

Making Sense of MSA and NAEP Assessment Results: How Well Are Maryland Students Doing?

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State assessments have become an ever-present feature of education policy and discussion about the quality of public schools. In Maryland, mandated state-designed assessments go back to the 1970s when state policymakers required students to pass standardized tests as part of the Maryland Functional Testing Program. Since that time, state assessments have evolved to address new policies, including the assessment requirements of the 2002 reauthorization of the Elementary and Secondary Education Act, No Child Left Behind. As Maryland, along with other states, has begun implementing the Common Core standards, a new set of state assessments—the Partnership for Assessment of Readiness for College and Careers (PARCC)—was implemented in the 2014-2015 school year. These assessments established new proficiency standards for students and benchmarks to gauge student performance in Maryland, including performance differences between historically disadvantaged students and their more advantaged peers.

This policy brief provides a brief history of assessment policy in Maryland and compares student performance on the Maryland School Assessments (MSA) and the National Assessment of Education Progress (NAEP) between 2005 and 2013, the last year all students were tested on the MSA. We examine the longitudinal trends for all students, students from different racial/ethnic groups, and students from low-income families and discuss how to interpret the results of state assessments compared to NAEP. By comparing the assessment results from MSA and NAEP, we show where Maryland stands in terms of student performance, including efforts to reduce the achievement gap between historically advantaged and disadvantaged students. We provide these analyses to establish an understanding of student performance gains (and losses) prior to the implementation of the new Common Core assessments.

MSA and NAEP Programs

The MSA program and the NAEP program have different histories and assessment goals. The MSA program was implemented in 2002 in response to the federal No Child Left Behind Act, which mandated that all states establish curricular standards in reading and math and test all students in grades 3-8 annually in those subjects. The Maryland State Department of Education (MSDE) thus administered the MSA every year to all students in grades 3-8. The exam tested students' mastery of the state-mandated curriculum in reading and math, and students received one of three ranks based on their scores: Basic (underperforming), Proficient (performing adequately), or Advanced (exemplary).

The NAEP, by contrast, is a national sampling exam that was first widely administered to the states in 1990. Known as “The Nation’s Report Card,” the NAEP provides a longitudinal perspective of how U.S. student achievement has changed over time. The exam is administered by the U.S. Department of Education and the National Center for Education Statistics every two years to a sample of students in grades four and eight. Students are tested in four subjects – math, reading, science, and writing – and the test items cover material from a general framework established by the National Assessment Governing Board rather than a specific curriculum. Unlike the MSA, the NAEP does not provide data on individual school or student performance, but instead provides performance information at the district, state, and national levels.

In this policy brief, we compare student performance on the MSA and the NAEP. Because the NEAP is an independent, national assessment, it can be used to corroborate the state test results. Because the MSA is a “high-stakes” test, that is, there are incentives attached to test scores, scores on the MSA may be inflated. Scores can be inflated when instruction focuses narrowly on the tested material and ignores other parts of the subject matter. To control for possible score inflation, we look at NAEP scores, a low-stakes test, which are more likely to represent a broader spectrum of what students know about a subject area. We define student performance as the percentage of students scoring proficient or advanced on the MSA and the NAEP. Results are analyzed at the state-level and then broken down according to race/ethnicity and by free and reduced meals (low-income) status.¹

¹ Eligibility for free and reduced price meals (FARMS) is a commonly used measure of students from low-income households.

Trends in Math and Reading Achievement

Fourth Grade Math Achievement: As Figure 1 shows (see appendix), students have shown steady improvement on both the MSA and NAEP 4th-grade math exams since 2005. Between 2005 and 2013, the percentage of students scoring proficient or above increased from 76% to 89% on the MSA and from 38% to 47% on the NAEP. However, the proportion of students scoring proficient or above has been significantly higher on the MSA than the NAEP. Partially, this can be explained by the fact that MSA proficiency standards are less rigorous than NAEP proficiency standards. Additionally, because the MSA is linked to a detailed curriculum, teachers are able to more directly prepare students for the MSA than the NAEP.

The pattern of steady improvement on the two tests in 4th-grade math holds even when we disaggregate the data based on students’ race/ethnicity. As Figures 2 through 4 demonstrate, all races of students seem to be making progress on the tests, including black and Hispanic students. The percentage of black students scoring proficient or above increased from 62% to 81% on the MSA and from 15% to 22% on the NAEP. The percentage of Hispanic students scoring proficient or above increased from 69% to 86% on the MSA and from 27% to 33% on the NAEP. It is important to note, though, that the difference between MSA and NAEP performance is much larger for black students (59 percentage points) and Hispanic students (53 percentage points) than for white students (28 percentage points).

Additionally, when comparing students of different backgrounds against each other, it is also clear that white students have consistently outperformed black and Hispanic students on these exams and that these

differences in achievement (or “achievement gaps”) have fluctuated over time. As Figures 5 and 6 show, the racial achievement gaps between black and Hispanic students and white students appear to be diminishing on the MSA but growing on the NAEP. When looking at the average yearly growth of students on these two tests, blacks (2.4 percentage points) and Hispanics (2.1 percentage points) have outperformed whites (1.0 percentage point) on the MSA, but the opposite is true on the NAEP, where the annual growth rates of whites (1.8 percentage points) has outpaced the annual growth rates of both blacks (0.9 percentage points) and Hispanics (0.8 percentage points). Possible explanations for this phenomenon will be discussed below in the Discussion and Implications section of this brief.

Fourth Grade Reading Achievement: Data shows that overall student performance on the 4th-grade MSA and NAEP reading exams has been steadily improving as well (Figure 7). Between 2005 and 2013, the percentage of student scoring proficient or above increased from 81% to 88% on the MSA and from 32% to 45% on the NAEP. However, NAEP performance remains significantly below MSA performance.

These findings hold even when disaggregated by race/ethnicity. White students improved their performance steadily over this period on both the MSA and the NAEP (Figure 8). Black students and Hispanic students also made similar gains (Figures 9 and 10). The percentage of black students scoring proficient or above increased from 70% to 80% on the MSA and from 12% to 22% on the NAEP. The percentage of Hispanic students scoring proficient or above increased from 73% to 84% on the MSA and from 21% to 35% on the NAEP. It is important to note, though, that the difference between MSA and NAEP scores is much larger for black students (58

percentage points) and Hispanic students (49 percentage points) than for white students (15 percentage points). Much of this phenomenon can probably be attributed to the extremely low starting point of minority students on the NAEP, but it may also be the case that minority students are perhaps more susceptible to efforts by schools to artificially inflate MSA test scores (Klein et al, 2000; Heilig & Darling-Hammond, 2008; Booher-Jennings, 2005; Smith & Fey, 2000).

While all racial groups have improved their performance on these two tests, the racial achievement gap in 4th-grade reading has nonetheless remained persistent. Whereas the black-white and Hispanic-white achievement gaps have narrowed on the MSA, these same gaps have widened on the NAEP. As of 2013, the percentage of black students scoring proficient or above remained 15 percentage points below that of white students on the MSA and 38 percentage points below that of white students on the NAEP (Figure 11). The percentage of Hispanic students scoring proficient or above remained 11 percentage points below that of white students on the MSA and 25 percentage points below that of whites on the NAEP (Figure 12). The annual yearly growth patterns of achievement on these two tests also confirm this pattern. Black students (1.3 percentage points per year) and Hispanic students (1.4 percentage points per year) are improving at a faster rate than white students (0.6 percentage points per year) on the MSA, but on the NAEP, black students (1.3 percentage points per year) and Hispanic students (1.8 percentage points per year) are improving at a slower rate than white students (1.9 percentage points per year).

Eighth Grade Math and Reading Achievement: Many of these same trends are apparent when looking at the performance of 8th-graders on the MSA and

NAEP (see figures 13-24), although 8th-grade proficiency levels on both tests are lower than 4th-grade proficiency levels. In math, MSA and NAEP performance has steadily risen, although students have consistently performed much better on the MSA than the NAEP. These findings are for the most part the same across racial subgroups, although the performance of white students did dip on the NAEP between 2011 and 2013. Unlike the 4th-grade math results, however, the achievement gap between white and minority students has been diminishing on the 8th-grade math exam. However, the gap should be viewed cautiously since it increased before returning to its previous 2005 levels.

The performance of 8th-graders on the two reading exams also reinforces many of the trends discussed above (Figures 19-24). In this regard, performance on the 8th-grade MSA and NAEP reading exams has steadily risen between 2005 and 2013, with students consistently performing better on the MSA than the NAEP. These findings hold even when the data is disaggregated by race. Furthermore, as was the case with the 4th-grade assessments, the difference between MSA and NAEP performance has been larger for minority students (45-46 percentage points) than for white students (37 percentage points). Additionally, when comparing different racial groups against one another, the achievement gap between minority students and white students appears to have decreased on the MSA but simultaneously remained stagnant (or in the case of Hispanic students, increased) on the NAEP. Between 2005 and 2013, the white-black achievement gap fell 12 percentage points on the MSA, but only 2 percentage points on the NAEP. The white-Hispanic achievement gap fell 15 percentage points on the MSA, but actually increased 4 percentage points on the NAEP.

Math and Reading Performance of Low-Income Students:

Over the past two decades, the percentage of students from low-income households enrolled in Maryland public schools has nearly doubled, from 22.4% of students in 1990 compared to 40.1% in 2010 (Sunderman & Dayhoff, 2014). By the 2013-14 school year, this increased to 42.8%, showing no abatement following the end of the 2008 recession. Since research on national trends finds a widening achievement gap between high- and low-income students (Reardon, 2011), it is important to examine trends in the performance of low-income Maryland students.

Patterns similar to those we saw in the previous analyses emerge when looking at the performance of low-income students. The performance of low-income students has increased on both the MSA and the NAEP, however the proportion of students scoring proficient or above has been significantly higher on the MSA than the NAEP (Figures 25-28). The MSA results for low-income students are not much different from those for all students whereas NAEP scores for low-income students are roughly half those of all students. In addition, the performance gap between the MSA and the NAEP has increased from its 2005 level with the exception of 4th-grade reading, which remained unchanged (57 percentage points). The gap between the two tests increased from 45 percentage points to 58 percentage points in 4th-grade math, from 19 to 29 percentage points in 8th-grade math (Figure 21), and from 33 to 46 percentage points in 8th-grade reading.

While the MSA does not report disaggregated scores for non-poor students, which would allow for a comparison between low-income and non-poor students, the NAEP does. Figures 29-32 show that low-income students score consistently below non-poor students

on the NAEP math and reading tests in both 4th and 8th grades and that the gap between low-income and non-poor students has increased. When comparing low-income and non-poor students on the NAEP, the 4th-grade math income gap increased from 33 percentage points in 2005 to 39 percentage points in 2013; the reading gap increased slightly, from 32 to 34 percentage points between 2005 and 2013. In 8th-grade math, the NAEP income gap increased from 29 to 35 percentage points between 2005 and 2011 before decreasing to 30 percentage points in 2013. On the 8th-grade NAEP reading test, the gap increased four percentage points, from 26 to 30 percent between 2005 and 2013. It is worth noting that the income gaps on the NAEP are larger than the racial achievement gaps. These patterns mirror national trends that show a widening achievement gap between high- and low-income students (Reardon, 2011).

Discussion & Implications

Summary of Results: In this analysis, we compared test results on the MSA to test results on the NAEP. The NAEP is a nationally administered, independent assessment that can be used to corroborate state test results. The results of our analysis can be summarized as follows:

- Students of all races have shown steady improvement on the MSA and the NAEP assessments between 2005 and 2013 in 4th- and 8th-grade math and reading.
- In both grades and subjects, NAEP performance remains significantly below MSA performance.
 - The gap between MSA and NAEP performance has increased between 2005 and 2013.
 - The gap between the MSA and NAEP performance is larger for black and Hispanic students than it is for white students.
- When comparing students by race, white students have consistently outperformed black and Hispanic students.
- The achievement gap between minority (black and Hispanic) students and white students has decreased greatly on the MSA but has remained stagnant or increased on the NAEP.
 - The achievement gap between minority (black and Hispanic students) and white students has decreased greatly on the MSA in both reading and math in grades 4 and 8.
 - The achievement gap between minority and white students has increased on the NAEP in 4th-grade reading and math.
 - The achievement gap on the 8th-grade NAEP has declined slightly in math but remained stagnant or increased in reading.
- The performance of low-income students on the NAEP has remained consistently below their performance on the MSA.
 - The gap between the two tests has remained unchanged in 4th-grade reading, but increased substantially in 4th-grade math, 8th-grade math, and 8th-grade reading.
 - The MSA/NAEP income performance gap has increased at a faster rate than the performance gap for all students.
- On the NAEP, the gap between low-income and non-poor students has increased in 4th-grade math, 4th-grade reading, and 8th-grade reading, while remaining about the same in 8th-grade math.
 - The NAEP income gaps are larger than the NAEP racial achievement gaps.

Discussion: While it may be encouraging that both MSA and NAEP scores have risen between 2005 and 2013, our analysis raises a number of questions concerning the validity of inferences that can be made based solely on MSA results.

The first question worth exploring is why MSA scores are so much higher than NAEP scores. Large discrepancies between NAEP and state assessment results, as has been the case in Maryland, suggest that NAEP proficiency levels are more challenging than Maryland's own (Lee, 2007; Peterson & Hess, 2006). In Maryland, the percentages of students meeting or exceeding the proficiency standard in reading and math were approximately twice as large on the MSA as on the NAEP. This finding suggests that MSA proficiency standards are much easier for students to obtain than the NAEP proficiency levels, and it raises concerns about the relative rigor of Maryland's state assessment system. In fact, "proficient" on the MSA more closely corresponds with "basic" on the NAEP.

The differences in outcomes on the MSA and the NAEP can also be seen as a product of the broader educational climate of high-stakes testing, where test scores are used to hold schools, teachers, and students accountable for results (Lee, 2007; National Research Council, 2011). In Maryland, there are consequences attached to student performance on the MSA, but not the NAEP, and this accountability pressure may explain why MSA performance appears much better than NAEP performance. Pressure to improve test scores encourages "teaching to the test" – that is, focusing instruction on MSA material and reducing time spent on other material – or using strategies that emphasize test-taking skills rather than those that lead to genuine progress in learning (Koretz, 2008; Holcombe, Jennings, & Koretz, 2013). These practices lead to score inflation where gains on tests

used for accountability are much larger than actual gains in student learning. Thus, our findings suggest that students in Maryland may have learned less than their MSA scores suggest as the pressure of high-stakes accountability has led to the artificial inflation of MSA scores.

The pressures of high-stakes testing and accountability also likely explain the paradoxical finding that the achievement gap between minority students and white students has diminished on the MSA, but has remained stagnant (or in some cases has even grown) on the NAEP. That pressure may also account for the income achievement gap differences. In the era of accountability, schools serving low-income and minority students are often under the greatest pressure to increase test scores quickly to avoid sanctions for poor performance. Consequently, those are the schools most likely to adopt strategies (like teaching to the test) that artificially inflate MSA scores but do not generalize to performance on the NAEP. Indeed, instances of this targeted, strategic behavior have been widely documented in the education literature (e.g. Klein et al, 2000; Heilig & Darling-Hammond, 2008; Booher-Jennings, 2005; Smith & Fey, 2000).

While possible score inflation on the MSA is a disturbing finding, there is some (albeit limited) hope that Maryland's test scores will tell a different story in the future. With the upcoming implementation of the Common Core standards and the PARCC assessments, it is conceivable that, over the long term, scores on the PARCC will indicate genuine improvement in student learning, and the gap between the state assessment and NAEP scores will accordingly decrease. This is based on the assumption that the Common Core will introduce more rigorous instructional content and that teachers will effectively implement these reforms. In the short term, however,

we can expect PARCC results to initially fall from the MSA levels as schools and educators learn the new content and become familiar with the tests.

Even with the implementation of the Common Core and the adoption of the new PARCC assessments, though, it is still likely that the same patterns identified in this analysis will continue as long as an accountability system tied to improving state assessment results remains in place. If Maryland were to attach high-stake incentives to the PARCC results (just as it does now with the MSA results), academic proficiency would probably not improve significantly on the NAEP, and the PARCC would give a false impression of student progress.

Policy Recommendations

To improve student learning, particularly that of low-income and minority students, we suggest the following recommendations:

- *Decouple accountability from high stakes testing (or at least stop the practice of basing accountability on the results of a single measure of achievement).* One of the most beneficial steps Maryland can take is to begin moving away from the current accountability regime, which bases the livelihoods of educators and the existence of schools on the outcomes of a single standardized test. The federal No Child Left Behind Act mandated this accountability regime, but as Congress revises this law in the coming months, Maryland should have some flexibility to change course. The Senate's Every Child Achieves Act of 2015 now being considered by Congress to reauthorize NCLB proposes to give states more flexibility for how to use test scores for accountability purposes. If this bill were to be enacted, states would still be required
- to include test scores in their accountability systems, but they would be given more freedom to determine the weight of those tests in their system. Moving forward, we thus recommend that Maryland use multiple measures of achievement, such as graduation, promotion, dropout, and college enrollment rates, and consider information from a single test as just one, incomplete measure of performance.
- *Interpret and use test scores carefully.* Measuring outcomes does not necessarily generate meaningful improvement in outcomes or explain what can be done to improve student learning. Educators, school officials, and lawmakers should have an awareness of the limitations of standardized assessments as indicators of student learning and use them as tools to diagnose weaknesses that need to be addressed through other reforms. An overly myopic focus on a single test result, as is the case today, can often result in the misidentification of effective and ineffective schools as well as the misappropriation of resources for school improvement interventions (Holcombe, Jennings, & Koretz, 2013).
- *Focus resources on reducing the achievement gap.* Reducing the persistent and widening achievement gaps on the NAEP will require investments in educational resources and support if all student groups are to meet the higher Common Core standards. Research finds positive relationships between key school and teacher resources (i.e., funding and in-field teaching) and student achievement (Lee, 2011). At the same time, schools need to use resources more effectively.
- *Address the out-of-school factors that contribute to low student achievement.* Because educational disadvantage stems

from many social and economic factors external to schools, school improvement strategies by themselves cannot close the achievement gap. This will require greater attention to the socio-economic factors, such as access to health care, the concentration of disadvantage or advantage in different neighborhoods, and the availability of housing and employment opportunities, that are strongly related to school readiness and learning.

In the end, there is no easy fix to improve student achievement. It will take considered reform at all levels of the school system – including structural changes in how we operate, fund, and run our schools, as well as the implementation of new programmatic interventions, such as extra tutoring services for struggling students and the adoption of challenging curricula for all students. It also

demands that we rethink our educational policies and perhaps acknowledge the failure of the current test-based accountability regime so that schools might stop feeling pressure to adopt strategies that improve test scores but may not significantly improve student learning. In other words, we should begin to shift our focus from achievement gaps to opportunity gaps—the idea that lower-status groups do not have equal access to educational opportunities and that these inequalities are responsible for much of the differences in performance that we see today (Carter & Welner, 2013). This focus on opportunity will help illuminate the way that differences in learning conditions, such as access to a high quality and challenging curriculum, time spent on instruction, and adequate support (among others) bear responsibility for the educational disparities that exist across the state of Maryland.

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Appendix

Student Performance on MSA and NAEP, 2005 - 2013

4th-Grade Math

Figure 1

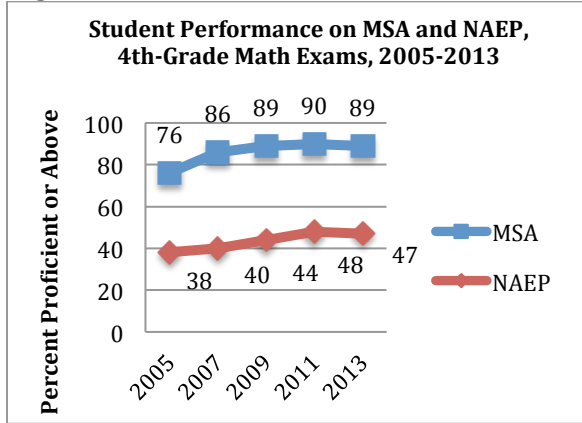


Figure 2

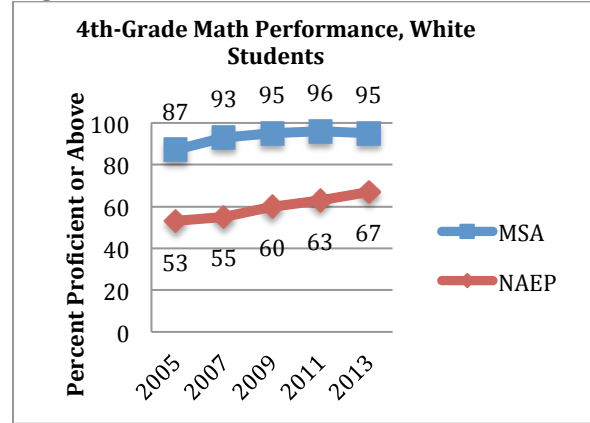


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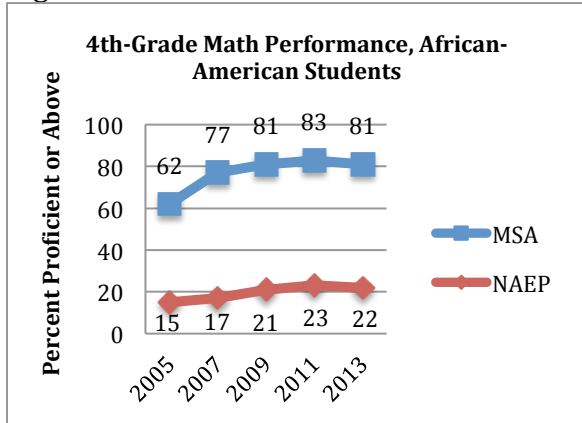


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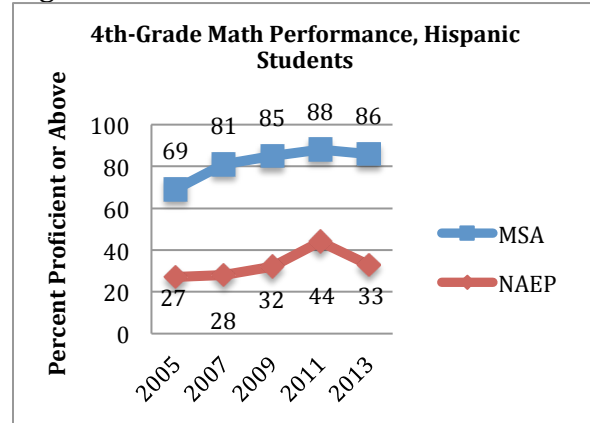


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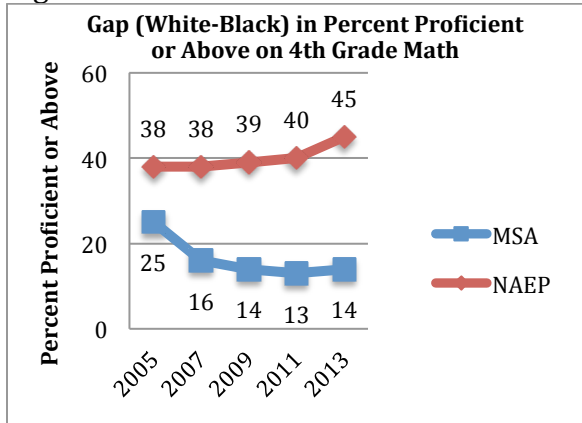
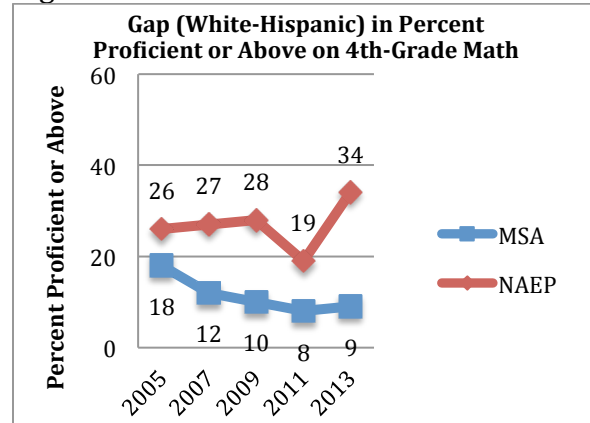


Figure 6



4th-Grade Reading

Figure 7

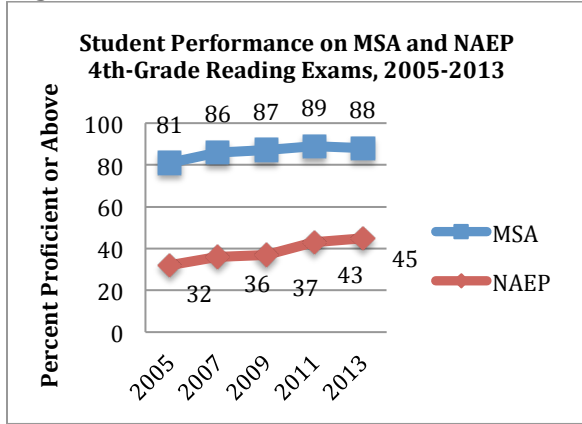


Figure 8

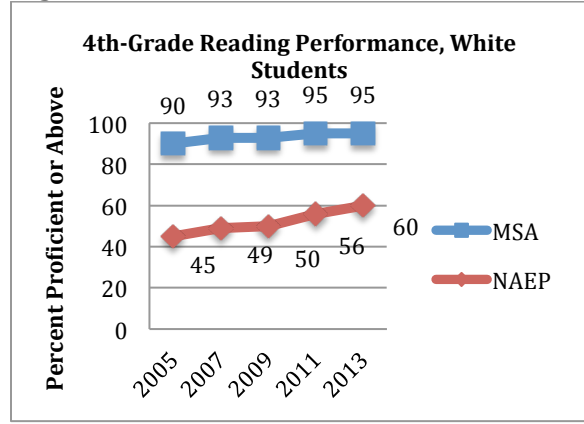


Figure 9

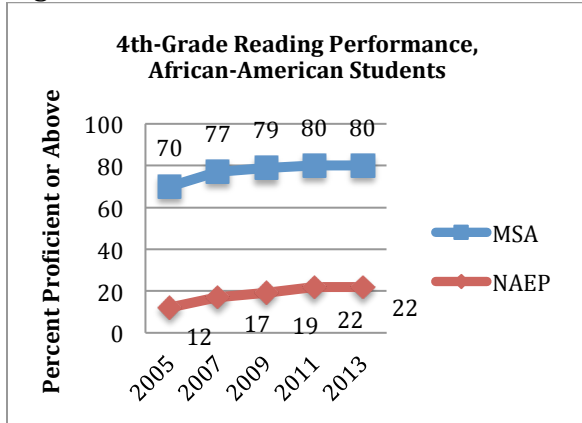


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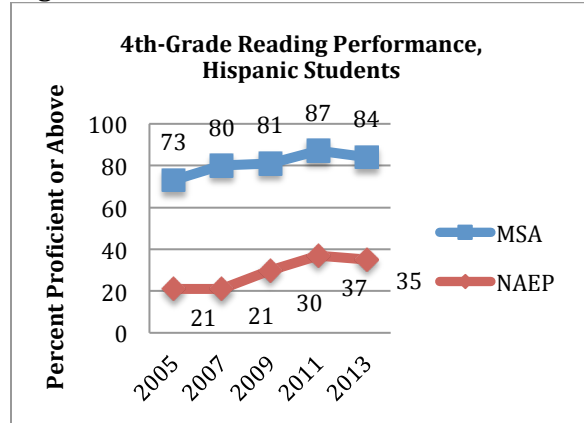


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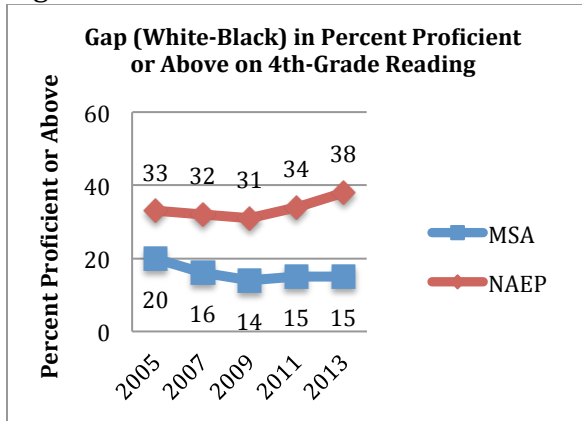
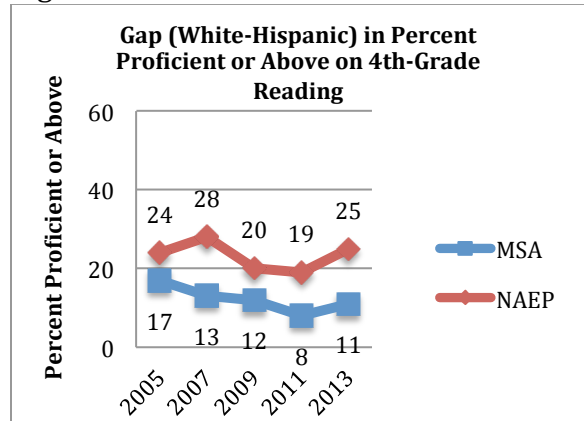


Figure 12



8th-Grade Math

Figure 13

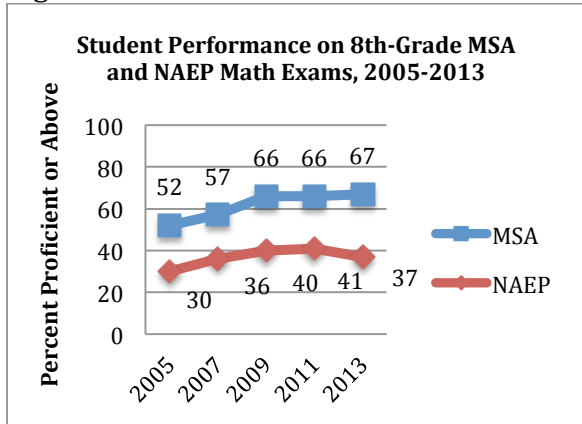


Figure 14

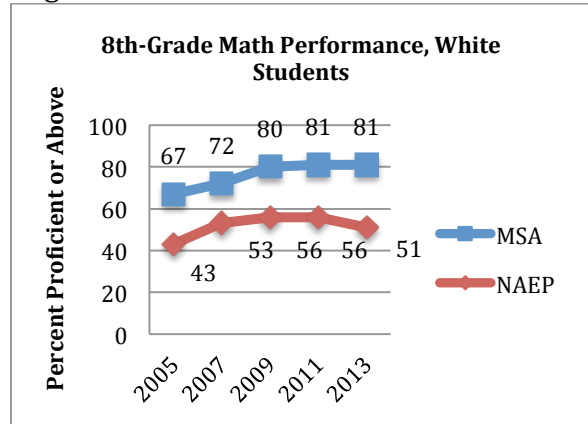


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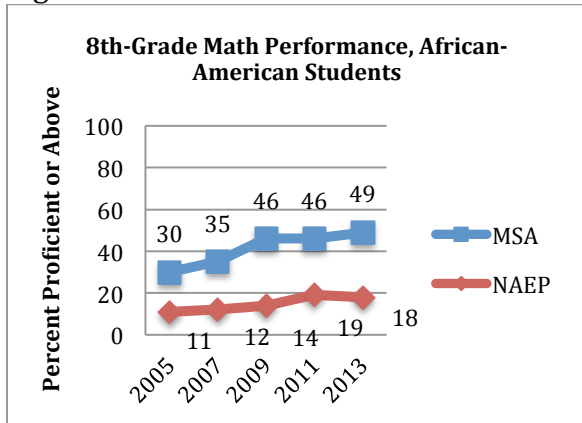


Figure 16

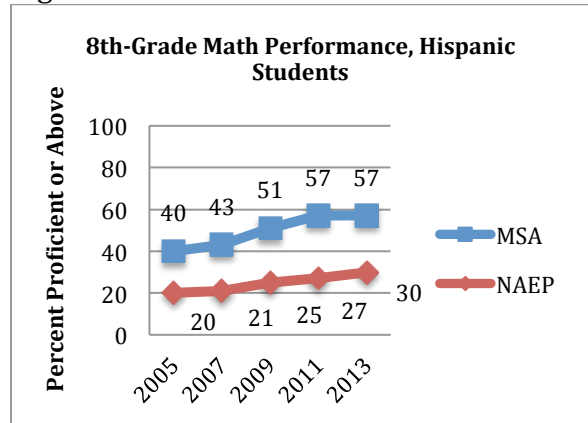


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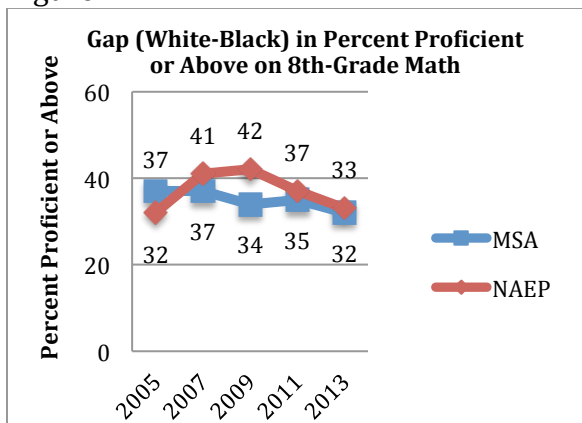
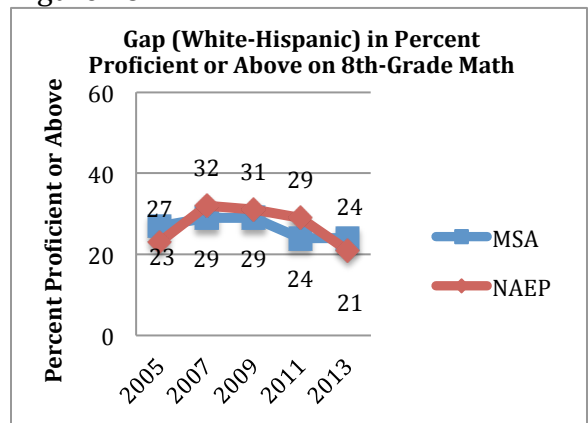


Figure 18



8th-Grade Reading

Figure 19

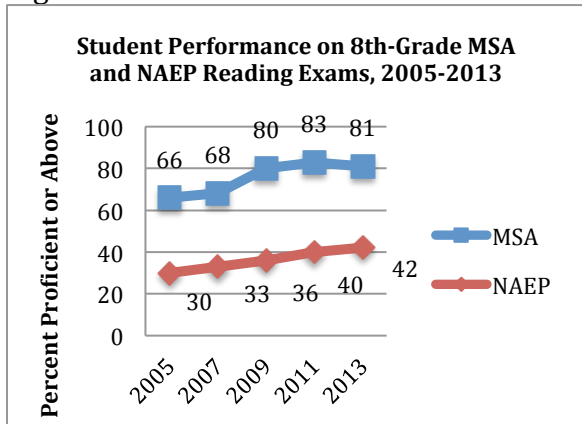


Figure 20

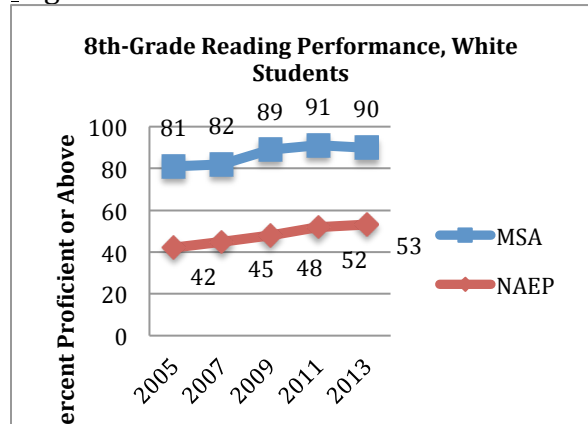


Figure 21

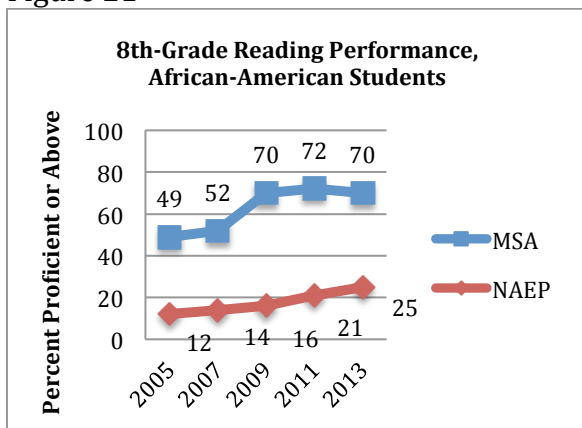


Figure 22

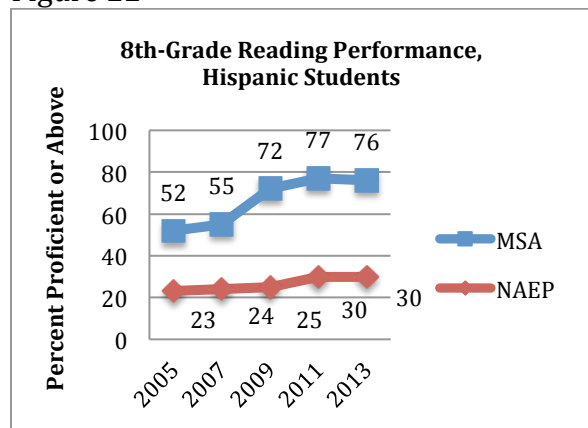


Figure 23

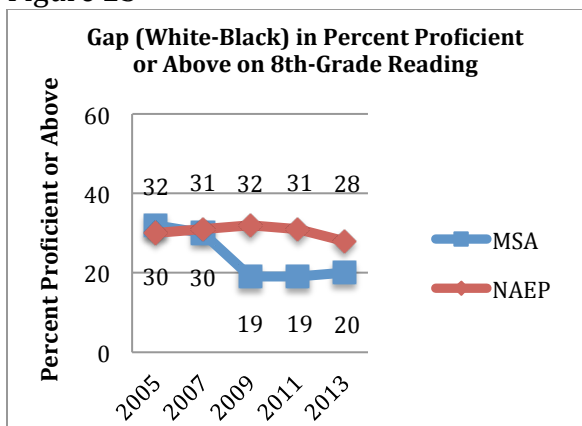
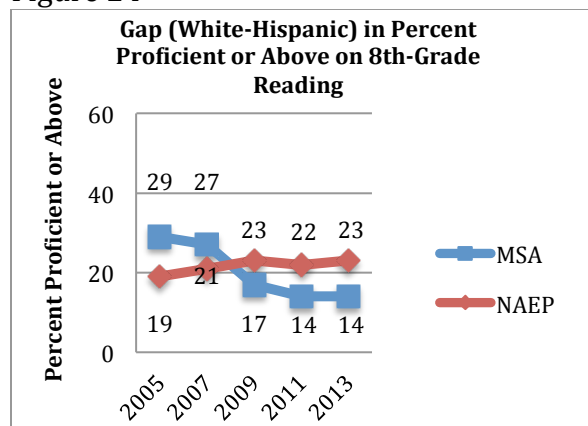


Figure 24



Low-income Students: MSA Compared to NAEP, 2005 - 2013

4th-Grade Math & Reading

Figure 25

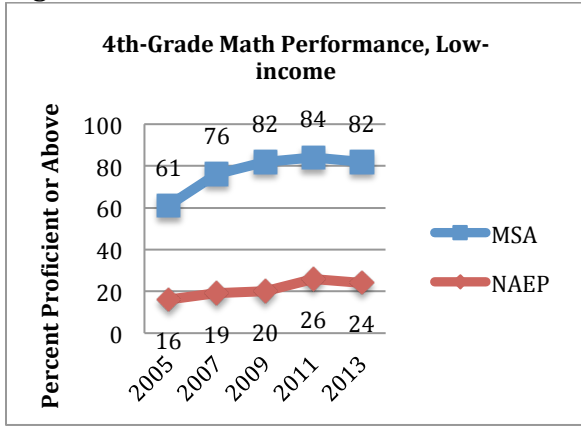
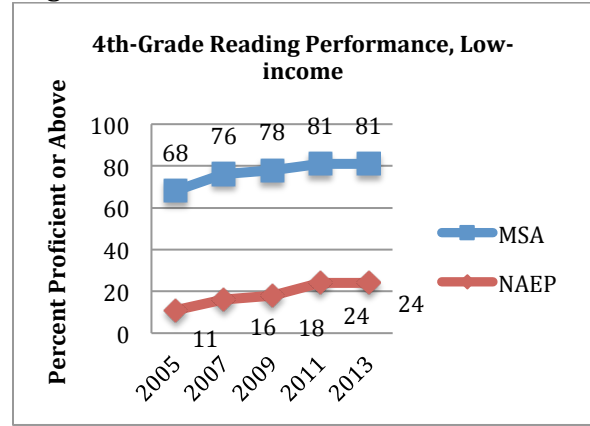


Figure 26



8th-Grade Math & Reading

Figure 27

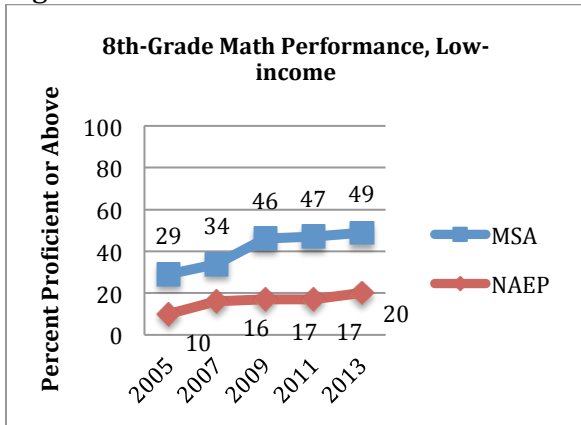
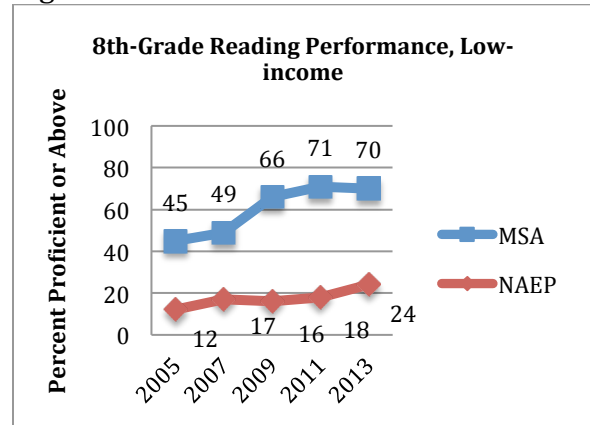


Figure 28



NAEP: Low-Income and Non-Poor, 2005 - 2013

4th-grade Math & Reading

Figure 29

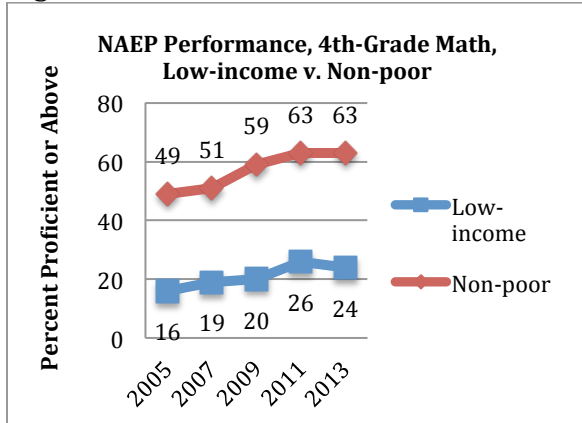
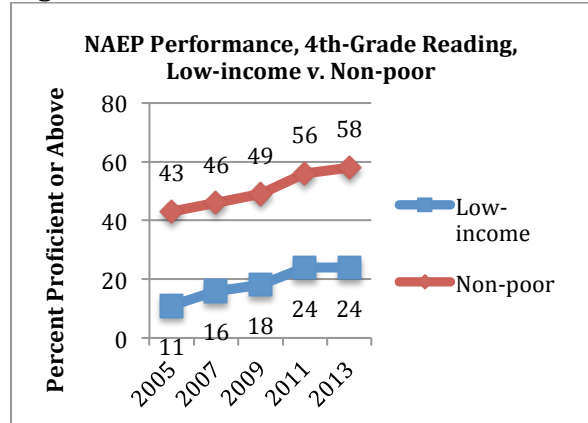


Figure 30



8th-grade Math & Reading

Figure 31

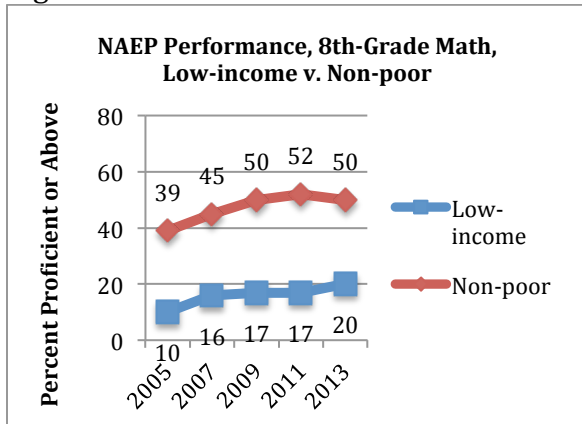
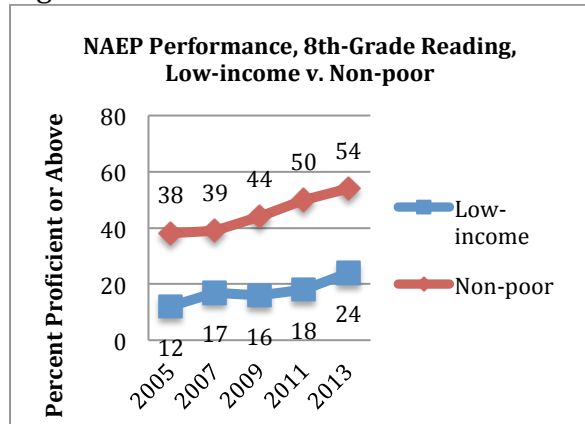


Figure 32



About the Maryland Equity Project

The Maryland Equity Project seeks to improve education through research that supports an informed public policy debate on the quality and distribution of educational opportunities. It conducts, synthesizes, and distributes research on key educational issues in Maryland and facilitates collaboration between researchers and policymakers. The Maryland Equity Project is a program in the Department of Teaching and Learning, Policy and Leadership in the College of Education at The University of Maryland.

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