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Graduation Rates and Math Proficiency in an Urban School District: A Counter-Narrative

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ABSTRACT

This article examines high school graduation rates and Algebra I proficiency rates in a large urban school district in Maryland. The article approaches the problem of low minority graduation and Algebra I proficiency rates from a critical race theory perspective. The article challenges the school district's received narrative that it is doing well for its minority students. Using a counter-narrative framework and a critical quantitative approach, the article builds a counter-narrative to the school district's narrative using the school district's own high school graduation and Algebra I proficiency data. The data show that African-American and especially Hispanic students are not succeeding to the degree the official narrative suggests. Free and reduced-price meal data are also used to show the strong relationship between low income and racial composition in the high schools in the district. Recommendations for improving Algebra I pedagogy are suggested.

Keywords: critical race theory, counter-narrative, official documents, high school graduation, Algebra I proficiency, QuantCrit

Following the publication of Ladson-Billings and Tate's (1995) seminal article on critical race theory (CRT) in education, CRT-guided educational research has mushroomed. Yet in spite of all the CRT-based research that has been done, there is yet much more that CRT-focused research can add to our understanding of the racial dynamics underlying secondary education in the United States. As DeCuir and Dixson (2004) note, CRT has emerged "as a powerful theoretical and analytical framework within educational research," but "researchers have yet to utilize CRT to its fullest" (p. 27). The present article is a modest attempt to expand the use of CRT by using official data to construct a counter-narrative to a school district's own chronicle of its asserted racially equitable education.

Critical Race Theory (CRT) was developed by scholars frustrated by the stalled progress of the civil rights movement (Taylor, 2016). Ladson-Billings (2013) posits five tenets of CRT. Those tenets include an acknowledgement that racism is normal and not an exception, interest convergence, the social construction of race, intersectionality and anti-essentialism, and voice or counter-narrative. Narrative is an especially important part of CRT because, as Delgado and Stefancic (2017) explain, "black, American Indian, Asian, and Latino writers and thinkers may be able to communicate to their white counterparts matters that the whites are unlikely to know" (p. 11). Not only do these narratives communicate "matters that the whites are unlikely to know," those narratives become counterstories or counter-narratives that "challenge majoritarian perspectives of historical and political reality." (Alemán & Alemán, 2016, p. 293). These counter-narratives "counter the stories of the privileged that are considered normal and neutral" (Miller et al., 2020, p. 273).

The author, a white male, for several years was an evaluator of supplemental educational programs offered by a United States military medical research facility to underserved students in a Maryland school district. At the same time, he studied urban education at an historically Black urban research university. This combination of experience and education led him to question narratives of minority student success in Maryland's largest school district. With data on student achievement by grade and race/ethnicity readily available on a Maryland State Department of Education website, it was a relatively straightforward matter to gather and analyze applicable student achievement data. Given the importance of counter-stories in CRT research, it seemed appropriate to frame the research in terms of counter-narrative. Thus the question this

research sought to address is this: Is the school district's narrative of minority student success supported by an analysis of the district's own data, or do the data tell a different story, a counter-narrative that paints a much different picture of minority student achievement?

The Narrative

The purpose of this study is to analyze the narrative presented by the Montgomery County, Maryland, School District with respect to its status as an exemplary school district in Maryland and present a counter-narrative based on the district's own statistics as found in the Maryland State Department of Education Report Card.

The Montgomery County School District (Montgomery County Public Schools [MCPS]) is Maryland's largest school district, with over 160,000 students. The district operates 200 schools, of which 25 are high schools. The school population is minority white; 32.4 percent of the students are Hispanic/Latino, 26.9 percent are white, 21.4 percent are African American, 14.1 percent are Asian, 5.3 percent are mixed race, with less than five percent in each of the two categories of American Indian/Alaskan Native and Native Hawaiian/Pacific Islander (MCPS, 2021a).

MCPS has long been recognized as one of Maryland's and the nation's best school districts. Childress et al. (2009) note that as early as the 1980s, ". . . MCPS was . . . considered to be one of the best school districts in the nation" (p. 15). While problems existed–minority students from less well-funded schools performed below their white peers in the more affluent parts of Montgomery County–MCPS was considered an exemplary school district.

In the 1990s, MCPS took steps to alleviate the achievement disparity. An African American superintendent was hired, and several initiatives were undertaken. The achievement gaps were not narrowed, however, and the incumbent superintendent did not seek a third term. After an extended search, Dr. Jerry Weast was hired as superintendent in 1999.

Weast undertook concerted and comprehensive steps to improve achievement for all students. A large committee of educators, administrators, union officials, citizens, and consultants worked to develop an action plan for reform. A leadership team was formed to implement the plan; the team included union officials as well as school administrators in order to gain teacher support. The report set academic milestones, required accountability and evaluation, and included increased professional development for teachers. Weast remained at the helm of MCPS for three terms, until 2011 (Childress et al., 2009).

Childress (2009) summarized the success of Weast's efforts. The achievements included improvements by students in all performance quartiles, with students in the lower performance quartiles improving at greater rates than students in the upper quartile; the achievement gap in reading for Hispanic kindergarten children decreased to single digits; the literacy and math achievement gaps on state proficiency exams between early elementary Black/ Hispanic students and white students were reduced by half; in high schools, twice as many African American students passed Advanced Placement tests.

These results gave MCPS national attention. The Public Education Leadership Program at Harvard University became involved in the reform effort, contributing analyses of race and achievement at MCPS in 2006 (Childress et al., 2009). In 2009, Harvard Education press published *Leading for equity: The pursuit of excellence in Montgomery County Public Schools*, giving MCPS widespread publicity for its outstanding accomplishments.

The narrative that MCPS is a successful school district has continued apace. MCPS continues to be listed highly in national rankings. The Public School Review (n.d.) noted the following regarding MCPS for the 2021-2022 school year:

- For the 2021-22 school year, there are 207 public schools serving 161,546 students in Montgomery County, MD. Montgomery County has one of the highest concentrations of top ranked public schools in Maryland.
- Montgomery County, MD public schools have an average math proficiency score of 48% (versus the Maryland public school average of 38%) and reading proficiency score of 55% (versus the 46% statewide average).

- Schools in Montgomery County have an average ranking of 8/10, which is in the top 30% of Maryland public schools.
- Minority enrollment is 72% of the student body (majority Hispanic and Black), which is more than the Maryland public school average of 63% (majority Black).

US News & World Report rankings also show Montgomery County with several schools in the top tier nationally. In the 2020 rankings, MCPS had one high school ranked as number 90 nationally and another at 105. Eight MCPS high schools were ranked among the top 25 in Maryland; one was ranked number 2 in the state (Peetz, 2020).

The *FY2021 Annual Comprehensive Financial Report* (MCPS, 2021b) shares the academic accomplishments of its students. For the school year ending in 2020, MCPS reported a Hispanic/Latino graduation rate of 77.1 percent and an African American graduation rate of 91.3 percent. MCPS also reported the AP exam results for African American and Hispanic/Latino students. For African American students who took those exams, 55.7 percent earned scores of three or higher, three representing a score of qualified but not sufficiently high to receive college credit. This percentage was higher than the overall Maryland percentage (48.6%) and the national percentage (40.6%). Hispanic/Latino students also scored three or better at a higher rate than Hispanic/Latino students in other Maryland school districts and nationally: 61.9% versus 61.2% and 52.1%, respectively. The document also included the aforementioned *US News and World Report* rankings for MCPS high schools, showing high rankings nationally and in Maryland for MCPS schools.

Clearly, the narrative is that MCPS is doing well for all of its students. The national press, the local press, and the district's own publications stress its high performance levels.

Literature Review

Counter-narratives challenge the dominant discourse regarding race and privilege (Solórzano & Yosso, 2002). The dominant narrative with respect to minority US high school students is the deficit narrative, painting these students with a broad, negative brush (Aronson et al., 2020; Miller et al., 2020). However, as described

above, MCPS sends the message that its minority students are succeeding in their academic pursuits. Thus, the counter-narrative constructed herein will attempt to show the MCPS narrative is incorrect and that minorities attending MCPS high schools are in fact not succeeding to the extent portrayed in the official narrative.

That MCPS has created an image of itself as a model school district with significant minority academic success is, however, in keeping with typical racial power structure thinking. Vaught (2012) notes that racial meanings are created. They can be created by those in the dominant position or they can be created by minorities using counter-narratives. MCPS has made its own meaning with respect to minority students by showcasing those minority students who have done well on the indicators selected by MCPS administrators. The MCPS narrative, however, disregards the counter-narrative that can be told by examining minority student performance on other indicators.

The intentional use of certain indicators to present a misleading picture of minority student success may be considered "spin." Vasquez Hellig et al. (2020) pointedly describe the use of spin by institutions: "While [the] dominant story of any large, influential organization can be read and understood, there are most often teams of people, including leaders and marketing professionals, whose job it is to spin, narrate, document, and promote the official positive narrative" (p. 616). The above-described MCPS narrative seems to have been constructed along the lines described by Vasquez Hellig et al. The purpose of this article is to "counter . . . [the] unexamined assumptions made by [MCPS]" (Delgado Bernal & Villalpando, 2016, p. 82).

Counter-narratives may be constructed in several ways. A person may tell his or her own story in the first person. A person's story may be told by another in the third person. A counter-narrative may also be constructed from various sources (Solórzano & Yosso, 2002). This third type of counter-narrative is sometimes called composite counter-storytelling and may involve the creation of a composite character to tell the story. Composite counter-narratives thus protect the privacy of the participants (Miller et al., 2020).

Yet another method to construct counter-narratives is to examine official documents to create narratives that challenge the narratives contained in those official documents. These counter-narratives challenge hegemonic narratives and the power institutions that sustain them, thus undermining those official narratives (Herath et al., 2020).

Counter-narratives to official narratives may be constructed in a number of ways. Some writers have examined official documents and challenged the narratives found in them with counter-narratives drawn from the documents themselves. Official narratives may also be challenged by persons who have worked under the requirements of the official documents and have experienced the racist or culturally oppressive effect of the policies embedded in those documents. Yet another challenge to official narratives comes from persons, generally academics, who examine the effects of official policy and show how those effects contravene the narrative found within the official documents.

Narratives counter to official narratives are employed in a variety of fields. Herath et al. (2020) demonstrated the ways in which academics have developed counter-narratives against official narratives of conflicts. Khoday (2021) critically examined the transcript of a trial in which a mixed-race adolescent was charged with and convicted of manslaughter. Khoday's analysis of the trial transcript revealed the ways the opinion of the Canadian Supreme Court, in affirming the youth's conviction, completely ignored and omitted any discussion of the provocative racist words and actions that led to the altercation that resulted in the death of the defendant's antagonist.

Vasquez Hellig et al. (2020) challenged the official narrative of Teach For America (TFA) by interviewing former TFA teachers, understanding their experiences, and comparing those experiences with policy and other documents promulgated by TFA. The experiences of the TFA teachers differed significantly, in negative ways, from the narrative created by official TFA materials. Outside the United States, Rosado (2019) showed that a video produced by the Peruvian government, intended to present an inclusive view of Peruvian culture to an international audience, marginalized Peruvians of African descent. The author critically analyzed the video, showing the ways in which it portrayed Peruvians of African descent in marginalized and subservient ways.

An example of counter-narrative to an official education narrative is found in the research undertaken by Kaomea (2003) regarding instruction in the history of Hawai'i and the culture and language of Hawai'i's indigenous people. Section 4 of Article 10 of the Hawaiian Constitution, adopted in 1978, requires the State to "provide for a Hawaiian education program consisting of language, culture and history in the public schools. The use of community expertise shall be encouraged as a suitable and essential means in furtherance of the

Hawaiian education program." This constitutional mandate has been implemented in Hawai'i's public schools since 1980. The program is largely implemented by older Hawaiians who have knowledge of Hawai'i's history, culture, and language. These Hawaiian elders, called *kūpuna,* are in age much like the grandparents of the public school children. They come to the schools on a regular basis and teach Hawaiian language, culture, and history to the school children. In Kaomea's words, "On the surface it looks and sounds like a wonderfully conceived program, one whose virtues are acknowledged by teachers, children, and administrators alike" (2003, p. 15).

Through an extensive effort involving review of official documents, classroom observation, analyses of student artwork, and observation of student cultural productions, Kaomea concluded that her research

> revealed the many ways in which all that these expert *kūpuna* have to offer, all that they could teach, is cut off and cast aside; their wealth of experiences and ancestral knowledge is effectively silenced and erased. Instead of appearing with strength and complexity, the Hawaiian studies *kūpuna* is reduced (in both real life occupational circumstances and in the children's drawings) to little more than a hired hand; one who is valued not for one's *na'auao* and *'ike* (ancestral wisdom and experience), but for a willingness to serve and assist in the implementation of a pre-scripted and restrictive curriculum that emphasizes benign lessons in Hawaiian arts, crafts, and music. (Kaomea, 2003, p. 22)

Kaomea also noted the *kūpuna* program, instead of presenting authentic Hawaiian culture, gives students the view of Hawaiian culture as portrayed by the Hawaiian tourist industry. She also notes the program, as implemented, ignores much, if not all, of the appalling colonial history of Hawai'i. These examples show the power of creating counter-narratives from official documents.

Methodology

The Maryland State Department of Education Report Card (Maryland State Department of Education, n.d.) contains data on school districts and schools throughout Maryland. Data on the report card include

demographics, enrollment, test score data, and graduation rates. Data may be displayed by category (sex, racial/ethnic group), by school, or by district. Historical data are also in the files so trends may be observed. The data may be displayed on-screen; spreadsheets containing the data may be downloaded. The quantitative data found on the Report Card will be used to construct the counter-narrative to the MCPS narrative.

While qualitative research has dominated critical race theory, there is a growing body of literature referred to as "QuantCrit," which involves the use of quantitative data in CRT research (Gillborn et al. 2018; Sablan, 2019). As Gillborn et al. (2018) explain,

> Quantitative methods cannot match qualitative approaches in terms of their suitability for understanding the nuances of the numerous social processes that shape and legitimate race inequity. However, quantitative methods are well placed to chart the wider structures, within which individuals live their everyday experiences, and to highlight the structural barriers and inequalities that differently racialized groups must navigate (p. 160).

Quantitative data are thus used here to create a composite counter-narrative to tell the story of underrepresented students at MCPS, to give voice to their experiences in the educational system. As Sablan (2019) notes, "descriptive and inferential statistics can be used to demonstrate CRT assumptions and document racial inequity" (p. 183). As Gillborn, et al. (2018) further elaborate, "quantitative material has the potential to contribute to a radical project for greater equity in education" (p. 160). It is in that spirit this paper uses quantitative data.

Using a counter-narrative framework, the article examines graduation rates and Algebra I proficiency rates in MCPS, along with faculty composition and free and reduced price meal data, to demonstrate large gaps in graduation and Algebra I proficiency rates among minority and low socio-economic status (SES) students in MCPS. These data are used to construct an intersectional counter-narrative to the school district's received narrative as a high-ranking school district providing an equitable education for all its students. The counter-narrative is developed from the district's own data on graduation rates, Algebra I proficiency rates, and faculty composition. By using data found in the Maryland State Department of Education Report Card, the article follows the recommendations of the Council of Chief State School Officers to "increase use of state and school

report cards for decision-making and continuous school improvement (Council of Chief State School Officers [CCSSO], 2019, p. 3).

For this study, data for each of the 25 high schools were obtained from both the Maryland State Report Card and from an MCPS source described below. Data from the 2018-2019 school year were used because that is the last year for which full data are available prior to the Covid-19 pandemic. All of the data shown in the two tables below were entered on a spreadsheet, one row for each high school in Montgomery County. From the Maryland State Report Card, eighteen data items were selected for each school. Those data items are listed on Table 1.

Table 1

Data Items Taken from the Maryland State Report Card

- School
- Federal funding at this school
- State/Local funding at this school
- Total funding at this school
- (Calculated) Funding at this school as a deviation from mean funding for each school
- (Calculated) Ratio of federal funding to total funding at this school
- Percentage of all students proficient in Algebra I
- Percentage of White students proficient in Algebra I
- Percentage of African American students proficient in Algebra I
- Percentage of Hispanic students proficient in Algebra I
- Percentage of Asian students proficient in Algebra I
- Percentage of Mixed Race students proficient in Algebra I
- Percentage of all students graduating
- Percentage of White students graduating
- Percentage of African American students graduating
- Percentage of Hispanic students graduating
- Percentage of Asian students graduating
- Percentage of Mixed Race students graduating

In addition to the items taken from the from the Maryland State Report Card, data were extracted from the 2018-2019 MCPS Schools-at-Glance Reports (Montgomery County Public Schools, 2022). Data extracted from these reports for each high school are shown on Table 2.

Table 2

Data Items Taken from the MCPS Schools-at-a-Glance Reports

- White Professional Staff
- Female Professional Staff
- Hispanic Student Enrollment (Percentage)

- African American Professional Staff
- Hispanic Professional Staff
- Asian Professional Staff
- Mixed Race Professional Staff
- Total Professional Staff
- Male Professional Staff
- Total Professional Staff
- Total Student Enrollment (Number)
- White Student Enrollment (Percentage)
- African American Student Enrollment (Percentage)
- Asian Student Enrollment (Percentage)
- Mixed Race Student Enrollment (Percentage)
- (Calculated) Sum Total Percentage Enrollment
- Average English Class Size
- Average Other Language Class Size)

The graduation rate was selected because it is a key indicator of secondary school performance (Maryland Equity Project, 2014). The Algebra I proficiency score was selected for three reasons. One, Algebra I is required for high school graduation in Maryland (Maryland State Department of Education, 2018). Two, mathematics proficiency is correlated positively with high school graduation (Lee, 2019). Third, algebra is a foundation for many of today's careers, and without it, students are at a distinct disadvantage on the job market (Grønmo, 2018). Math skills are increasingly necessary for entry into the work force (United States Department of Education, n.d.). Furthermore, more math courses in high school, even for students who do not go on to college, lead to better labor market outcomes (James, 2013). Thus, graduation rates and Algebra I proficiency should give a reasonable indication of MCPS' students' skills when they leave high school. In addition, SES, using percentage of students receiving free or low-priced meals (FARMS), will be correlated with Algebra I proficiency rates and graduation rates to show the relationship between those rates and SES.

Results

Graduation Rates and Algebra I Proficiency

Graduation rates and Algebra I proficiency percentages were analyzed by three racial/ethnic categories: white, African American, and Hispanic. The results are displayed on Figures 1 and 2, respectively.

Figure 1

Mean High School Graduation Percentages, 2019

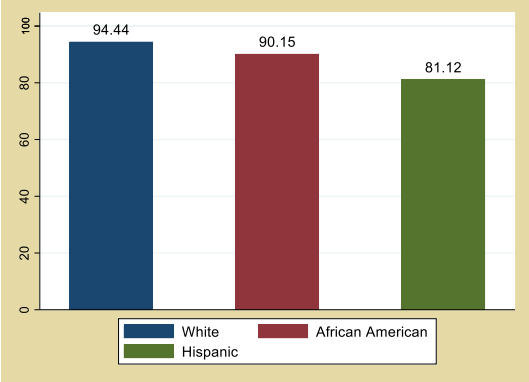
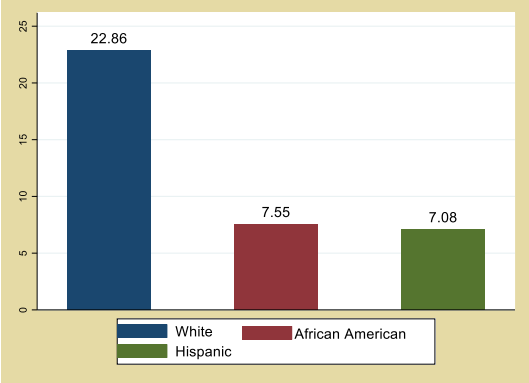


Figure 2

Mean Algebra 1 Proficiency Percentages, 2019



As can be seen from the figures, some disparity is evident among the graduation rates. Those differences, while not extreme, are statistically significant.[1] The Algebra I proficiency rates show even greater

[1] White MCPS 2019 graduates had a higher graduation rate (Mean = 94.44, SE = 0.87) than African American MCPS 2019 graduates (Mean = 90.15, SE = 1.11) . This difference, 4.29 [95% CI 1.45 – 7.12], was t (48) = 3.0437, p =.0038, with a relatively high effect size, Cohen's d = 0.86. With respect to Hispanic 2019 graduates, the difference was even more pronounced (Mean = 81.12, SE = 1.82). This difference, 13.32 [95% CI 9.26 – 17.37], was t(34.52) = 6.61, $p < .0001$, with a very high effect size, Cohen's d = 1.82.

disparities and are also highly statistically significant.[2] These results suggest African American and Hispanic students in MCPS high schools are not achieving to the same extent as their white counterparts.

The composition of the student body in the various high schools may have some bearing on these results. For both white and Hispanic students, there is a strong correlation between the racial/ethnic composition of the student body and both graduation rate and proficiency in Algebra I. For example, the greater the percentage of white students in the school, the higher their graduation rates and Algebra I proficiency; yet, the more Hispanic students in the school, the lower their graduation rate and Algebra I proficiency. For the white student graduation rate, the correlation is positive and strong, $r = .64$, $p = .0006$. For Hispanic students, the correlation was negative and strong, $r = -.85$, $p < .001$. For African American students, the correlation coefficient was small, $r = .11$ and was not statistically significant. The same pattern holds true for the Algebra I proficiency rate. For white students, the correlation was moderately strong at $r = .57$, $p = .007$. For Hispanic students, the coefficient was again strongly negative, $r = -.62$, $p = .001$. For African American students, the correlation coefficient was negative, $r = -.26$ and again not statistically significant.

The analysis above used proficiency scores on the Algebra I exam. Proficiency is a high bar. To verify that minority students had lower percentages of higher scores, as well higher percentages of lower scores, aggregate scores for the three racial/ethnic groups were summarized across all five possible scores. The results are shown in the following figure.

[2] White MCPS 2019 Algebra I examinees had a higher proficiency rate (Mean = 22.86, SE = 3.24) than African American Algebra I examinees (Mean = 7.55, SE = 1.23) . This difference, 14.69 [95% CI 10.68 – 18.70] ,was t (25.69) = 4.43, $p = .0002$, with a relatively high effect size, Cohen's $d = 1.39$. With respect to Hispanic 2019 examinees, the difference was also pronounced (Mean = 7.08, SE = 1.78). This difference, 15.78 [95% CI 8.25 – 23.30], was t(31.54) = 4.27, $p = .0002$, with a high effect size, Cohen's d = 1.32.

Figure 3

Percentages of scores on the Algebra I Maryland Comprehensive Assessment Program Test, by Racial/Ethnic Groups, 2019

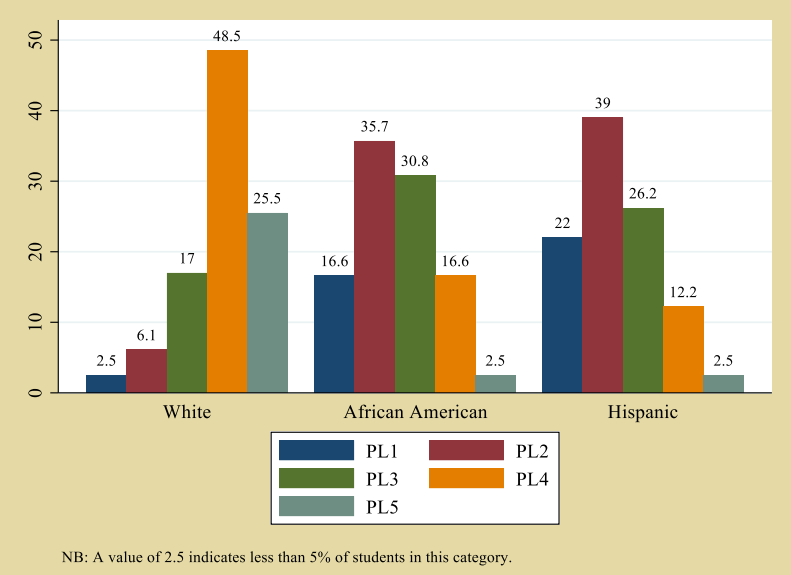


Figure 3 shows clearly African American and Hispanic students have higher percentages of scores at the lower end of the scale (PL1 – PL3) and lower percentage of scores at the higher end of the scale (PL4 and PL5). For white students, the percentages are reversed. The overall results confirm the results studying only the proficient scores.

School Professional Staff and Graduation Rates

The literature suggests that having a teacher of the same race or ethnicity will lead to better academic outcomes for students of color (Redding, 2019). The racial/ethnic composition of the MCPS high school professional staff was analyzed in light of graduation rates among the three groups studied in this analysis. Because data on the race/ethnicity of Algebra I teachers were not available, this section discusses only professional staff and graduation rates.

The first observation to be made is the professional staff in the 25 MCPS high schools is, not surprisingly, overwhelmingly white and female. Tables 3 and 4 show the percentages of race/ethnicity and gender, respectively, of the professional staff in the 25 MCPS high schools.

Table 3

Racial/Ethnic Composition of Professional Staff in the 25 MCPS High Schools, 20193

	Percent white	Percent Black	Percent Hispanic
Minimum Percentage	51.0	2.0	2.0
Maximum Percentage	88.5	33.6	12.6
Mean Percentage	70.9	14.3	7.0

Table 4

Gender Composition of the Professional Staff in the 25 MCPS High Schools, 2019

	Percent Female	Percent Male
Minimum Percentage	53.6	27.5
Maximum Percentage	72.5	46.4
Mean Percentage	63.6	36.4

As can be seen from the data in Tables 3 and 4, the professional staff of the 25 high schools is majority white female throughout the district.

The correlations between the racial/ethnic composition of the professional staff and graduation rates among the racial/ethnic groups of the students present definite patterns. White students' graduation rate is highly correlated with the percentage of white professional staff, $r = .71$, $p = .0001$. The graduation rate for Hispanic students is negatively correlated with the number of Hispanic teachers in the school, $r = -.75$, $p < .001$. The comparable correlation coefficient for African American students is $r = .1$, $p = .62$.

For African American students, the graduation rate does not seem to be dependent on the composition of the professional staff in the high schools. White students appear to do better with greater percentages of white teachers.[4] For Hispanic students, the graduation rate is strongly negatively correlated with increasing numbers of Hispanic teachers.

[3] Correlations between each racial/ethnic group's enrollment percentage and the percentage of professional staff in that racial/ethnic group are positive and significant in each case.

[4] White students appear to do less well with higher percentages of African-American teachers. The correlation coefficient for the white student graduation rate and the percentage of African American teachers is $r = .58$, $p = .002$.

There may be several explanations for the negative correlation between Hispanic academic success and the number of Hispanic teachers. One, as shown in Table 3, there are very few Hispanic teachers in any of the schools, so the data may be insufficient to show a meaningful relationship between graduation rate and Hispanic teachers. A second reason was offered by Redding (2019). Redding suggests that Hispanic teachers may not be recent immigrants, whereas many Hispanic students are recent immigrants. Therefore, cultural connections between the Hispanic students and their Hispanic teachers may be muted because of this cultural difference.

Socio-economic Status and Student Achievement

The literature demonstrates a significant correlation between SES and student achievement, with students in lower income households generally achieving at lower levels than their peers from higher income groups (Hernandez & Zamora, 2018). The question becomes whether this correlation holds true for minority students in MCPS. To investigate this question, the percentage of students receiving free or reduced-price meals (FARMS) was used as an indicator of the socio-economic status of the student population in the 25 MCPS high schools. The focus of this analysis will be on Hispanic students because their proficiency scores and graduation rates are the lowest.

Two scatterplots and their associated correlation coefficients succinctly summarize the not-surprising relationship between low socio-economic status and Algebra I proficiency and high school graduation in MCPS high schools. Figure 4 presents the Algebra I proficiency rates; Figure 5 presents the graduation rates; both are plotted against the percentage of students receiving FARMS.

Figure 4

Scatterplot Showing the Relationship between Percentage of MCPS High School Students Receiving FARMS and Algebra I Proficiency Scores on Maryland Comprehensive Assessment Program Test, 2019

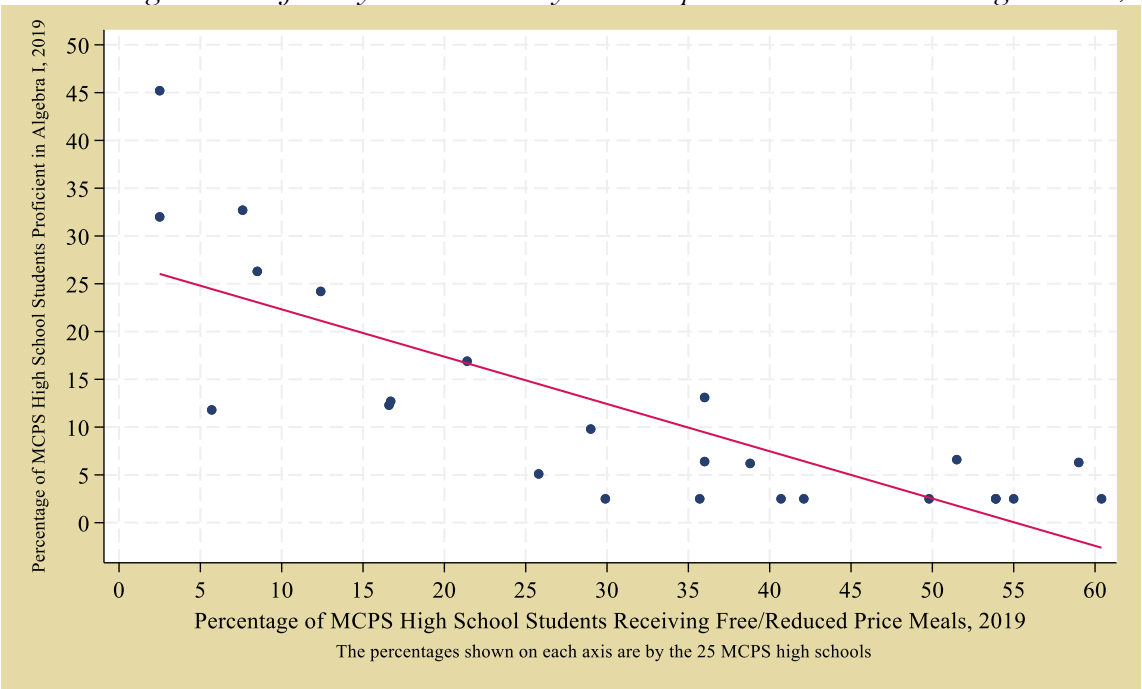
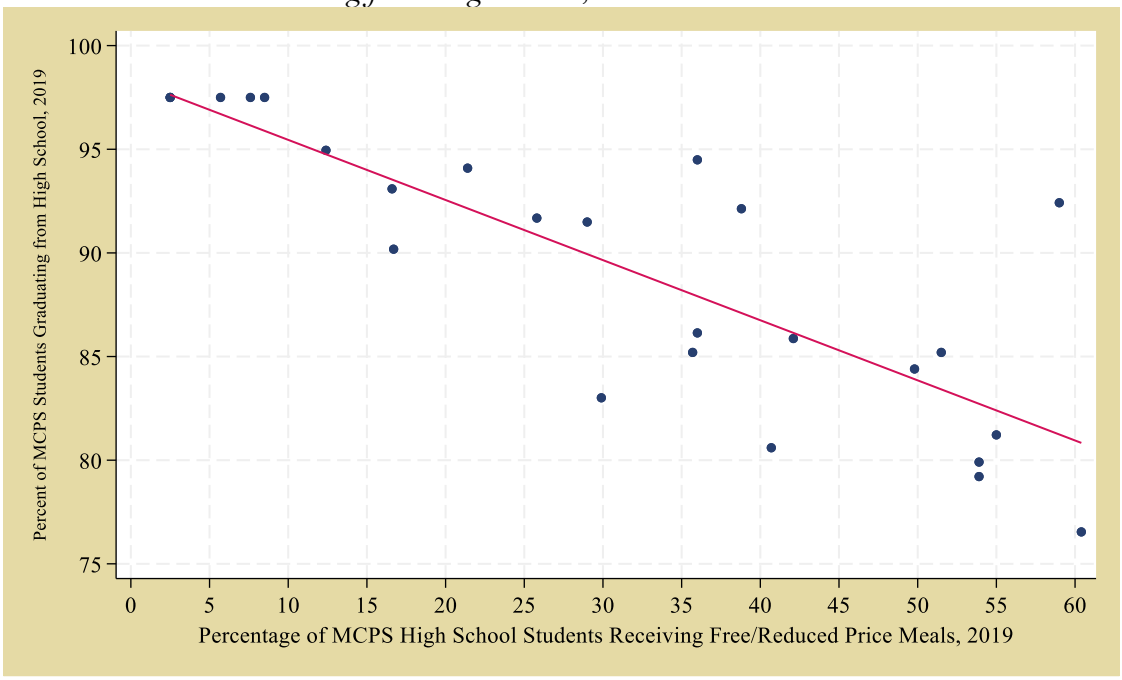


Figure 5

Scatterplot Showing the Relationship between Percentage of MCPS High School Students Receiving FARMS and Students Graduating from High School, 2019



The correlations are negative and statistically significant. For Algebra I proficiency, the correlation is $r = -.80$, $p < .001$. For high school graduation rates, the corresponding statistics are $r = -.82$, $p < .001$.

These plots, however, do not reveal the deep divide between Hispanic students in MCPS high schools and students from other racial/ethnic groups. The four high schools with the lowest percentages of Hispanic students, all less than 15%, have the lowest percentages of FARMS students, all less than 10%; the highest Algebra I proficiency rates, ranging from 11.8% to 45.2%; and high school graduation rates close to 100%.

The statistics for schools with the highest percentage of Hispanic students are far different. In the five schools with the highest percentages of Hispanic students, the percentages of Hispanic students range from 51.1% to 61.4%. The percentages of students receiving FARMS in these schools range from 49.8% to 61.4%. Algebra I proficiency rates in those five schools approach zero. Graduation rates range from 79.2% to 84.4%. Ethnicity, low socio-economic status, and low academic performance are clearly related for Hispanic students in MCPS high schools. Thus, within MCPS high schools, the phenomenon of "intersecting social inequalities" (Hill Collins, 2019, p. 43) appears to be at play.

Discussion

The analysis suggests that in the 25 MCPS high schools, Hispanic students are not graduating at the same rate as White students, and are definitely not becoming as proficient in Algebra I as the White students. The data also show that as the percentage of Hispanic students increases in a school, the graduation rates and Algebra I proficiency of Hispanic students decrease. African American students appear to perform better than the Hispanic students; their graduation rates do not appear to vary with the racial composition of the schools, but their Algebra I performance does seem to decrease as the number of Black students in a school increases, although not by a statistically significant amount.

The data further show the relatively low percentages of Black and Hispanic teachers in each of the high schools. Given the increasing number of minority students in MCPS high schools, and research that suggests positive benefits of having teachers of the same racial/ethnic groups as the predominant groups in the

classrooms (Dee, 2005; Lindsay et al., 2021), MCPS may do well to increase the number of African American and Hispanic teachers, especially in mathematics.

Furthermore, the data show a strong relationship between racial/ethnic group and low SES, thus suggesting an interaction between racial/ethnic group and SES and the importance of taking an intersectional approach to the problem. While tackling the racial issue is crucial, as Gillborn (2015) suggests, the impact of low income on the students, especially the Hispanic students, cannot be ignored. The strongest negative correlation between student achievement and low socio-economic status is in the Hispanic population. This relationship was clearly shown in the analysis of data from high schools with the highest and lowest Hispanic populations.

Taken together, the data suggest there is a counter-narrative to be told. Given that in 2020-2021, the majority ethnic group in MCPS was Hispanic, and given that Hispanic high school students appear to do more poorly in schools that have a higher percentage of Hispanic students, it seems the narrative that MCPS high schools are doing well for their Hispanic students, as the district and professional literature might suggest, is not completely accurate. These data confirm the existence of a counter-narrative to the received wisdom regarding MCPS high school performance for its minority students. These data also demonstrate how quantitative data can indeed contribute to the counter-narratives of critical race theory.

Limitations and Implications for Practice

The major limitation of this study is that it is a snapshot. The data are from one point in time. A study over multiple years may show improvement in minority graduation rates and math proficiency. Thus, while the data examined suggest a counter-narrative is present, perhaps a longer study would suggest progress is being made.

The link between theory and practice is a central focus of critical theory (Hohendahl, 1994), as well as a tenet of critical race theory (Delgado & Stefancic, 2017). What actions, then, do the data suggest? Do the data suggest changes in Algebra I educational practice? The counter-narrative established by the data suggest Black

and Hispanic students were not proficient in Algebra I in the school year studied. The data thus raise the issue of mathematics pedagogy and whether the pedagogy in Algebra I classrooms should better accommodate Black and Hispanic mathematics learners.

Danny Bernard Martin has written extensively on African American students and mathematics learning. Martin (2012) argues that mathematics should be taught to "Black children within their *phenomenal Black realities"* (p. 49, italics in original). He insists the "the ecological context of [Black students'] mathematical thinking and development" (p. 57) be taken into account when Black students are taught mathematics. He notes that many Black students have mathematical aptitude, but do not learn mathematics in the ways that are taught in school. When teachers fail to acknowledge these other ways of learning math, and how Black students actually use math in their daily lives, they lead their Black students to abandon any desire they had to excel in mathematics. Thus pedagogy tailored to Black students is critical if they are to realize their full potential as mathematics learners.

Likewise, it is possible for Hispanic students to succeed in mathematics. This was conclusively demonstrated by Jaime Escalante in his success with Hispanic students in east Los Angeles. Escalante developed a program that enabled Latinx students to succeed in mathematics, even achieving proficient scores on the AP Calculus tests. His program had one entrance requirement: *ganas*, or desire. Escalante, after protracted fighting with school administrators, obtained the textbooks he needed. He worked with the students to help them complete six years of mathematics instruction in three calendar years. In class, he used "lively examples, ingenious demonstrations of math at work, and lots of linkages between math principles and their real-world applications" (Escalante & Dirmann, 1990, p. 410). After the program was in place, former students became role models and showed how they succeeded in life by becoming proficient in mathematics. These Hispanic role models motivated upcoming students to apply themselves and work hard to succeed in Escalante's program.

These examples suggest different pedagogies for minority students may have a positive impact on their Algebra I performance. Given the Black and Hispanic Algebra I proficiency rates, the major implication for practice might be to adopt more minority-focused pedagogies in the Algebra I classrooms. The MCPS data show

a high correlation between math proficiency and high school graduation; across the three student groups, the correlation between high school graduation rate and Algebra I proficiency is $r = .77$, $p < .001$. In a study of dropout rates in Los Angeles County schools, Silver et al. (2008) noted, "The rate of failure in Algebra is particularly problematic because of the pivotal role that the course has been shown to play as the 'gateway' to more advanced mathematics, *high school graduation*, and postsecondary education opportunities" [emphasis added] (p. 15). Given the importance of Algebra I proficiency, MCPS would do well to create a new narrative of tailored mathematics pedagogy for its African American and Hispanic students. These changes in pedagogy may be the actions a critical race theory approach requires and may very well offset the effects of race/ethnicity and low SES observed in the data.[5]

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[5] MCPS has a policy that stresses equity, non-discrimination, and culturally responsive teaching (Montgomery County Public Schools, 2010). Attempts to discuss this policy with two different MCPS representatives, a school board member and a former mathematics teacher/now assistant principal, were ignored. A call to the office of the Chief Academic Officer resulted in a flat refusal for a meeting, with the option of filing a request under the Maryland Freedom of Information Act. In short, this does not appear to be an issue school personnel wish to discuss.

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