence teacher labor markets.

A number of conclusions can be drawn from these findings. One conclusion is that the move toward neighborhood schools, while moderately increasing levels of segregation in MNPS, only led to a slight worsening of resource allocation inequities. While teacher resources seem to be inequitably distributed across MNPS, particularly by race and class, the relationships changed little over the time that MNPS was implementing its neighborhood-based student assignment policy. Another conclusion is that, while MNPS was able to successfully implement polices that reduced pupil/teacher ratios based on school type and student characteristics, the district had less control of the distribution of teacher qualifications such as experience or certification levels.

MNPS polices around teacher support for students in resegregating schools is evident. MNPS policies have resulted in more teachers in schools and a decrease in the pupil-teacher ratio for poor and minority students. This is evidence of a conscious policy that distributed compensatory resources to students who may be most negatively affected by the transition to neighborhood-based student assignment policies, specifically through the use of design center and enhanced option school types.

However, the issue with resource allocation in a neighborhood-based student assignment policy may be more about teacher transfer polices than about resegregation, per se. Additional consequences of neighborhood-based student assignment policies seems to be that teachers with more experience (and, as a result of the single salary schedule, drawing higher salaries) are moving away from schools with concentrations of poor and/or minority students. This happens to the extent that the relationships between

teacher salary and experience and student-level race and class variables become more inequitable for students over the time period studied. As in many districts, MNPS transfer policies are based on experience; more experienced teachers are given preference in the schools in which they work.

One can analyze these findings with a classic public choice economics paradigm: lacking any concomitant fiscal reward for teaching in what is perceived as a more difficult school environment, teachers will act to maximize their overall basket of rewards by finding better environments within which to work.

Options for disrupting this dynamic include varying teacher salaries based on location, merit, or performance; improving teacher perceptions of hard-to-staff schools; taking a firmer policy hand in placing teachers at MNPS schools; or reallocating students in order to create schools that would represents less of a perceived challenge for teachers. For example, one way for MNPS and other resegregting districts to address this issue would be to vary the salary scale for teachers by school type. There may be a point at which teachers would trade perceived difficult conditions for additional salary. In a similar vein, there may be other aspects of teaching such as collaborative culture, shared decision making, or teacher teaming, that would provide a cultural counterfactual to the perceived benefits of teaching in a school with a lower percentage of poor and/or minority students. Finally, MNPS could revisit their teacher placement and transfer policies to interrupt the movement of more experienced teachers from harder to staff schools

Numerous studies have begun to examine differentiated teacher compensation. Three classic policy approaches include so-called combat pay—additional salary for working in hard-to-staff schools or hard-to-staff subjects; merit pay—based on teacher credentials or training; or performance-based pay—additional pay for teachers for academic results in the classroom. Studies indicate that there is a generational shift in teachers perception of pay-for-performance plans; that teachers are wary of performance pay that presents as a "zero-sum game"; that teachers are more supportive of combat and merit pay plans than performance-based incentives; and that teachers are less supportive of salary differentiation based specific school system personnel needs (Ballou & Podgursky, 1993; DeArmond & Goldhaber, 2007; Farkas et al., 2003; Jacob & Springer, 2007; Podgursky & Springer, 2006).

Student assignment policies themselves could be used to ameliorate this problem. As has been stated above, students themselves may be considered resources to be allocated with consequences for the health of school districts. If the resource inequities around teacher quality described in this paper are in fact tied to the concentration of peer and/or minority students in a school, that is, if the policy of neighborhood-based student assignment is related to the presence of less experienced teachers in MNPS schools, then this relationship may be altered by changing the manner in which students are assigned. This analysis has shown the growing importance of class

in relationship with teacher credentials and experience. Some proposals have focused on developing student assignment polices that are predicated on socioeconomic—instead of racial—integration (Kahlenberg, 2001).

As with any time-bound study, changes in findings for the last year of analysis present problems for the researcher. In this study, for example, findings for 2004 represent departures from trends for a number of variables. These findings have been interpreted within the overall arc of changes over time, but there is a possibility that 2004 may be a year in which MNPS reaches stability in student assignment policies, and that findings of this study may only represent the policy churn that occurs during implementation of any large-scale systematic change.

Much of the education policy conversation over the last decade has involved an explicit conceptual move from concerns about equity to concerns about adequacy (Springer, Houck, & Guthrie, 2007). Therefore, having determined inequitable patterns of resource allocation among teacher characteristics in the face of neighborhood-based student assignment policies, examining school-level outcomes in order to distinguish the positive effects of decreased pupil teacher ratios from the negative effects of inexperienced teachers would be a logical next step for study. Although recent work in MNPS indicates little relationship between funding levels and student performance, this work involved only two academic years and did not examine changes in relationships longitudinally (Klein, 2008).

CONCLUSION

The purpose of this article was to examine empirically patterns of resource allocation among resegregating schools in the Nashville public schools during a shift toward neighborhood-based student assignment policies, in the service of determining if schools in Nashville were resegregating and if poor and minority students in Nashville schools received the benefits of additional resources. Overall findings indicate that MNPS schools are resegregating along lines of both race and class. Additionally, MNPS policies are having positive intended consequences—more students are enrolling in magnet, enhanced option, and design center schools that provide additional resources to students. In terms of resource allocation, the intended consequence of providing additional teachers at resegregating schools has had the desired impact; students who are poor, minority, or both see more teachers and therefore experience a decreased student-teacher ratio. However, unintended consequences of these shifts in resource allocation and student assignment policies include a movement of highly experienced, better paid teachers away from schools attended by minority and/or poor students. As a result, poor and minority students are taught by higher percentages of nontenured teachers.

Proposals for addressing the inequities in the distribution of teacher qualities include rolling back the student assignment plan implement between 1998 and 2004, taking a more centralized role in assigning teachers to schools throughout MNPS, or providing some form of differentiated compensation to draw more highly experienced and credentialed teachers back into schools with high concentrations of poor and/or minority students. Each of these steps takes an act of political will on the part of educators and policymakers to continue to assure that all students have access to high-quality schools and teachers as they matriculate.

NOTES

1. A number of proxy measures have been introduced to examine teacher quality, including verbal ability, subject matter knowledge, experience, credentials, and practices (Darling-Hammond, 2000). For additional perspectives on this question, see Loeb and Page (2000) and Ballou and Podgursky (2000).

2. Although this study examines changes from 1999 to 2004, the student assignment information is provided for 1998 in order to demonstrate that there were no substantive policy changes before 1999, the first year of this study. In effect, 1999 will serve as a baseline in this study.

3. MNPS allowed students to grandfather into their current schools to avoid the additional burden of multiple school changes brought on by shifting school attendance patterns.

4. Practically, this dataset examines variation across individual students. Operationally, regression analysis will be school-based with student enrollment weights.

5. While standardized betas are reported in the findings to allow comparisons across variables, tables presenting the full analysis with multiple models, unstandardized coefficients, F statistics, and adjusted R-squared statistics can be found in the Appendix.

6. No other study has endeavored to report levels of segregation by free-lunch status, so no comparisons are available.

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APPENDIX: RESULTS OF OLS REGRESSIONS

Tables 1A–3A present results for original regressions with unstandardized coefficients, F statistics, and reported adjusted R-square statistics. Regressions were run in three models for each dependent variable: school type alone, student characteristics alone, and a combined model.

TABLE 1A Regression Models for the Dependent Variable of Pupil/Teacher Ratios.

	1999			2000			2001			2002			2003			2004		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Enrollment	0.012**	0.011**	0.011**	0.005**	0.004**	0.004**	0.006**	0.005**	0.005**	0.011**	0.009**	0.009**	0.011**	0.010**	0.010**	0.019**	0.017**	0.017**
Enrollment^2	−e-6**	−e-6**	−e-6**	−e-6**	−e-6**	−e-6**	−e-6**	−e-6**	−e-6**	−e-6**	−e-6	−e-6**	−e-6**	−e-6	−e-6**	−e-6**	−e-6**	−e-6**
Free lunch	−0.798**		−0.669**	−0.335**		−0.136**	−0.171**		−0.072**	−0.617**		−0.320**	−0.506**		−0.272**	−0.866**		−0.724**
Black	−0.127**		−0.160**	−0.204**		−0.211**	−0.213**		−0.253**	−0.056**		−0.122**	−0.091**		−0.090**	−0.160**		−0.141**
Interaction	0.474**		0.463**	−0.140**		−0.085*	−0.140**		0.031	0.057		0.138**	0.021		0.010	0.176**		0.344**
Design Center		—	—		−1.40**	−1.29**		0.820**	0.889		−0.750**	−0.741**		−1.65**	−1.63**		−2.76**	−2.82**
Enhanced Option		—	—		−5.31**	−5.17**		−4.73**	−4.604**		−3.57**	−3.48**		−3.66**	−3.55**		−4.55**	−4.44**
Magnet		1.74**	1.65**		1.59**	1.58**		0.907**	0.918**		2.68**	2.63**		1.92**	1.86**		2.08**	1.92**
N	47848	47848	47848	55002	55002	55002	61228	61228	61228	61088	61088	61088	54255	54255	54255	28789	28789	28789
Adjusted R^2	0.281	0.291	0.295	0.079	0.175	0.179	0.086	0.153	0.156	0.410	0.525	0.527	0.454	0.541	0.544	0.488	0.574	0.584
F	3740**	6544**	3332**	943**	2331**	1498**	1157**	2208**	1408**	8486**	13498**	8518**	9018**	12807**	8099**	5490**	7769**	5057**

TABLE 2A Regression Models for the Dependent Variable of Percentage of Non-Tenured Teachers.

	1999			2000			2001			2002			2003			2004		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Enrollment	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-4**	−e-3**	−e-3**	−e-4**	−e-3**	−e-3**	−e-3**
Enrollment^2	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**	−e-8**
Free lunch	0.022**		0.026**	0.0025**		0.029**	0.023**		0.026**	0.025**		0.025**	0.024**		0.022**	0.018**		0.015**
Black	0.025**		0.024**	0.034**		0. 027**	0.040**		0.038**	0.029**		0.027**	0.028**		0.028**	0.027**		0.026**
Interaction	−0.017**		−0.018**	−0.017**		−0.019**	−0.013**		−0.018**	−0.006**		−0.008**	−0.012**		−0.011**	−0.012**		−0.011**
Design Center		—	—		0.286**	0.277**		0.038**	0.029**		0.088**	0.082**		0.067**	0.064**		0.060**	0.056**
Enhanced Option		—	—		0.132**	0.121**		0.131**	0.113**		0.058**	0.042**		0.015**	0.003		−0.007**	−0.017**
Magnet		0.048**	0.052**		0.051**	0.053**		0.022**	0.023**		−0.008**	−0.005**		−0.018**	−0.157**		−0.030**	−0.028**
N	48590	48590	48590	55002	55002	55002	61228	61228	61228	61214	61214	61214	54602	54602	54602	46104	46104	46104
Adjusted R^2	0.029	0.029	0.045	0.073	0.119	0.136	0.071	0.061	0.090	0.042	0.030	0.058	0.027	0.020	0.038	0.084	0.082	0.105
F	300**	485**	380**	864**	1484**	1084**	931**	793**	756**	543**	384**	475**	306**	211**	267**	844**	823**	677**

TABLE 3A Regression Models for the Dependent Variable Mean Teacher Salary.

	1999			2001			2002			2000			2003			2004		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Enrollment	1.59**	1.81**	1.61**	5.25**	5.71**	5.48**	4.53**	5.05**	4.86**	2.12**	3.28**	3.11**	6.13**	6.79**	6.66**	6.78**	6.98**	6.63**
Enrollment^2	−e-3**	−e-3*	−e-3**	−e-3**	−.001**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−e-3**	−.002**	−.002**	−.001**	−.002**	−.002**	−.002**
Free lunch	−792.68**		−797.68**	−735.89**		−810.81**	−795.10**		−795.53**	−645.66**		−668.90**	−767.74**		−580.22**	−1025.17**		−858.11**
Black	−613.85**		−612.63**	−618.30**		−553.4074**	−592.27**		−624.08**	−533.14**		−562.66**	−423.67**		−504.06**	−948.15**		−952.17**
Interaction	565.44**		565.95**	746.84**		631.4383**	986.83**		781.73**	909.21**		672.23**	934.93**		700.91**	814.68**		744.48**
Design Center		—	—		−5426.09**	−5326.52**		−103.27	−24.79		−1208.18**	−1144.94**		−854.16**	−835.15**		−605.97**	−506.51**
Enhanced Option		—	—		4039.88**	4242.237**		5078.66**	5255.40**		5915.62**	6052.89**		5769.03**	5821.22**		−188.01**	106.41
Magnet		59.90**	−63.27		−79.55**	−148.14**		130.00**	70.47**		130.29**	67.97		1566.77**	1510.10**		1509.30	1388.46**
N	48590	48590	48590	55002	55002	55002	61228	61228	61228	61059	61059	61059	54416	54416	54416	46104	46104	46104
Adjusted R^2	0.073	0.057	0.072**	0.200	0.237	0.248	0.203	0.240	0.252	0.085	0.170	0.179	0.131	0.206	0.212	0.203	0.200	0.228
F	761**	976**	634**	2751**	3426**	2274**	3131**	3877**	2585**	1141.67**	2494**	1662**	1636**	2829**	1827**	2350**	2289**	1701**