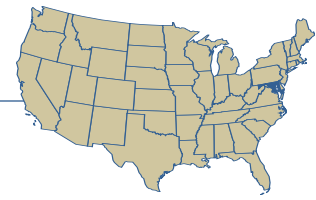


# Maryland



## Introduction

This study linked data from the 2005 and 2006 administrations of Maryland's reading test to the Northwest Evaluation Association's Measures of Academic Progress (MAP) assessment, a computerized adaptive test used in schools nationwide. (Mathematics data were not available because Maryland school districts only use the NWEA MAP tests in reading.) We found that Maryland's definition of proficiency in reading is somewhat lower than the median set by the other 25 states in this study. In other words, Maryland's reading tests are a bit below average in terms of difficulty.

In addition, the difficulty level of Maryland's reading tests decreased from 2005 to 2006 in some grades. There are many possible explanations for these declines (see pp. 34-35 of the main report), which were caused by learning gains on the Maryland test not being matched by learning gains on the Northwest Evaluation Association test. One striking finding of this study is that Maryland's reading cut scores are somewhat easier for elementary school students than for eighth-grade students (taking into account the differences in subject content and children's development). State policymakers might consider adjusting their cut scores to ensure equivalent difficulty at all grades so that parents and schools can be assured that elementary school students scoring at the proficient level are truly prepared for success later in their educational careers.

### **What We Studied: Maryland School Assessment (MSA)**

Maryland currently uses the Maryland School Assessment (MSA) which tests mathematics and reading in grades 3 to 8. The same sets of tests were used in spring 2005. The current study linked reading data from spring 2005 and spring 2006 MSA administrations to a common scale also administered in the 2005 and 2006 school years.

To determine the difficulty of Maryland's proficiency cut scores, we linked data from Maryland's tests to the NWEA assessment. (A "proficiency cut score" is the score a student must achieve in order to be considered proficient.) This was done by analyzing a group of schools in which almost all students took both the state's assessment and the NWEA test. (The methodology section of this report explains how performance on these two tests was compared.)

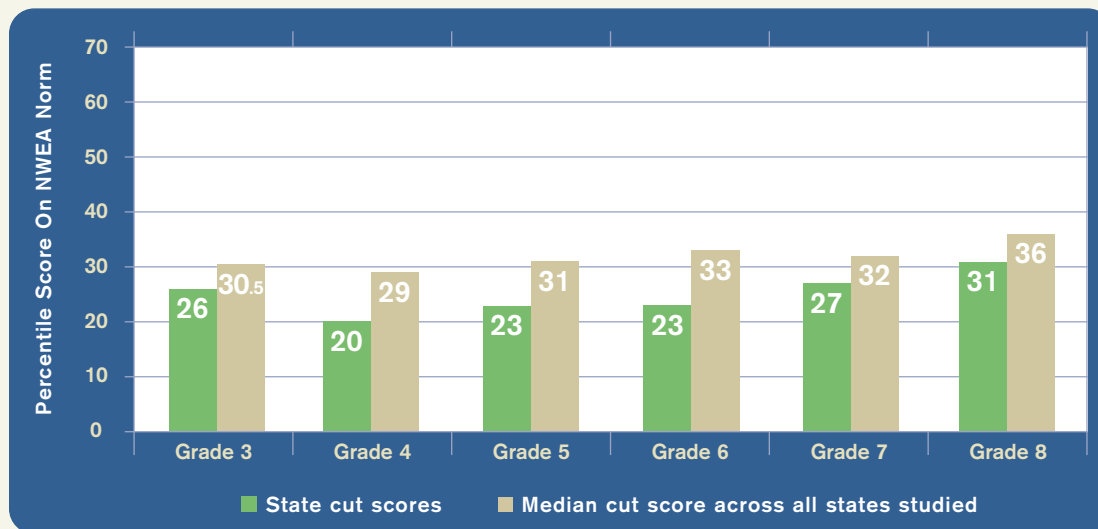
## Part 1: How Difficult is Maryland's Definition of Proficiency in Reading?

One way to evaluate the difficulty of a standard is to determine how many people attempting to attain it are likely to succeed. How do we know that a two-foot high jump bar is easy to jump over? We know because, if we asked 100 people at random to attempt such a jump, perhaps 80 percent would make it. How do we know that a six-foot high jump bar is challenging? Because only one (or perhaps none) of those same 100 individuals would successfully meet that challenge. The same principle can be applied to academic standards. Common sense tells us that it is more difficult for students to solve algebraic equations with two unknown variables than it is for them to solve an equation with only one unknown variable. But we can figure out exactly how much more difficult by seeing how many eighth graders nationwide answer both types of questions correctly.

Applying that approach to this task, we evaluated the difficulty of Maryland's proficiency cut scores by estimating the proportion of students in NWEA's norm group who would perform above the Maryland cut score on a test of equivalent difficulty. Figure 1 shows the difficulty of Maryland's **reading** proficiency cut scores in 2006 in relation to the median reading cut score for all the states in the study. Maryland's scores ranged between the 20th and 31st percentiles with respect to the NWEA norm group, with eighth grade being the most challenging.

Another way of assessing difficulty is to evaluate how Maryland's proficiency cut scores rank relative to other states. Table 1 shows that the Maryland cut scores generally rank in the lowest third in difficulty among the 26 states studied for this report.

Figure 1 – Maryland Reading Cut Scores in Relation to All 26 States Studied, 2006 (Expressed in MAP Percentiles)



**Note:** This figure compares reading test cut scores ("proficiency passing scores") as percentiles of the NWEA norm. These percentiles are compared with the cut scores of all 26 states reviewed in this study. Maryland's cut scores are consistently 4.5 to 10 percentile points below the median in grades 3 to 8.

Table 1 – Maryland Rank for Proficiency Cut Scores in Relation to 26 States, Reading, 2006

Ranking (Out of 26 States)						
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Reading	16	22	20	21	20	18

**Note:** This table ranks Maryland's reading cut scores relative to the cut scores of the other 25 states in the study, where 1 is highest and 26 is lowest.

### Part 2: Differences in Cut Scores over Time

In order to measure their consistency, Maryland's proficiency cut scores for the tests were mapped to their equivalent scores on NWEA's MAP assessment for the 2005 and 2006 school years. Cut score estimates for both years were possible for grades 3, 4, and 5.

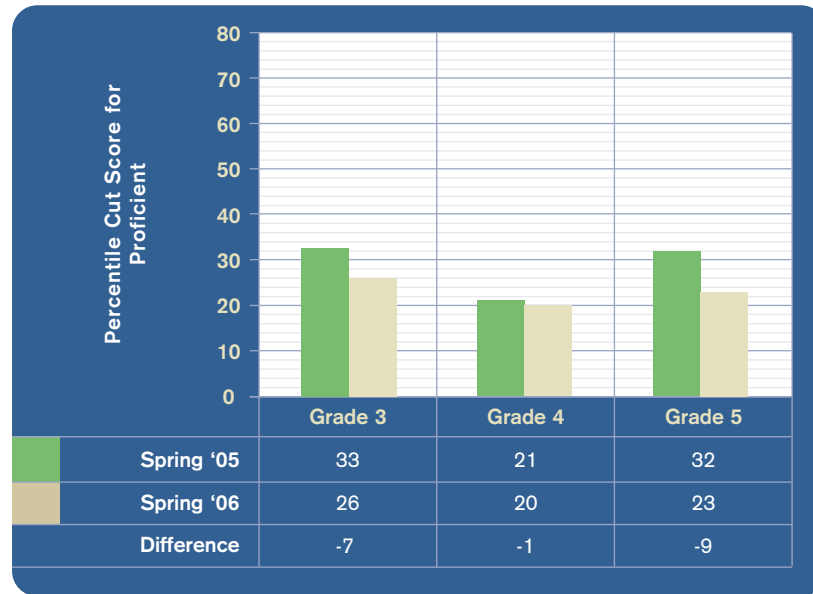
States may periodically re-adjust the cut scores they use to define proficiency in reading and mathematics, or update the exams used to test student proficiency. Such changes can impact proficiency ratings, not necessarily because student performance has changed, but because the measurements and criteria for success have changed. Unintentional drift can occur even in states, such as Maryland, that maintained their proficiency levels.

Is it possible, then, to compare the proficiency scores between earlier administrations of Maryland's tests and today's? Yes. Assume that we're judging a group of fourth graders on their high-jump prowess and that we measure this by finding how many in that group can successfully clear a three-foot bar. Now assume that we change the measure and set a new height. Perhaps students must now clear a bar set at one meter. This is somewhat akin to adjusting or changing a state test and its proficiency requirements. Despite this, it is still possible to determine whether it is more difficult to clear one meter than three feet, because we know the relationship between the measures. The same principle applies here. The MSA in 2005 and in 2006 can both be linked to the MAP, which has remained consistent over time. Just as one can compare three feet to a meter and know that a one-meter jump is slightly more difficult than a three-foot jump, one can estimate the cut score needed to pass the MSA in 2005 and 2006 on the MAP scale and ascertain whether the state test may have changed in difficulty.

In **reading**, Maryland's estimated cut scores decreased over this period in the third and fifth grade (see Figure 2), but there was essentially no change in the fourth-grade cut score. Consequently, even if student performance stayed the same on an equivalent test like NWEA's MAP assessment, one would expect the reading proficiency rate in 2006 to be 7 percent higher than in 2005 for third grade and 9 percent higher for fifth grade. (Maryland reported a 2 point gain for third graders and a 3 point gain for fifth graders over this period.)

Thus, one could fairly say that Maryland's third- and fifth-grade reading tests were easier to pass in 2006 than in 2005, while the fourth-grade test was about the same. As a result, improvements in the state's self-reported third- and fifth-grade proficiency rates during this period may not be entirely a product of improved achievement, while any improvements in the fourth-grade performance would signal real change in student performance.

Figure 2 – Estimated Differences in Maryland’s Proficiency Cut Scores in Reading, 2005-2006 (Expressed in MAP Percentiles)



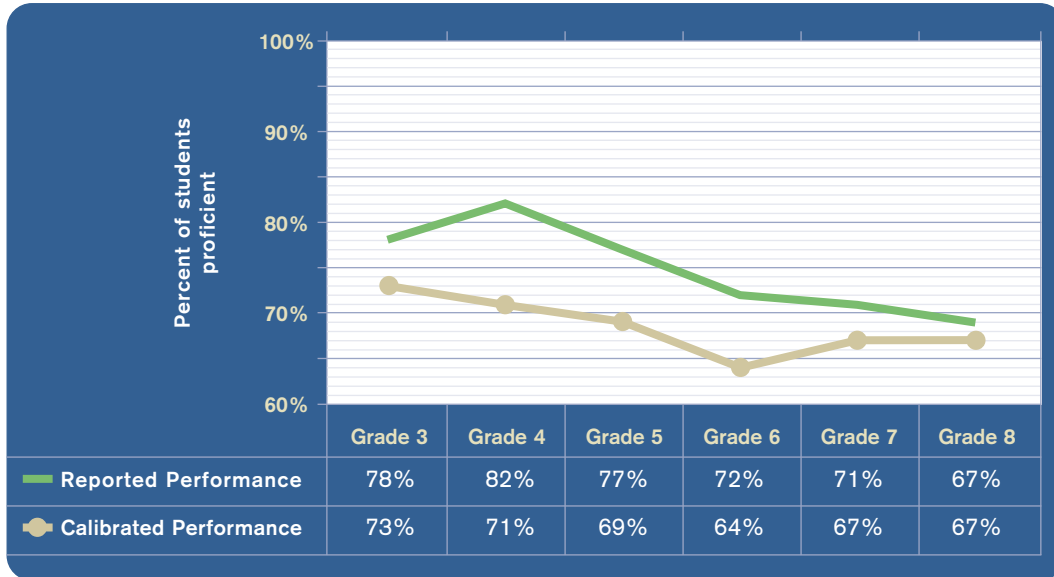
**Note:** This graphic shows how the difficulty of achieving proficiency in reading has changed. For example, third-grade students in 2005 had to score at the 33rd percentile on the NWEA scale in order to be considered proficient, while a year later third graders had only to score at the 26th percentile to achieve proficiency. The changes in grade 4 were within the margin of error (in other words, too small to be considered substantive).

### Part 3: Calibration across Grades

Calibrated proficiency cut scores are those that are relatively equal in difficulty across all grades. Thus, an eighth-grade cut score would be no more or less difficult for eighth graders to achieve than a third-grade cut score is for third graders. When cut scores are so calibrated, parents and educators have some assurance that achieving the third-grade proficiency cut score puts a student on track to achieve the standards at eighth grade. It also provides assurance to the public that reported differences in performance across grades are a product of differences in actual educational attainment and not simply differences in the difficulty of the test.

Examining Maryland’s cut scores, we find that they are not well calibrated across grades. Figure 1 gave the relative difficulty of Maryland’s 2006 reading cut scores across grades 3 to 8 (the “NCLB grades”), showing that cut scores in the upper grades tended to be more difficult than the cut scores in the lower grades. Figure 3 shows Maryland’s reported reading performance on its state test compared with the rates of proficiency that would be achieved if the cut scores were all calibrated to the grade-8 standard. When differences in grade-to-grade difficulty of the cut score are removed, student performance is more consistent at all grades. This would lead to the conclusion that the higher rates of proficiency that the state has reported for students in lower grades are somewhat misleading, especially in grades 4, 5, and 6.

Figure 3 – Maryland Reading Performance as Reported and as Calibrated to the Grade-8 Standard, 2006



**Note:** This graphic shows, for example, that if Maryland's grade-3 reading cut score were set at the same level of difficulty as its grade-8 cut score, 73 percent of third graders would achieve the proficient level, rather than 78 percent, as was reported by the state.

### Policy Implications

When setting its cut scores for what it takes for a student to be considered proficient in reading, Maryland is below the middle of the pack, at least compared with the other 25 states in this study. This finding is consistent with the recent National Center for Education Statistics report, *Mapping 2005 State Proficiency Standards Onto the NAEP Scales*, which also found Maryland's standards to be at or just below the middle of the distribution of all states studied. From 2005 to 2006, Maryland's reading test became easier to pass, although not for

all grades. As a result, Maryland's expectations are not smoothly calibrated across grades; students who are proficient in third grade are not necessarily on track to be proficient by the eighth grade. State policymakers might consider adjusting their cut scores across grades so that parents and schools can be assured that elementary school students scoring at the proficient level are truly prepared for success later in their educational careers.