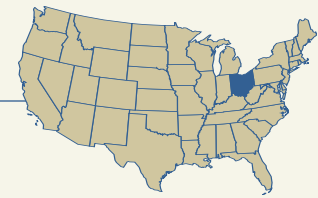


Ohio



Introduction

This study linked data from the 2007* administration of Ohio's reading and math tests to the Northwest Evaluation Association's Measures of Academic Progress (MAP) assessment, a computerized adaptive test used in schools nationwide. We found that the difficulty of Ohio's proficiency cut scores in reading and math is generally below the median, compared to the 25 other states in the study.

Ohio's estimated reading cut scores are even in their difficulty across the grades studied, but its estimated mathematics cut scores are more difficult in the middle grades. As a result, reported proficiency rates for mathematics may not reflect true differences in performance across grades. State policy-makers might consider adjusting their math 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. Furthermore, state leaders need to be aware of the disparity between math and reading standards when evaluating differences in teacher, student, and school performance across these domains.

What We Studied: Ohio Achievement Tests (OAT)

Ohio currently uses an assessment called the Ohio Achievement Tests (OAT), which assess mathematics and reading in grades 3-8. The current study linked reading and math data from spring 2007 administrations to a common scale also administered in the 2007 school year.

To determine the difficulty of Ohio's proficiency cut scores, we linked data from Ohio'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 elementary and middle 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 are Ohio's Definitions of Proficiency in Reading and Math?

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 leap? We know because, if we asked 100 people at random to attempt such a jump, perhaps 80 would make it. How do we know that a six-foot high jump bar is challenging? We know because only one (or perhaps none) of those same 100 individuals would successfully meet that level of 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.

*The Ohio report uses data collected from the 2007 testing season, rather than the 2006 season as with most other state reports, since the distribution of schools comprising the 2007 sample represented a better cross-section of the state than were available for the 2006 sample.

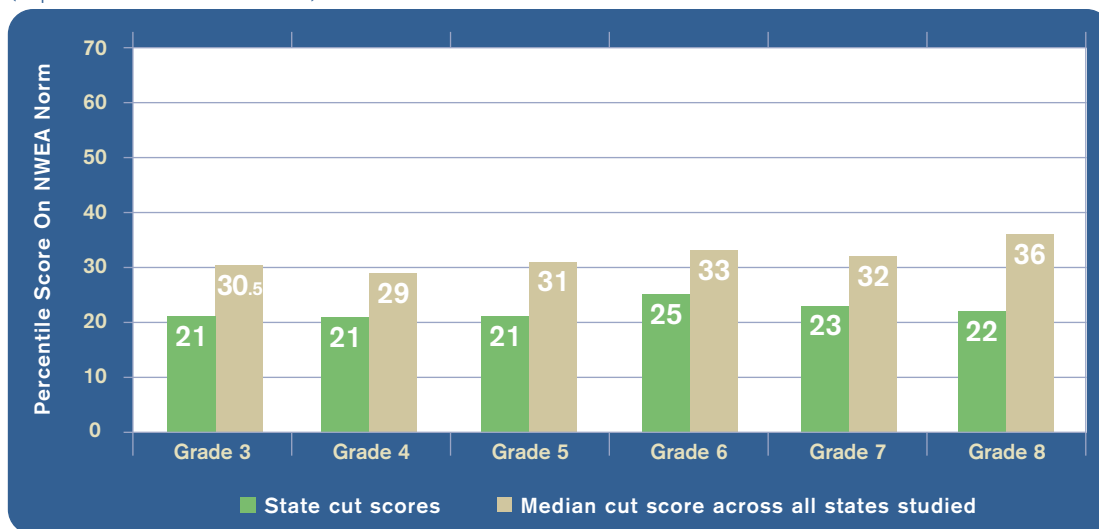
Applying the concept to this assignment, we evaluated the difficulty of the Ohio proficiency cut scores by estimating the proportion of students in NWEA’s norm group who would perform above the cut score on a test of equivalent difficulty. The following two figures show the estimated difficulty of Ohio’s proficiency cut scores for reading (Figure 1) and mathematics (Figure 2) in 2007 in relation to the median cut score for all the states in the study, and compared to the NWEA norm group. The estimated proficiency cut scores for **reading** in Ohio ranged between the 21st and 25th percentiles on NWEA norms, with the sixth grade cut score being most challenging. In **mathematics**, the estimated cut scores ranged between the 20th and 40th percentiles, with fifth grade being most challenging.

Ohio’s estimated reading cut scores in every grade are below the median level of difficulty among the states studied. Estimated mathematics cut scores are also below the median in all but grade five. Note, too, that Ohio’s reading cut scores are lower than its math cut scores in every grade beyond the

third. Thus, reported differences in achievement between the two subjects may be more a product of differences in cut scores than in actual student achievement. In other words, Ohio students may be performing worse in reading and better in mathematics than is apparent by just looking at the percentage of students passing state tests in those subjects.

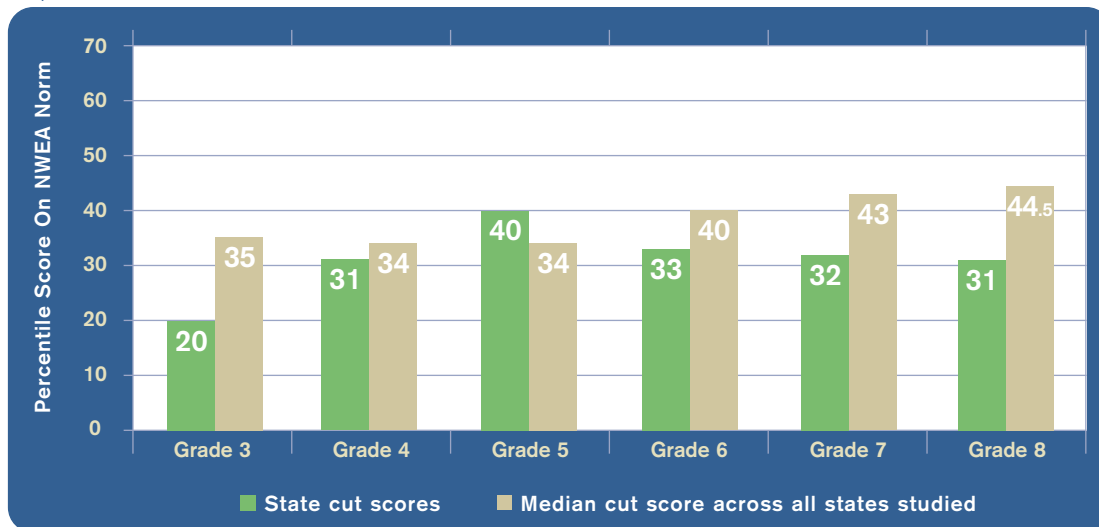
Another way of assessing difficulty is to evaluate how Ohio’s proficiency cut scores rank relative to other states. Table 1 shows that Ohio’s estimated reading and mathematics cut scores generally rank among the lower half of the 26 states examined for this report.

Figure 1 – Ohio Reading Cut Scores in Relation in Relation to All 26 States Studied, 2007
(Expressed in MAP Percentiles)



Note: This figure compares estimated reading test cut scores (“proficiency passing scores”) as percentiles of the NWEA norm. These percentiles are compared with the median cut score of all 26 states reviewed in this study. Across all grades, Ohio’s reading scores are below the median, with differences ranging from 8 to 14 points.

Figure 2 – Ohio Mathematics Cut Scores in Relation to All 26 States Studied, 2007
(Expressed in MAP Percentiles).



Note: Ohio's math test cut scores are shown as percentiles of the NWEA norm and compared with the median cut score of all 26 states reviewed in this study. Only in grade 5 do Ohio's standards surpass the median. In grades 3, 7, and 8, the state's cut scores are well below the median.

Table 1 – Ohio Rank for Proficiency Cut Scores Among 26 States in Reading and Mathematics, 2007

Ranking (Out of 26 States)						
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Reading	21	22	23	20	22	21
Mathematics	20	17	9	17	21	19

Note: This table ranks Ohio's cut scores relative to the cut scores of the other 25 states in the study, with 1 being highest and 26 lowest.

Part 2: Calibration across Grades*

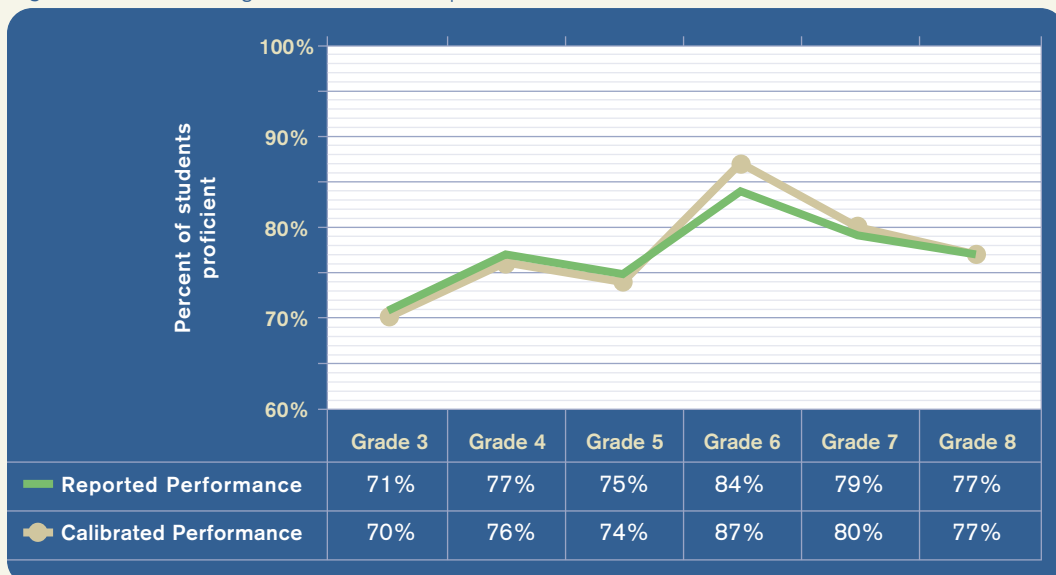
Calibrated proficiency cut scores are relatively equal in difficulty across all grades. Thus, the eighth grade cut score is no more or less difficult for eighth graders to achieve than the third grade cut score is for third graders. When cut scores are so calibrated, parents and educators have some assurance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

Figures 1 and 2 showed the relative difficulty levels of the reading and mathematics cut scores, illustrating the fluctuation across grades. Those figures showed that the difficulty of the estimated cut scores was very stable across the grades in reading, but that the mathematics cut scores started out easy, peaked in grade five, then eased up a bit. The following two

figures show Ohio's reported performance in reading (Figure 3) and mathematics (Figure 4) on the state test, compared with the proficiency rates that would be achieved if the cut scores were all calibrated to the grade 8 standard. Because the estimated reading cut scores are so well calibrated to begin with, Figure 3 shows very little difference between reported proficiency rates and what those rates would be like if they were calibrated to the grade 8 cut score. Figure 4, however, shows that the reported proficiency rates in mathematics may actually be overestimating the percentage of third grade students who are actually on track to meet the eighth proficiency standards.

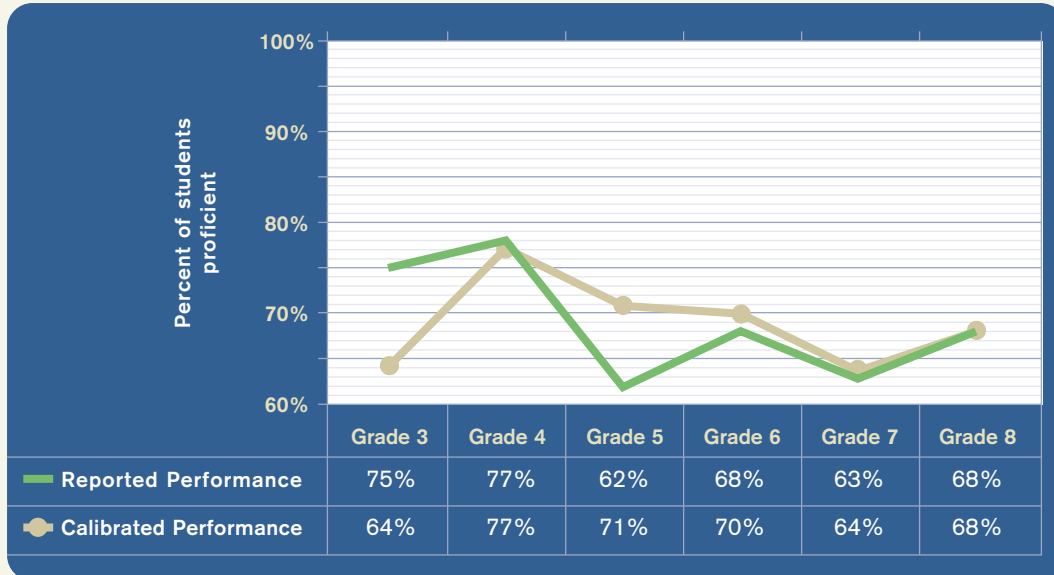
* Ohio was one of seven states in this study for which cut score estimates could be determined for only one year. Therefore, it was not possible to examine whether its cut scores have changed over time.

Figure 3 – Ohio Reading Performance as Reported and as Calibrated to the Grade 8 Standard, 2007



Note: This graphic shows, for example, that if Ohio's grade-three reading cut score was set at the same level of difficulty as its grade-eight cut score, 75 percent of third graders would achieve the proficient level, rather than 71 percent, as was reported by the state.

Figure 4 – Ohio Mathematics Performance as Reported and as Calibrated to the Grade 8 Standard, 2007



Note: This graphic shows, for example, that if Ohio's grade-3 mathematics cut score were as difficult as its grade-8 cut score, 64 percent of third graders would achieve the proficient level, rather than 75 percent, as was reported by the state.

Policy Implications

When setting its cut scores for what constitutes proficiency, Ohio is a bit below the median in both reading and mathematics, at least compared to the other 25 states in this study. Ohio's proficiency cut scores are well calibrated from grade to grade in reading, but less so for mathematics. As a result, reported mathematics proficiency rates may slightly exaggerate differences across grades. State policymakers might consider adjusting the difficulty of their math cut scores across

grades so that parents and schools can be assured that proficient performance at the earlier grades accurately predicts proficiency at the later grades. Furthermore, state leaders need to be aware of the disparity between math and reading standards when evaluating differences in teacher and student performance across these domains.