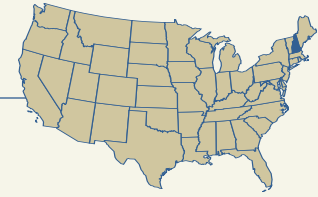


New Hampshire



Introduction

This study linked data from the 2003 and 2005 administrations of New Hampshire’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 New Hampshire’s definitions of proficiency in reading and mathematics are relatively consistent with the standards set by the other 25 states in this study, with its reading and math tests a bit above average in difficulty.

The difficulty of New Hampshire’s tests increased markedly from 2003 to 2005—the No Child Left Behind era—from very low to moderate standards. The state’s cut scores are also now less challenging for third-grade students than for eighth graders. New Hampshire 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: New Hampshire - New England Common Assessment Program (NECAP)

New Hampshire currently uses an assessment called the New England Common Assessment Program (NECAP) which tests mathematics and reading in grades 3-8. It replaced the New Hampshire Educational Improvement and Assessment Program (NHEIAP) that was used prior to fall 2005 and that tested math and reading in students in grades 3, 6, and 10. The current study linked data from the spring 2003 administration of the NHEIAP and the fall 2005 administration of NECAP to a common scale.

To determine the difficulty of New Hampshire’s proficiency cut scores, we linked reading and math data from New Hampshire’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 New Hampshire’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 jump over? 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? 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.

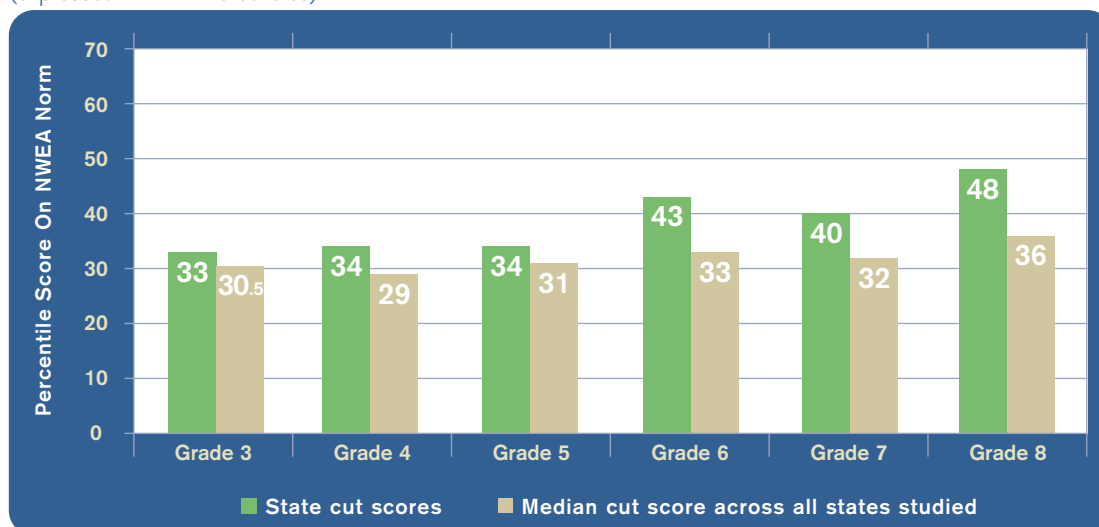
Applying that approach to this task, we evaluated the difficulty of New Hampshire’s proficiency cut scores by estimating the proportion of students in NWEA’s norm group who would perform above the New Hampshire cut score on a test of equivalent difficulty. The following two figures show the difficulty of New Hampshire’s proficiency cut scores for reading (Figure 1) and mathematics (Figure 2) in 2005 in relation to the median cut score for all the states in the study. The proficiency cut scores for **reading** in New Hampshire ranged between the 33rd and 48th percentiles for the norm group, with the eighth grade being most challenging. In **mathematics**, the proficiency cut scores ranged between the 34th and 53rd percentiles, with eighth grade again being most challenging.

New Hampshire’s cut scores in both reading and mathematics are consistently at or above the median in difficulty among the states studied. Note, though, that New Hampshire’s cut scores for reading are generally lower than for math at the same grade. (This was the case in the majority of states studied.) 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, New Hampshire students may be performing worse in reading and better in mathematics than is apparent by just looking at the percentages that pass state tests in those subjects.

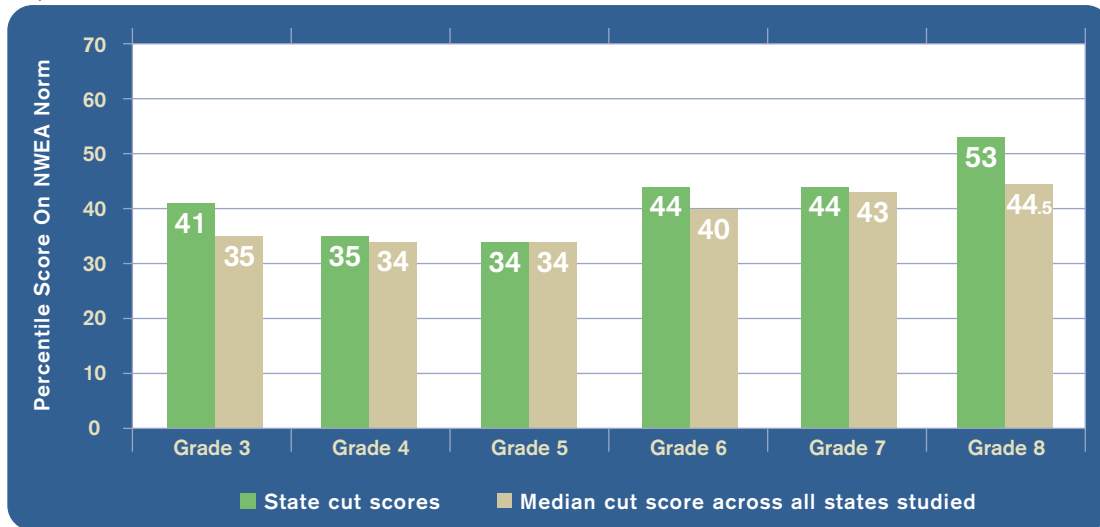
Another way of assessing difficulty is to evaluate how New Hampshire’s proficiency cut scores rank relative to other states. Table 1 shows that the New Hampshire cut scores generally rank in the upper third for reading and around the middle for math, among the 26 states studied for this report. Its reading cut score in grade eight is particularly high, ranking third out of the 26 states.

Figure 1 – New Hampshire Reading Cut Scores in Relation to All 26 States Studied, 2005 (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 median cut score of all 26 states reviewed in this study. New Hampshire’s cut scores are consistently 2.5 to 12 percentile points above the median.

Figure 2 – New Hampshire Mathematics Cut Scores in Relation to All 26 States Studied, 2005
(expressed in MAP Percentiles)



Note: New Hampshire'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. The state's cut scores are consistently 1 to 8.5 percentile points above the median, with the exception of grade 5 where it matches the median.

Table 1 – New Hampshire Rank Among 26 States for Proficiency Cut Scores in Reading and Mathematics, 2005

| Ranking (Out of 26 States) | | | | | | |
|----------------------------|---------|---------|---------|---------|---------|---------|
| | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
| Reading | 9 | 6 | 7 | 4 | 7 | 3 |
| Mathematics | 8 | 10 | 13 | 9 | 9 | 6 |

Note: This table ranks New Hampshire'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: Differences in Cut Scores over Time

In order to measure their consistency, New Hampshire's proficiency cut scores were mapped to their equivalent scores on NWEA's MAP assessment for the 2003-4 and 2005-6 school years. Cut score estimates for reading and math were available for both years in grades 3 and 6.

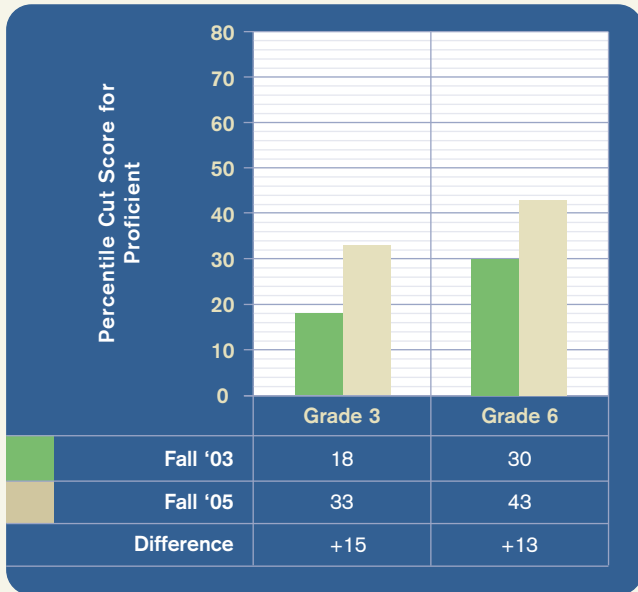
States may periodically re-adjust the cut scores they use to define proficiency in reading and mathematics, or, as New Hampshire did, may change or update the tests used to test student proficiency. Such changes can impact proficiency ratings, not necessarily because student performance has changed, but because the measurements and criteria for success have changed.

Is it possible, then, to compare the proficiency scores between earlier administrations of New Hampshire tests and today's? Yes. Assume that we're judging a group of fifth 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. Although the NHEIAP and NECAP are different measures, both can be linked to the MAP, which has remained consistent over time. Just as one can compare three feet to one 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 NHEIAP in 2003 and the NECAP in 2005 and ascertain which test was more difficult. It should be noted, however, that for the NHEIAP in 2003, the "basic" level was the minimum satisfactory performance level reported by New Hampshire for purposes of NCLB, whereas when the NECAP was adopted, the "proficient" level became the minimum acceptable level reported for NCLB. Furthermore, the NHEIAP administered in 2003 was a spring season test, and the NECAP is a fall test. These changes in practice are accounted for in the following analyses and figures.

New Hampshire's estimated **reading** cut scores indicate large increases over this two-year period in the third and sixth grades (see Figure 3). Consequently, even if student performance stayed the same on an equivalent test like NWEA's MAP assessment, one would expect the reading proficiency rates in 2005 to be 15 and 13 points lower than in 2003 for third and sixth graders, respectively. (New Hampshire reported a 4 point drop for third graders and a 9 point drop for sixth graders over this period.)

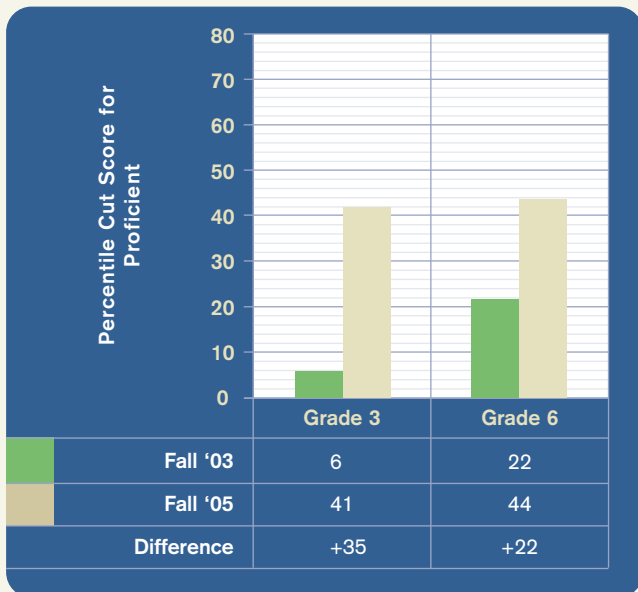
New Hampshire's estimated **mathematics** cut scores show similar patterns, with large increases for grades 3 and 6 (Figure 4). Consequently, even if student performance stayed the same on an equivalent test like NWEA's MAP assessment, one would expect the math proficiency rate in 2005 to be 35 percent lower than in 2003 for third grade, and 22 percent lower for sixth grade. (New Hampshire reported a 16-point drop for third graders and a 12-point drop for sixth graders over this period.) Thus, one could fairly say that New Hampshire's reading and mathematics tests were harder to pass in 2005 than in 2003, at least at the third and sixth grades.

Figure 3 – Estimated Differences in New Hampshire's Proficiency Cut Scores in Reading, 2003-2005 (as Expressed in MAP Percentiles)



Note: This graphic shows how the difficulty of achieving proficiency in reading has changed. For example, New Hampshire sixth grade students in 2003 had to score at the 30th percentile on NWEA norms in order to be considered proficient, while by 2005 sixth graders had to score at the 43rd percentile to achieve proficiency.

Figure 4 – Estimated Differences in New Hampshire's Proficiency Cut Scores in Mathematics, 2003-2005 (as Expressed in MAP Percentiles)



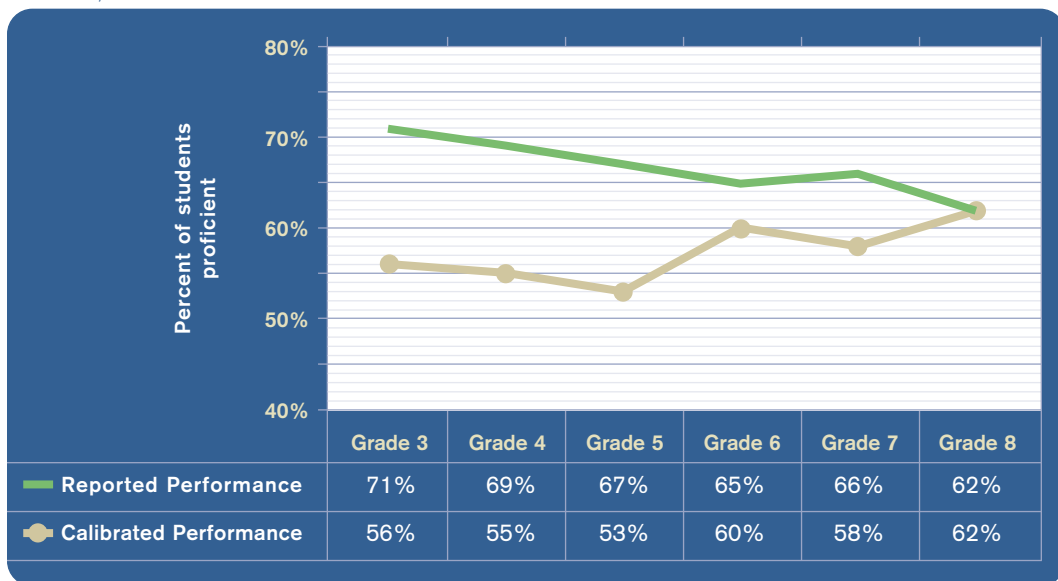
Note: This graphic shows how the difficulty of achieving proficiency in math has changed. For example, third grade students in 2003 had to score at the 6th percentile nationally in order to be considered proficient, while in 2005 sixth graders had to score at the 41st percentile to achieve proficiency.

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.

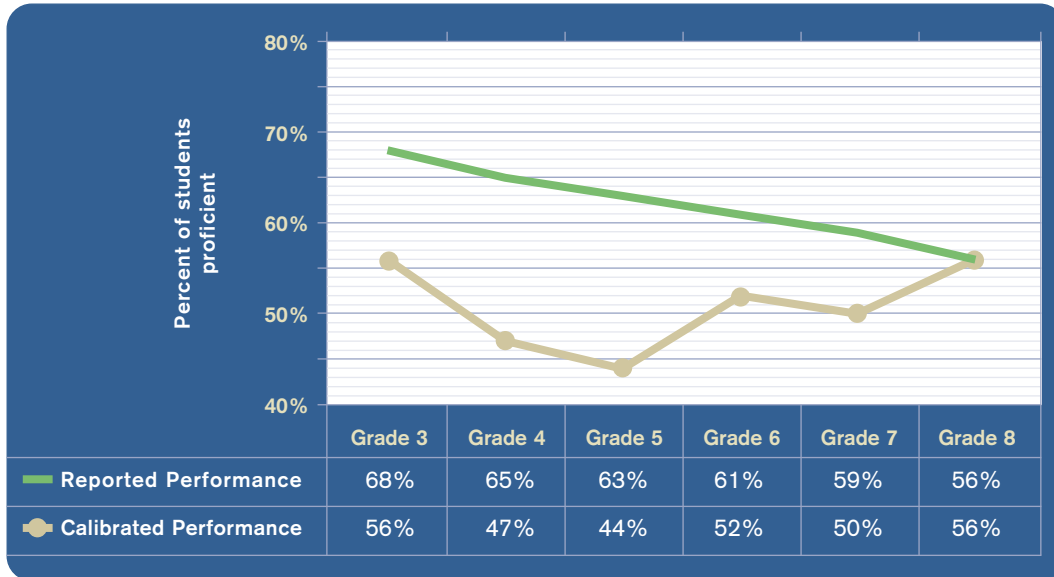
Examining New Hampshire's cut scores, we find that they are not well calibrated across grades. Figures 1 and 2 showed the relative difficulty of New Hampshire's reading and mathematics cut scores across the different grades, indicating that that the upper grade cut scores in both subjects were somewhat more challenging than in the lower grades. (This was the case for the majority of states studied.) The following two figures show New Hampshire's reported 2005 performance in reading (Figure 5) and mathematics (Figure 6) on its state test and the rate of proficiency that would be achieved if the cut scores were all calibrated to the grade-eight 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 lower grades students are somewhat misleading.

Figure 5 – New Hampshire Reading Performance as Reported and as Calibrated to the Grade-8 Standard, fall 2005



Note: This graphic shows, for example, that if New Hampshire's grade-3 reading cut score was set at the same level of difficulty as its grade-8 cut score, 56 percent of third graders would achieve the proficient level, rather than 71 percent, as was reported by the state.

Figure 6 – New Hampshire Mathematics Performance as Reported and as Calibrated to the Grade-8 Standard, fall 2005



Note: This graphic shows, for example, that if New Hampshire's grade-3 mathematics cut score were set at the same level of difficulty as its grade-8 cut score, 56 percent of third graders would achieve the proficient level, rather than 68 percent, as was reported by the state.

Policy Implications

When determining what constitutes proficiency in reading and math, New Hampshire is just above the middle of the pack, at least compared with the other 25 states in this study. However, New Hampshire increased its cut scores dramatically from their previous levels when it adopted the New England Common Assessment Program. Also of note is that New Hampshire's cut scores are not smoothly calibrated across

grades; students who are proficient in third grade are not necessarily on track to be proficient by 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.