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# Moving Beyond Dichotomies: How the Intersection of Race, Class and Place Impacts High School Graduation Rates for African American Students

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# Moving Beyond Dichotomies: How the Intersection of Race, Class and Place Impacts High School Graduation Rates for African American Students

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*Over thirty years ago, William Julius Wilson declared that class trumped race as the more significant determinant of social mobility and economic opportunity. Despite the acclaim and scrutiny for Wilson's work, the United States has grown increasingly divided by intersecting factors of race, class and other demographic factors such as place (Massey, 2007). These divisions are especially evident in the public education system. We analyze how race, class and place interact to predict high school graduation rates in a national sample of schools and students. Results confirm that a singular focus on race, class, or locale is insufficient to explain high school graduation rates. However, a more contextualized focus on the interactions between multiple determinants of inequality (e.g. race, class and place) can yield a more nuanced understanding of the indicators driving educational inequalities. Scholars and practitioners need to focus on the manner in which multiple positionalities influence the academic achievement of African American children and young adults.*

Key words: *educational attainment, achievement gap, spatial stratification, intersectionality, geographically weighted regression, race, class*

*I have four girls right now in my senior home room who are pregnant or have just had babies. When I ask them why this happens, I am told, 'Well, there's no reason not to have a baby. There's not much for me in public school.' The truth is, that's a pretty honest answer. A diploma from a ghetto high school doesn't count for much in the United States today. (Kozol, 1992, p. 26)*

Over 30 years ago, William Julius Wilson (1978) argued that social class was replacing race as the primary status for social and economic opportunity and mobility in the United States. Despite Wilson's vision of an increasingly race neutral society, the colorline has remained a persistent reality well into the 21<sup>st</sup> century. From 1972 to 2009, for example, income inequality between whites and African Americans has remained constant; African Americans have continued to earn between 57 and 60 percent of the white median income (Kerbo, 2011). While some African Americans have achieved educational and economic success, in the aggregate, African American youth still experience significantly greater high school dropout rates (Orfield, Losen, Wald, & Swanson, 2004) lower scores on standardized tests (Jencks & Phillips, 1998; National Center for Education Statistics, 2009) and higher rates of suspension and expulsion from schools (Mendez & Knoff, 2003; Mendez, Knoff, & Ferron, 2002).

While race continues to play an important role in educational inequalities in the United States, socioeconomic status (SES) and other demographic variables are also critical factors in explaining disparities in educational achievement among African American students. Rather than class replacing race, as Wilson contends, in this paper we are interested in exploring how SES, race and place factors come together to produce inequalities in high school graduation rates; Kozol (1992) termed these multiple determinants "savage inequalities." This paper asserts that class, race and place are intricately bound to one another and a singular focus on any of these factors is an

insufficient explanation for educational outcomes.

The purpose of this study is to investigate how race, class, and place interact to explain high school graduation rates. It is innovative in that it moves beyond the traditional focus on race or socioeconomic status as drivers of educational inequalities. As a point of clarification, we focus on the experiences of African American students, because no other racial group has been subjected to the same degree of racial segregation (Massey & Denton, 1993).

### Background: The Interaction Between Race, Class and Place in the Public Education System

*New York City schools are deficient in instrumentalities of learning ... There are certainly city schools where the inadequacy is not 'gross and glaring.' Some of these schools may even be excellent. But tens of thousands of students are placed in overcrowded classrooms, taught by unqualified teachers, and provided with inadequate facilities and equipment. The number of children in these straits is large enough to represent a systemic failure. (Judge Judith Kaye, as cited in Fine, Roberts, & Torre, 2004, p. 79)*

Schools have often been considered the great equalizer and the pathway for social mobility. Empirical data show quite the opposite. Schools tend to perpetuate systemic inequalities, as well as being mechanisms for maintaining stringent racial hierarchies (Glenn, 2002). This has been the case since 1896 when the Supreme Court ruled in the historic case *Plessy v. Ferguson* that "separate but equal" facilities for people of color and whites were constitutionally sanctioned. Although this legal precedent was reversed, de jure segregation implemented in later Supreme Court Cases like *Sweatt v. Painter* in 1950 and *Brown v. the Board of Education of Topeka, Kansas* in 1955 allowed for the U.S. education system to continue as a "separate and unequal" system (Glenn, 2002) and has continued to remain persistently segregated (Orfield, Frankenberg, & Siegel-Hawley, 2010; Orfield & Eaton, 1996; Price & Wohlford, 2005). In fact, two thirds of urban African Americans live in areas of

extreme residential segregation (Massey, 2006). The current demographic and geographic trends lead Massey (2007) to conclude that "America's current ecological structure concentrates the best-prepared students in areas of resource abundance while gathering the least prepared in areas of resource scarcity" (p. 197). Students in lower performing schools are more often than white students in suburban districts to be exposed to high rates of violence and crime, and experience greater rates of personal stress that adversely affect their academic performance (Massey, 2006), have less access to resources to prepare them for college, and have less experienced teachers (Fram, Miller-Cribbs, & Van Horn, 2007). The following section presents background literature on how educational inequalities among African Americans can be explained by class, race, place and the intersection among the three concepts.

#### *Class, Race, and the Public School System*

Although race is a socially constructed category that has been assigned based on skin color, physical characteristics, common descent and ethnic background (Yetman, 1985), there can be no doubt that race has played and continues to play a significant role in social stratification and inequality. This is certainly evident in the U.S. education system. The discrepancy between the academic performance between white and African American students, often termed the "achievement" or "opportunity gap" has persisted since rigorous standardized tests were widely implemented in 1965 (Hedges & Nowell, 1998). Despite considerable attention to the achievement gap, the average African American student still scores significantly lower than white students on most standardized tests (Jencks & Phillips, 1998). It should be noted that standardized tests have been criticized for being racially and culturally biased and, therefore, privilege white middle-class students (Jencks, 1998). Ferguson (2007) found in a secondary data analysis of a comprehensive survey of 7,120 students in 95 schools in 15 school districts in middle and high income districts that 44% of African American children and teens self report that they generally receive C and D grades (compared to 14% of whites), 55% understand less than half of the material read in school (compared to 29% of whites), and 48% completely

understand their teacher's lessons less than half of the time (compared to 28% of whites). Finally, Caldas and Bankston (1998), through an examination of performance on the Graduation Exit Examination, found that African Americans in segregated schools still perform substantially worse than their white peers even when controlling for class indicators like family educational level, parental occupational status, and family educational level, indicating that there may be a segregation effect.

Beyond just academic achievement, the graduation rates of African American males lag behind their white peers. For example, the 2010 Schott Foundation 50 State Report on Black Males in Public Education found that only 47% graduate from high school nationally, compared to 78% of white males. In urban settings like New York City, a staggering 28% manage to graduate (Schott Foundation for Public Education, 2010). In a non-randomized study of 10,000 youth in urban, suburban, and rural communities, Fine, Roberts, and Torre (2004) found that 56% of whites are tracked into more "rigorous curriculums" compared to 33% of African American and 27% of Latino students. Furthermore, in Massey's exploratory study of youth of color at elite public universities, he found that students of color experience twice as much stress due to family challenges, come to college with greater exposure to violence and social disorder, and are less prepared academically (as evidenced by taking fewer advanced placement classes and having lower standardized test scores) (Massey, 2006).

Of course, race is not the only factor associated with educational outcomes in the United States. Indeed, there is a substantial amount of literature to support the proposition that associations between race and education are moderated by class. However, rather than employing the Weberian definition of class adopted by Wilson, we acknowledge that class is a complex construct which, in addition to an individual's position in economic markets, includes features such as occupational class, rates of home ownership and employment status.

One clear example of the association between class and academic achievement can be seen in reports of standardized test scores. In an examination of high school performance on standardized tests, Belluck (1999) found that middle class

African Americans receive significantly lower SAT scores than their white peers and are more likely to fail a class (as cited in Hallinan, 2001). Furthermore, 47% of African American high school seniors have taken a PSAT/SAT prep course, compared to 66% of white American seniors, indicating that African American students may not be receiving or cannot afford to acquire the same resources as their white peers to prepare for college admissions requirements (Fine, Roberts, & Torre, 2004).

The influence of class privilege is perhaps most apparent at the college level. With the soaring cost of higher education, people of color are facing the "affordability crisis" where even if they are admitted to college, they do not have the financial resources to attend (Price & Wohlford, 2005). The Higher Education Research Institute at UCLA (2008) found that the parental income of "entering college freshmen [in 2005] is outpacing the national income by a 2-to-1 margin and it accelerated during the mid-1980s, suggesting not only that students are from more economically advantaged homes than their predecessors but that the gap is widening" (p. 2). In *Categorically Unequal*, Massey (2007) documented that admissions committees give preferential treatment to children of alumni, which equates to "an admissions bonus of around 160 SAT points, tipping the odds of admission very strongly in their favor; a clear example of social capital influencing academic achievement" (p. 198).

Effects of class are not limited to the later portions of an individual's education. Starting in early childhood, class and poverty issues are an ever-present reality in the public school system. For instance, Locasale-Crouch (2007) documented that while children from low-income communities have less access to high-quality early education, some upper-income families are spending tremendous resources enrolling their children into high-priced "baby-ivy" preschools to give them an early academic advantage (Kozol, 2005). Thus, in terms of educational inequality, the literature would appear to support the proposition that race and class have a role to play. Furthermore, it would appear that these constructs do not necessarily act independently of one another. That is, the extent to which race is associated with educational outcomes would appear to depend on class and vice versa.



*Spatial Stratification/Place*

Poverty, like educational opportunities, can be seen as place specific. Both between states and regions and within counties and cities there is significant variation in rates of poverty (Partridge & Rickman, 2006). For example, Partridge and Rickman (2006) found that the South has the highest poverty rate at 13.9%, compared to the national average of 12.4%; however, within the South, Louisiana has a 19% poverty rate compared to only 8.5% in Maryland. Similar variations were found within counties as well. These findings led Partridge and Rickman to conclude that there is a need to acknowledge the importance of "place specific policies" (Partridge & Rickman, 2006). Given that school districts are funded by local property taxes, the rates of regional poverty are directly tied to the provision of resources to these schools. Thus the spatial dimensions of poverty directly correlate to the spatial stratification of educational opportunities and graduation rates.

Beyond spatial differences in poverty, a limited amount of research has been conducted to explore the role of spatial stratification in educational attainment. For example, Roscigno, Tomaskovic-Devey and Crowley's (2006) study "Educational Inequalities and Place" documents a measurable rural and urban disadvantage in educational outcomes, which they term "the spatial patterning of opportunity." The authors found that this disadvantage is beyond just a shortage of school resources, but also includes class indicators like parents' educational achievement and families' median income. While they were looking at areas of overlap, due to the authors' decision to control for race, it is impossible to get a full picture of all of the interactions between race, class and place that can predict children's educational achievement.

Additionally, Fram, Miller-Cribbs and Van Horn (2007) found that factors representing social disadvantage beyond race and poverty, such as locale, play a critical role in providing context for academic achievement in the South. They found that children from high-ethnic minority neighborhoods and in high-poverty schools have a greater percentage of peers reading below grade level (Fram, Miller-Cribbs, & Van Horn, 2007).

*The Intersection of Class, Race and Place in Educational Outcomes*

While we contend that class, race and place play a predictive role in educational stratification, we now advance the argument that the interaction between these factors—or what some scholars have coined intersectionality—may be a more meaningful way to explain the persistence of social and economic inequality as opposed to a singular reification of either race, place or class. As Yeskel (2008) stated: “We need to have conversations about both race and class independently and about the intersections” (p. 9). Intersectionality has been defined in related research as the coalescing of the positionalities of gender, race, and class in “unique constellations of disadvantage and privilege” throughout society (Browne & Misra, 2005). For the purpose of this study we are using McCall’s (2005) conceptualization of intersectionality which states that “no single dimension of overall inequality can adequately describe the full structure of multiple, intersecting, and conflicting dimensions of inequality” (p. 1791). We are interested in moving beyond a singular focus on race or class or locale—but rather focusing on how these multiple positionalities, or what McCall terms “intercategorical complexity” come together to influence the academic achievement of African American children and young adults. Although intersectionality has been applied in a number of sociological domains, rarely has it been used to explain the existence of educational inequalities.

Descriptive data from The National Center for Education Statistics (2009) provide support for our proposition of intersectionality with respect to race and class. For example, there is considerable academic variation among eighth grade white and African American students who are receiving free lunch, reduced lunch and those that are not eligible for lunch programs. In 2007 the average standardized math scores for free lunch-eligible eighth grade African American students was 253 compared to a free lunch-eligible white students who averaged a score of 274. The gap remains even for African American and white students not eligible for lunch subsidies. These and similar data have led some education scholars to contend that the “black-white achievement difference remains a defining mark of racial inequality in public education today” (Hallinan, 2001, p. 51). Overall, these data lend further support to our proposition of an interaction between SES and race. As stated

by Hallinan (2001), "social class [alone] is not an adequate explanation for the achievement gap" (p. 60).

Considerable academic literature has focused attention on the systemic inequality associated with the construction and funding of school districts by local property taxes (Roscigno et al., 2006; Wenglinsky, 1997; Wise & Gendler, 1989). In *The Shame of the Nation*, Kozol (2005) presents data that correlates race and class indicators (i.e., percentage of students on free or reduced lunch) with the percentage of per pupil spending to reveal that districts with the lowest per pupil spending are also comprised of the largest percentages of low income students and students of color. In the city of Philadelphia for example, the Lower Merion District, where 4% of students are low income and 91% are white or other, spends \$17,261 per pupil annually. However, the Philadelphia School District, where 79% of students are African American or Latino/a, spends an average of \$9,299 per pupil. There are similar disparities in per pupil spending in all of the large urban cities that Kozol evaluated including Chicago, Detroit, Milwaukee, Boston, and New York City (Kozol, 2005).

Although there are many scholars that look at the singular predictive relationship of race and class and some who are examining place, there is a gap in the literature when it comes to the intersectionality of race, class and place for all races, especially at the national level. In particular, Yeskel's (2008) study points out that both the independent and convergent effects of race and class must be considered. Based on the above review of the literature, we pose four primary research questions: (1) What relationship is there between race and educational outcomes in the United States? (2) What relationship is there between class and educational outcomes in the United States? (3) Do class and race interact to influence educational outcomes in the United States? (4) How does geographic stratification (i.e., place) help to explain the above relationships?

## Methods

### *Study Design*

This study involves the secondary analysis of data collected from the U.S. Census Bureau and the National Center for Education Statistics (NCES). This study is cross-sectional

with the goal of describing the manner in which race, class and place stratification coalesce to impact educational outcomes in the United States. Due to the cross-sectional study design, it is challenging to establish temporal precedence, therefore, we are only able to demonstrate with a high degree of certainty the correlational relationship between race, class and spatial stratification. This study should be viewed as principally exploratory, with the overall goal of informing the design of future studies that can more adequately address questions of causation and the nuanced interaction between race, class and place.

The majority of data used for this study was obtained through the NCES web-based datatools portal (<http://nces.ed.gov/datatools/>) which provides comprehensive information on a variety of educational measures in the United States. Various measures are available from this source and data are aggregated (with some variation across the country) at the school, district, and county levels. These data are reported directly from school districts across the country and been aggregated to the school-district level, thus making direct comparisons of Census data to school district reports possible. One limitation of this data is that comparable Census demographic data is only available for the year 2000, thus rendering it cross-sectional.

#### *School District Level Examination*

The current study involves the use of aggregated data on reports of graduation rates throughout the country. While county-level data were available for this analysis and may have facilitated a more longitudinal examination, the aggregation of trends at this high of a level could distort the more minute within-county variations. Additionally, due to our study's focus on spatial stratification, it was deemed important to utilize the smallest geographic area possible. This would allow, for instance, examination of possible variation in outcomes by racially and socioeconomically diverse districts within the same county. However, this also creates a limitation for large cities such as New York City or Seattle that comprise one school district.

School district boundaries were specifically identified by

combining the individual boundary file of every school district in the country. These boundary files are available from the U.S. Census Bureau (<http://www.census.gov/geo/www/cob/sn2000.html>). The files were combined using ArcGIS 9.3, available from the Environmental Systems Research Institute.

### *Variable Descriptions*

*Educational attainment.* The construct of educational attainment was measured by calculating the ratio of diploma recipients to all twelfth-grade students in a given school district. A total of 10,335 school districts nationwide were included in this analysis. This data was obtained exclusively from the NCES database described above and calculated based on the 1999-2000 graduating school year. As the goal of this study was to determine rates of high school graduation, this denominator counts only students who are currently enrolled in the twelfth grade at accredited high schools. Students who are enrolled in non-traditional or adult education programs where traditional grades are not reported may not be included in the denominator. It is acknowledged that this measurement leads to larger proportions of high school graduates relative to commonly cited U.S. graduation rates (see descriptive statistics in Table 1 below). For instance, the NCES typically calculates graduation rates based on the proportion of students starting as ninth-graders in a given year and graduating four years later. This strategy is problematic because it fails to take into account that students change schools, attend alternative educational environments and simply may not graduate from the same school that they started in the ninth grade. While our constructed variable may be more of a raw measure, it is proposed that the proportion as calculated in this study is a better measure of the total diploma output of a given school district and also recognizes the varied paths through which students gain a diploma in the United States. Our method, however, makes it impossible to take into account those that drop out of high school.

*Race.* The construct of race was measured by calculating the proportion of African American school-aged children (i.e., ages 5 to 17) in a given school district. This data was obtained exclusively from the school-district tabulation of Census 2000 data described above. Although the NCES databases do

provide information sufficient to calculate the proportion of African American twelfth graders in a given school district, over a third of the school districts did not report this information for the 1999-2000 school year. Therefore, due to the high percentage of missing NCES data, it was necessary to use the constructed proportion of African American school-aged children in a given school district.

*Class.* Although there are a number of potential measures with which class could be effectively operationalized at the school-district level, the current study utilized the socio-economic position index (SEPI) developed by the Harvard Public Health Disparities Geocoding Project (Krieger et al., 2003). The index was developed based on factor analysis and consisted of the following components: (1) The proportion of individuals in working-class occupations in the school district; (2) the proportion of unemployed individuals in the school district; (3) the proportion of individuals meeting the federal poverty definition on the school district; (4) the proportion of individuals (over the age of 25) with less than a high school education; (5) the proportion of expensive homes in the school district (i.e. those homes greater than or equal to 400 percent of the median housing price in 1999); and (6) the median income of the school district. We chose this measure because of its breadth and ability to capture multiple indicators of class attainment, rather than singular indicators such as median family income or percentage receiving free or reduced lunch. It is acknowledged that the SEPI has been shown to be no better than simple measures of poverty at predicting potentially related constructs (e.g., low birth weight as in Krieger et al., 2003). However, the current study seeks to examine the association between socioeconomic status and educational outcomes, not simply predict educational outcomes.

*Place.* As implied from the discussion above, in examining the construct of place in this study we have focused on the geographic boundaries of U.S. school districts as our unit of analysis. While it is acknowledged that there is an ongoing debate over the proper definition of neighborhoods in the literature (see for example, Chaskin, 1995), it is proposed that using school districts as our level of analysis is the most appropriate geographic unit for the current study. We are

simply seeking to determine geographic variation in educational outcomes. Since any potentially relevant policies or programs designed to increase graduation rates will likely be tied to a given school district, it is arguable that the school district is the smallest geographic unit available to effectively address the questions in this study. Furthermore, school districts are a microcosm of the demographics of the cities within them and, therefore, there is heterogeneity across districts just as there is across cities or counties.

In order to create the SEPI index, the values for each school district measurement of the SEPI variables were standardized. These standardized values were then averaged to create a composite SEPI index for the school district. In order to facilitate comparison amongst the various variables, race and educational attainment were similarly standardized prior to any subsequent analysis. It should be noted that, while the Harvard Public Health Disparities Geocoding Project envisions a summation of the SEPI variables in order to create the index, the average was taken here to maintain a constant scale among all of the variables in the analysis. For clarity, it should be noted that the standardized values of income and expensive homes were reverse coded to reflect poverty and not wealth. While standardization amongst all of the variables can potentially lead to misinterpretation of the ultimate effect of an independent variable on a dependent variable, it also allows for better comparison amongst multiple independent measures, which is the principal goal of this analysis (Schroeder, Sjoquist, & Stephan, 1986).

The dataset prepared for this analysis had several missing values. Of the 13,867 school districts for which the CCD has data, only 10,335 had data available for all three of the variables created for the study (74.5 percent). Rather than dropping these records from the analysis, several different imputation techniques are available to estimate the missing data values. Indeed, as the current study will be employing GIS in the analysis, near-neighbor imputation is a potential option for this analysis. However, as King, Honaker, Joseph, and Scheve (2001) argued, such imputation techniques can lead to biased estimates. Thus, the current study will make use of multiple imputations using predictive mean matching (Little, 1998). A

total of 10 multiple imputations were run after which average values for each school district were taken as representative of missing values based on the overall statistical patterns in the available data.

### *Analytic Technique*

The research questions in this study were assessed using both ordinary least squares regression (OLS) and geographically weighted regression (GWR). While OLS or variations thereof remain a standard analytic tool across many disciplines, the analysis of geographic units adds an additional level of complexity to the problems usually assessed through OLS. Specifically, the OLS assumptions of the independence of observations and constant variance across school districts may be violated. The use of GWR can account for such violations. Additionally, GWR can be used to examine the spatial variability of regression parameters (Fotheringham, Brunsdon, & Charlton, 2002). All analysis was undertaken through a combination of 'R', GWR 3 from the National Centre for Geocomputation in Ireland, and ArcGIS 9.3.

## Results

### *Descriptive Statistics*

Descriptive statistics from the non-standardized variables identified above are outlined in Table 1. As noted above, the proportion of diplomas to twelfth graders is higher than what might typically be expected in the United States. Other variables appear to be in general congruence with other reports from Census 2000 data.

The authors utilized color-coded country-wide maps of the variables to get a better sense of the pattern of the variables throughout the United States.<sup>1</sup> In terms of the diploma ratio measure, a great deal of variation was observed throughout the country. This tends to be true even within states (aside from Arizona). In terms of school district class (as measured by the SEPI), there is a noticeable trend with northern school districts appearing to experience less deprivation than southern school districts. Race appears to have the most noteworthy trend with the vast majority of school districts in the southeast



of the country having above average proportions of African American students.

Table 1. For identified constructs. (n=13,867)

Construct	Operationalized Measure	Mean	SD	Min	Max
<i>Poverty</i>	SEPI				
	% Working Class	0.68	0.10	0.00	1.00
	% Unemployed	0.05	0.04	0.00	1.00
	% in Poverty	0.12	0.08	0.00	1.00
	% with < High School Education	0.20	0.10	0.00	1.00
	Median Income (\$)	41,040	15,783	0.00	192,787
<i>Race</i>	% School-Aged African American Children	0.05	0.11	0.00	0.98
<i>Educational</i>	Number of Diplomas: Number of Seniors	0.93	0.24	0.00	19.33

Table 2. Global OLS regression model predicting the diploma ratios.

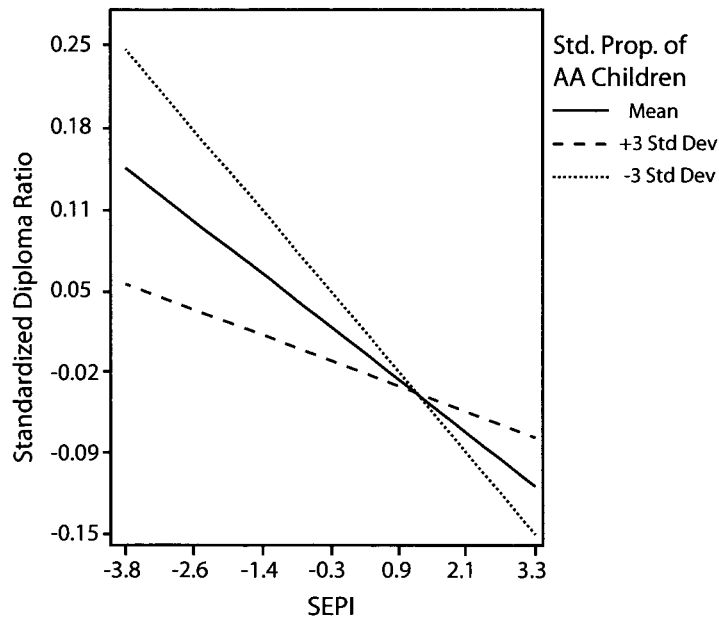
	Beta	SE	95% CI		VIF
Intercept	0.009***	0.002	0.0048	0.0128	
SEPI	-0.037***	0.003	-0.0427	-0.0309	1.09
Race	-0.008**	0.003	-0.0136	-0.0018	2.29
Race By SEPI Interaction	0.006*	0.003	0.0002	0.0125	2.17
Adjusted R-Squared	0.013				
Null Model					
(Only SEPI) AIC	-1432.86				
AIC	-1612.38				

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

*OLS/Global Model Results*

The results of OLS regression outlined in Table 2 (i.e., the global model) indicate that both school district class indicators and the proportion of African American school-aged children are significant predictors of the ratio of diplomas issued in a given school district. Specifically, on average, a one standard deviation increase in the disadvantage of a school district is associated with a 0.037 standard deviation decrease in the diploma ratio in a given school district ( $p < 0.001$ ). For race, the results indicate that, on average, a one standard deviation increase in the proportion of African American students in a school district is associated with a 0.008 standard deviation decrease in the diploma ratio for that school district ( $p < 0.01$ ).

Figure 1. Interaction between deprivation and race



There is also a significant interaction between race and class. Figure 1 displays the pattern of this interaction by comparing three different values of race as it relates to class (x-axis) and diploma ratios (y-axis). The dashed line in the figure

represents the trend of school districts with a relatively low proportion of African Americans (i.e., three standard deviations below the mean), the dotted line represents school districts with a relatively high proportion of African Americans (i.e., three standard deviations above the mean), and the solid line represents the trend for school districts with a mean proportion of African Americans. From this data, race appears to have a differential effect on the diploma ratio depending on the level of school district deprivation. Specifically, race appears to have less of an effect in extremely low class school districts and a comparatively large impact in high SES school districts. Put simply, the extent to which SES is associated with the diploma ratio appears to depend on the level of school district deprivation.

As indicated in Table 1, the variance inflation factor (VIF) was calculated in the global model to assess multicollinearity. The VIF is a measurement used in OLS regression to assess the extent to which standard errors are increased in a given model due to correlations amongst independent variables. As can be seen, the VIF is well below the typical cutoff value of 10 suggesting a lack of multicollinearity at the global level (see Kutner, Nachtsheim, and Neter, 2004 for more on this recommended level). Furthermore, although the adjusted R-squared value indicates that the model explains a very small amount of variance, the AIC indicates that this model is an improvement to the null model which only included class as a predictor of the diploma ratio. Based on the geographic analysis indicating the possible presence of clustering among the race and poverty independent variables, it is necessary to investigate possible violations to the assumptions of OLS through the use of local modeling by way of GWR.

#### *GWR/Local Model Results*

Initial attempts to build the local model of these variables resulted in models that failed to converge due to multicollinearity problems. As collinearity has already been assessed at the global level, these results suggest *local* multicollinearity in the model. This is consistent with the results of the interaction analysis in the global model which suggests that, at least around values within one standard deviation of the mean,

the interaction variable may possess some level of local multicollinearity. Therefore, for school districts in which there is a moderate level of deprivation (i.e., middle to lower middle class districts) and moderate proportions of African American school-age children, the interaction variable is highly correlated with the other two measures. Thus, the interaction variable was dropped from estimates of the local model, which allowed the GWR model to successfully converge.

The results of the local model are displayed in Table 3. This table presents the quintile summary of the two parameters included in the global model. The results of Monte Carlo significance tests indicate significant spatial variability in these parameters across the United States. In other words, the associations modeled using OLS *cannot* be generalized to the United States as a whole. As measured by the R-squared value, the local model is indicated to account for over 23% of the variance in these data compared to just over one percent using the global model. Furthermore, the model is indicated to be a better fit as measured by the AIC value of -4376.63 compared to -1612.38 in the global model.

Table 3. Geographically weighted regression 5-number parameter summary results and Monte Carlo significance test for spatial variability of parameters

Parameter	Minimum/ Maximum	Lower/ Upper Quartiles	Median	Monte Carlo Testing Status
Intercept	-0.85 0.13	0.00 0.05	0.01	Non-Stationary***
SEPI	-0.50 0.23	-0.04 0.01	-0.03	Non-Stationary**
Race	-1.71 0.67	-0.03 0.01	-0.02	Non-Stationary**
R-Squared	0.23			
AIC	-4376.63			

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

Further geographic analysis was conducted to assess the spatial variability of the parameter estimates. The results of this analysis indicate that the parameter estimates vary substantially across the United States. These results, taken in conjunction with the descriptive geographic analysis mentioned above, are informative in examining how the global model without the interaction effect compares to the OLS model with the interaction effect. Take, for example, the southeast United States. Our descriptive geographic analysis of race and poverty indicated that this area of the country has relatively high levels of African American children and relatively high levels of poverty and other indicators of class differentials. In our geographic analysis of GWR coefficients in this same region, it appears that the racial coefficients are relatively low. This is consistent with the interaction effect, which was interpreted as showing that race had less of an effect on the receipt of one's diploma ratios when SES was low. Similarly, returning to our geographic analysis of parameter estimates, it can be seen that areas with high socioeconomic statuses and high proportions of African American children appear to have higher racial coefficients (e.g., eastern Michigan/Detroit,) indicating that race may play a more significant role in educational attainment. Thus, the results of our geographic analysis in conjunction with the increased R-Squared value and decreased AIC, suggest that the variability captured in the interaction variable of the global OLS model is better accounted for by the local GWR model.

## Discussion

In the nearly thirty years since William Julius Wilson declared class as the more significant determinant of social mobility, we have seen a country grow increasingly divided by intersecting factors of race, class and other residual demographic factors, such as place (Massey, 2007). In this paper we chose the public education system as the site to examine how the interaction of race, class and spatial stratification impacts the high school graduation rates of African American high school-aged students. Through the use of regression techniques that allow for the examination of both the global and geographically varying aspects of these constructs, we acquired a more

in-depth understanding of how race, class and place interact to predict high school graduation rates nationwide. The results of these analyses provide support for the proposition that a singular focus on race, class, or locale represents an oversimplification of this problem. These results instead lend support to the need to focus on the manner in which multiple positionalities, or what McCall (2005) terms "intercategorical complexity," influence the academic achievement of African American children and young adults.

### The Interaction Between Race, Class & Place on Educational Attainment

Consistent with the reviewed literature on educational attainment (Belluck, 1999; Kozol, 2005) the results of our analyses indicate a positive relationship between the socioeconomic status of a school district (as measured by SEPI or school district class indicators) and the aggregate level of educational attainment in that school district. As was seen in Jencks and Phillips (1998) and Ferguson (2007), a similar trend was observed with respect to race. In school districts with higher levels of African American school-age children there are lower rates of educational attainment. Thus, with respect to our first two research questions, as has been previously documented in the literature, we can say that both social class and race appear to have independent effects on educational outcomes.

With respect to our third research question, pertaining to the presence of race and class interactions on educational outcomes, our analyses indeed show evidence of such interactions. Similar to the findings uncovered in the 2009 NCES educational statistics, our findings suggest that there are increasing levels of educational attainment for white students in privileged school districts. Interestingly, the data presented in this study augments and contextualizes these findings in the literature by revealing that in affluent school districts that possess relatively high numbers of African American school-age children, there is an increase in the levels of educational attainment compared to privileged districts with a lower percentage of African American students. In other words, for primarily white and wealthy school districts, race is the greater

determinant of students' educational attainment, however in predominantly African American school districts factors associated with SES can play a more predictive role. These findings reinforce the claims made by Hallinan (2001) and Yeskel (2008) that a more sophisticated appreciation of the intersections between race and class can reveal a complex picture of the factors that predispose educational inequality.

From our analysis in the local GWR model, we learned that there is a noticeable spatial variability across the United States, seeming to give credence to the idea that "intercategorical factors" like place can be important in determining rates of educational attainment. These findings move beyond the regional discussions presented in Roscigno et al. (2006) or a binary urban/rural distinction sometimes mentioned in the sociological literature. This finding starts to address our fourth research question regarding the moderating role spatial stratification can play in explaining the variability in the rates of high school graduation. For instance, the geographic analysis of our local model indicates that in some portions of the country, such as the Detroit or Miami areas, where there are greater concentrations of African Americans, SES factors may be a *more* significant predictor of high school graduation rates.

Differential patterns of the effects of race were also observed in our geographic analysis of the model coefficients, the association between educational outcomes and numbers of African American school-age children matches the trend of the global model in much of the northern portion of the country while a neutral or even positive association with race is observed in most of the South. Such inconsistent patterns across the country could support the conjectures of Kozol (2005) and Fine, Roberts & Torre (2004) that disparate levels of achievement are the product of an uneven distribution of resources to poor and minority school districts throughout the country or perhaps varying levels of racial segregation in educational settings, as Caldas and Bankston (1998) posited.

As previously stated, these findings start to address the question about the moderating role place can play in understanding educational inequalities. When we initially developed our fourth research question about the role of place, we expected to see more robust regional or urban/rural

differences emerge in our geographic analysis. Based on the dominant literature on the academic achievement gap, it was anticipated that in locales with large percentages of urban poverty and racial segregation that we would see significant clusters of low graduation rates. Overall, these variable patterns are interpreted as an indication that it is inappropriate to tell a single story for the association between race and class across the whole country. In response to the question of whether race or class is the dominant predictor of educational inequality, the answer is: it depends. Rather, the extent to which either one of these factors is associated with educational attainment can depend on the location of a school district. More than just a simple interaction effect as identified in the global model, the results of our analyses indicate that place can provide important context for the explanation of how a student's educational attainment is constructed and the many competing factors that influence that trajectory. Rather than there being a singular indictment of race, class or place as explanatory variables, it is more apt to say the relationships between these variables represent a complex problem, and educational outcomes depend on an individual's amalgamation of racial and class positionality, as well as place.

### Implications of this Study

The results from this study reconfirm the necessity of scholars and practitioners to focus on the manner in which multiple positionalities influence the academic achievement of African American children and young adults. Clearly, resources should be allocated to students with the greatest need; therefore, we urge the importance of considering the multiple determinants of social and educational inequality (e.g., race, class, gender, place, etc.). This has a practical implication for after-school enrichment programs and funders that target services for "at-risk" students using school-wide indicators like percentages of students receiving free and reduced lunch. In light of these findings, we also want to stress that racial minorities, even in affluent areas, are still in need of services and support to reach their educational goals.

Furthermore, the themes underscored in this study can



resonate well beyond the educational system. For social welfare scholars interested in the predictors of social inequality, the findings in this study emphasize the need for a more nuanced discussion on how individual attributes like race and class interact with social contexts like place. This research also has implications for social work practice. Since issues of social inequality are central to the core tenets of social work practice, it is important that we do not fall prey to unidimensional explanations of inequality. Knee-jerk responses of “it’s race” or “it’s class” fail to take into account the context of multidimensional issues. The findings in this study reinforce the critical importance of including conversations about multidimensionality and intersectionality within social work education.

### Limitations of this Study and Directions for Future Research

The current study has several limitations. As stated previously, the study is cross-sectional, therefore causation cannot be inferred with any degree of certainty. The cross-sectional nature of the study also prevents the analysis of cohort effects, which are of potential importance and represent the typical means by which graduation rates are measured in the United States. While our approach to measuring graduation rates takes into account the many different pathways young adults make to graduation, we do miss those that drop-out before reaching the twelfth grade. This approach also limits the ability to assess the extent to which the significance of race is changing over time, as Wilson has suggested. The school district focus of the study makes it impossible to include individual-level covariates such as gender, sexual orientation, immigration status, and other family demographics, as well as community-level factors such as the presence of violence, which are potentially of value in discussions of educational outcomes. Also the focus on school districts obscures the variation in graduation rates for large cities, such as New York City, that also comprise single school districts. Finally, since we relied on those that self-reported as African American on the 2000 U.S. Census, it is impossible for us to ascertain possible within-group differences among African Americans. This approach also precludes the

inclusion of those that perhaps do not self-identify as African American on the Census or those who opt to not participate in it.

Future research in this area is needed to better understand how the contextual factors analyzed in this study relate to the propensity of *individual* students to graduate from high school. Ideally, such research should focus on graduation cohorts with students as the unit of analysis. Although the analyses presented in this manuscript provide more information than analyses conducted at the state or country level, they are limited by the lack of information on individual students which the literature suggests are important determinants of educational outcomes in the United States. Nonetheless, such future research should also be informed by the results of this study, which suggests that the macro-level context in which a student is educated also plays an important role in educational attainment.

## Conclusion

In *The Declining Significance of Race* Wilson (1978) described a country that he hoped to see, a country where the historical legacies of racism could be transcended. One of the limitations of his approach was an attempt to explain social inequality with a singular focus on class. Such an approach fails to acknowledge that people's lives are multidimensional. Simple bivariate approaches to problems of social inequality tend to flatten the fine-grained details or context that informs the lived experiences of children as members of families, communities, school districts, counties and states (compounded by their own individual biological makeup). However, Wilson deserves credit for advancing a provocative thesis about the declining significance of race that inspired generations of scholars to interrogate more critically the relative roles of race and class in the prospects for individual and group advancement in American society.

Although we chose to focus on the public education system, there are many other social domains, such as the prison industrial complex, where we hypothesize a similar coalescing of predictive factors occurs. As we have seen in this paper, with regard to the public education system, the classic engines of

social inequality (racism and class) are still alive. The race, class and place dialectic is, in a sense, a synthesis of these various iterations of social marginalization and stratification. Consistent with intersectionality theorists like McCall, the results of this study indicate that rather than race, class or place being singular drivers of educational disparities, a convergence of factors is responsible. This does not lend itself to simple prescriptive indictments of race or class as causes of inequality. Rather than the education system being “the great equalizer,” we have seen that educational attainment is influenced by a combination of factors, including the socioeconomic status of one’s school district, the race of one’s peers in that school district and perhaps, most profoundly, one’s zip code.

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Endnotes:

1) Although this study made use of GIS technology for both descriptive and inferential analyses, the fact that this study included school districts from across the country required the authors to produce high-resolution maps that cannot be meaningfully included in a grayscale publication. These maps can be accessed freely over the internet with additional information at <http://staff.washington.edu/mienkoja/pweb/StorerEtAl2012FullColorFigures.pdf>. References such as "geographic analysis" included in the remainder of the document refer to the authors' interpretation of these maps.