

INTRODUCTION

If America is to remain internationally competitive with other advanced nations, we must maximize the academic potential of our top students. Over the last decade, however, federal and state education accountability systems—particularly in the wake of the No Child Left Behind Act (NCLB) of 2001—have placed primary emphasis on moving low-performing students toward proficiency. The sanctions stemming from these systems have cast greater attention on schools that fail to attain proficiency for most students—a necessary and noble endeavor. But they have also fueled concerns that the academic needs of high-performing learners, who in many states are largely unaffected by accountability systems, have been neglected.

To date, few research studies have examined the progress of individual high achievers over time in relation to other students. (See *Rundown on the Research on High Flyers* on page 6.) A few studies—including Duffett, Farkas, and Loveless (2008), commissioned by the Fordham Institute—have followed the top tenth of students in an effort to determine how these students rise—or fall—on absolute scales of academic performance. But we know of no research to date that has followed the progress of *individual* high achievers over time. This analysis helps to fill that gap. Using data from an extensive student-level database maintained by the Northwest Evaluation Association™ (NWEA) and its Measures of Academic Progress™ (MAP) assessments, we compared the performance and growth of high achievers to that of their peers over multiple years, examining two groups of students: an elementary/middle school cohort, followed from third through eighth grades; and a middle/high school cohort, followed from sixth through tenth grades. We sought answers to three key questions:

- **Do high achievers maintain their altitude?** In other words, are the nation’s star third graders the same students that graduate eighth grade at the top of the pack? Or do up-and-coming peers surpass them? To find out, we compared student achievement at the initial and final years of the analysis—third and eighth grades for elementary/middle school students, and sixth and tenth grades for middle/high school students.
- **For those students who “lose altitude” over time, how far do they fall? And for those who climb into the top tier, how did they perform academically in earlier grades?** We tracked the achievement of these volatile high flyers to determine whether they experienced large swings in performance or remained relatively solid students throughout their school careers.
- **How much do high achievers grow academically over time?** While high achievers, by definition, perform better than 90 percent of their peers, do they get further ahead each year? Or do low- and middle-achieving students gain ground relative to them? We examined the performance gaps between these three groups of students and whether those gaps grew or narrowed over time.

The study also briefly investigated *which* students—by race, gender, and school environment—remained high achievers throughout their careers, and whether certain types of high achievers (or high achievers in certain types of schools) displayed different rates of academic growth over time.²

Methods in Brief

Data were drawn from NWEA’s Growth Research Database, a longitudinal repository containing MAP assessment results. MAP tests are a series of computer-based adaptive assessments offered in mathematics, reading, language usage, and science that are typically administered to students in grades two through ten. The full repository includes data from 4,800 school systems and approximately five million students.

² This report is the short version of a more comprehensive report that will be released later this year. Expect then to hear more about how school-level factors impacted high-achieving students, among other lines of inquiry.

RUNDOWN ON THE RESEARCH ON HIGH FLYERS

The body of research regarding the academic performance of high achievers is relatively limited, although the Thomas B. Fordham Institute has published several reports in this area. The most relevant of these is *High-Achieving Students in the Era of NCLB* (Duffett, Farkas, and Loveless, 2008). Using data from the National Assessment of Educational Progress (NAEP), Loveless concluded that low achievers made big strides in performance from 2000 to 2007, but that the progress of high achievers remained consistently meager over time. Unfortunately, NAEP data cannot be used to trace the performance of individual students over time, so the Loveless analysis relied on cross-sectional comparisons.

Several studies on this general topic have focused on the effect that proficiency-centered accountability systems (NCLB in particular) may have on the growth of high-performing learners. Neal and Schanzenback (2010) found that Chicago's shift to a high-stakes test led to achievement gains among students at the threshold of proficiency. In a study of Texas data, Reback (2008) found that low-achieving students performed better than expected when their scores were important to a school's rating, while the performance of high-achieving students did not change. These findings have been reinforced by some other research (Dee & Jacob, 2011; Duffett, Farkas, and Loveless, 2008), but not all findings in this area have been consistent. A rigorous study by Ballou and Springer (2008) examined test scores over

three years in one western state and found gains across the achievement spectrum. A 2011 update of this study (Kober, McMurrer, and Silva, 2011) again reported no gains posted by low performers at the expense of high performers, but did find that the former showed *larger* gains than the latter. Other evidence suggests that the achievement of high-performing students has not suffered under NCLB (Cronin, Kingsbury, McCall, & Bowe, 2005; Chudowsky, Chudowsky, & Kober, 2009).

The existing body of research has several limitations. First, prior studies are generally limited to short time frames or a few grade levels. Second, school poverty and other factors related to school context are not frequently considered. Third, most prior research fails to acknowledge that the distribution of high-achieving students is uneven: If one defines the threshold of high achievement as students performing at or above the 90th percentile, middle- and high-income students are certain to be overrepresented relative to low-income students, and a low-income student at the top of his class—but at the 85th percentile overall—would be overlooked. This study was designed to address all of these gaps. We examine multiple grade levels over several years, consider the impact of school-based factors, and adopt a school-based definition of “high achiever” in a separate, preliminary analysis (see *A Closer Look at High Flyers in High-Poverty Schools* on page 15).

In this study, high achievers—dubbed “high flyers” in these pages—were defined as those students who scored at or above the 90th normed percentile on their MAP math and reading assessments, according to the NWEA 2008 RIT Scale Norms (NWEA, 2008).³ We tracked two groups of high achievers over time: an elementary/middle school cohort and a middle/high school cohort. The elementary/middle school cohort comprised 81,767 students in math and 93,182 students in reading, from more than 1,500 schools in thirty states. Of those students tracked in math, 10,116 (12.4 percent) qualified as high flyers in third grade, while 10,925 third-grade students (11.7 percent) were high flyers in reading.⁴ We followed this cohort from 2004-05 through 2009-10, as those students progressed from third grade to eighth grade.

3 The RIT scale (Rasch unit) is an IRT-based equal-interval scale used to measure student achievement, somewhat akin to using feet and inches on a yardstick to measure height. The scale can be used to chart a student's academic growth from year to year. We recognize that some problems may be introduced when identifying high performers using a cut score defined from a norm. For example, a norm does not necessarily provide a fixed standard; that is, the 90th percentile in third-grade math within a test's 2008 norms may not be the same as the 90th percentile within the same test's 2011 norms. Norming groups may improve or slip in their performance over time.

4 The MAP scores of students in our sample were evaluated against NWEA's 2008 norm population. The norm and study populations are therefore distinct; thus, the percentage of students performing at or above the 90th normed percentile could in practice be more or less than 10 percent of the study population. The data show that this was indeed the case here, as the proportion of high flyers in the initial sample (elementary/middle school) was greater than 10 percent (Table 2, page 9).

The middle/high school cohort comprised 43,423 students in math and 48,220 students in reading, from more than 800 schools in twenty-eight states. Among the math students, 2,912 (6.7 percent) were high flyers in sixth grade, while 4,394 (9.1 percent) of sixth-grade reading students were high flyers. We followed these students from 2005-06 through 2009-10, as they progressed from sixth grade to tenth grade.⁵ Table 1 shows the two cohorts of students followed over time.

TABLE 1
Cohorts 1 and 2 by Grade and Year

Cohort	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Cohort 1 (Elementary/Middle School)	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Cohort 2 (Middle/High School)	N/A	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10

The two cohorts consisted of students who had MAP scores in both the initial and final years of the study. We did not require that students have MAP scores for each intervening year, since very few students met that criterion. While the choice of third and sixth grades is in one sense arbitrary, both were selected because they represent a form of entry point: third grade because it is the first NCLB-tested grade and is the beginning of the intermediate grades in many schools, and sixth grade because it is the typical entry point for middle school.⁶

⁵ We did not track students through higher grades due to the fact that smaller numbers of students participate in testing at those grades.

⁶ See full methodology and limitations in Appendix I. Additional data tables are available online at the Thomas B. Fordham Institute's website at <http://www.edexcellence.net/publications-issues/publications/high-flyers.html> and at the Kingsbury Center Data Gallery at <http://kingsburycenter.org/gallery/high-achievers>.