



Getting Students on Track to College and Career Readiness: How Many Catch Up from Far Behind?

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Abstract

This report focused on the extent to which students who are academically far off track in preparing for college can catch up in four years. We studied multiple cohorts of students in eighth grade whose EXPLORE[®] scores were more than one standard deviation below the EXPLORE benchmark scores associated with being on track. We found that 10 percent or fewer of the students who were far off track in eighth grade attained the ACT College Readiness Benchmarks[®] by twelfth grade. We did a similar analysis for two cohorts of students beginning in fourth grade, using scores on state-developed tests in grade four and EXPLORE scores in grade eight, and obtained similar results. For both the fourth grade and the eighth grade cohorts, the overall percentage of students catching up was lower in higher poverty schools. At some higher poverty schools, however, the percentage of students catching up exceeded the average for lower poverty schools.

These findings will help inform policymakers who set accountability expectations for schools. For example, reasonable growth goals might be set based on student performance in the more successful schools. Furthermore, goals for percentages of students reaching college and career readiness achievement targets should take into account the students' starting points and the number of years that schools have available to catch them up. In addition, research can be conducted to identify educational practices that distinguish schools and school systems that are more successful at working with off-track students and getting students on track starting in preschool and the early grades.

Getting Students on Track to College and Career Readiness: How Many Catch Up from Far Behind?¹

Introduction

In recent years, educators and policymakers have emphasized the goal that all students graduate from high school ready for college and careers (National Governors Association Center for Best Practices, National Conference of State Legislatures, National Association of State Boards of Education, and Council of Chief State School Officers, 2008). The Common Core State Standards were written with that goal explicitly in mind (Common Core State Standards Initiative, 2010). Evidence from the ACT[®], however, indicates that the majority of students who finish high school do not graduate college and career ready, and the situation is worse for low-income and minority students (ACT, 2010a). For example, in states where all eleventh graders took the ACT in 2010, only 27% of low-income students met college readiness benchmarks in reading, 16% in mathematics, and 11% in science.²

Many efforts to address the problem of preparing American students for college and careers have focused on high school. The famed *Nation at Risk* report placed nearly all of its emphasis on strengthening the high school curriculum (National Commission on Excellence in Education, 1983). However, academic preparation gaps appear long before high school. For example, gaps in vocabulary development between disadvantaged students and their more advantaged counterparts emerge in early childhood (Hart & Risley, 1995), and students entering kindergarten from disadvantaged backgrounds tend to lag behind their more advantaged peers not only in vocabulary and overall oral language development (Farkas & Beron, 2004; Dunham, Farkas, Hammer, Tomblin, & Catts, 2007) but also in early reading and mathematics skills and

¹ This study uses data maintained by the Arkansas Department of Education and is published with its permission.

² For African American and Hispanic students respectively, the corresponding statistics were 17 and 28 percent in reading, 9 and 19 percent in mathematics, and 5 and 10 percent in science. If the college readiness of dropouts were measured and included, these percentages would likely be even lower.

background knowledge (West, Denton, & Germino-Hausken, 2000). These gaps tend to widen over time (Rathbun, West, & Hauksen 2004), and failure to get off to a good start can have severe consequences later (Kraus, 1973; Lloyd, 1978; Juel, 1994; Hanson & Farrell, 1995; Cunningham & Stanovich, 1997; O'Donnell & Zill, 2006; Duncan, Claessens, Huston, Pagani, Engel, Sexton, Dowsett, Magnuson, Klebanov, Feinstein, Brooks-Gunn, Duckworth, & Japel, 2007; Dougherty, 2010; Dougherty & Mellor, 2009; Claessens & Engel, 2010).

The literature leads us to expect that it is difficult to close students' academic preparation gaps relative to college and career readiness for several reasons:

- 1) "Matthew effects"—the tendency of less prepared students to progress more slowly than better prepared students—are likely to be common in education (Stanovich, 1986).³ For example, students who are below college readiness benchmarks in eighth grade have been found to progress more slowly in high school than do students who are above the benchmarks (ACT, 2010b). Matthew effects can occur because students who already know more about a topic often have an easier time learning new information on the same topic (Willingham, 2006), and because early exposure to knowledge can stimulate students to want to learn more (Alexander, Kulikowich, & Schulze, 1994; Maltese & Tai, 2010).
- 2) Closing students' preparation gaps relative to college and career readiness requires students who are academically behind to grow *faster* than students who are ahead of them. The lagging students must do double duty, catching up on content that they missed

³ Stanovich explains that "The very children who are reading well and who have good vocabularies will read more, learn more word meanings, and hence read even better. Children with inadequate vocabularies—who read slowly and without enjoyment—read less, and as a result have slower development of vocabulary knowledge, which inhibits further growth in reading ability." (p. 381) Adults can worsen these effects by lowering their expectations of what students are capable, or ameliorate the effects by providing long-term interventions to increase students' knowledge and vocabulary.

earlier while mastering newly taught curriculum. Students who are already on track do not carry this extra burden.

- 3) Preparation gaps are often based on broad deficits in vocabulary and knowledge that take time to make up, not just a handful of discrete skills that can be quickly acquired (Hirsch, 2006; Farkas & Beron, 2004).

If catching students up were relatively easy, we should find jurisdictions serving sizeable disadvantaged student populations in which nearly all students are college and career ready by the end of high school, but in fact we do not.

We used the ACT College Readiness Benchmarks as indicators of high school students' preparation for college. These benchmarks identify the ACT scores associated with a 50% probability of earning a B or a 75% chance of earning a C in entry-level college courses corresponding to the ACT subject tested (Allen & Scoring, 2005; ACT, 2008b). We used the corresponding EXPLORE College Readiness Benchmarks as indicators of whether eighth grade students are on track to meet the ACT benchmarks. The report focuses on students who start out far off track—well below the achievement level that students with average growth trajectories need to reach the ACT benchmarks by the end of high school.

In addition to reporting aggregate statewide and nationwide data, we also examined school-level data. The school-level analyses allowed us to determine how much better the highest performing ten percent of schools did with students who started out far off track.

The next section discusses the methodology of our study. The two following sections look at results for students catching up in Grades 8-12 and Grades 4-8. Finally, the conclusion discusses implications of our findings for how educators and policymakers should think about intervention and set accountability goals.

Methodology

Students in the Analysis

Grades 8-12. For the analysis of students catching up in high school, we used data from four nationwide cohorts of students (Table 1) who took the EXPLORE test in Grade 8, PLAN[®] in Grade 10, and the ACT in Grade 12. We limited the analysis to students who took their most recent test in twelfth grade in order to give the students a full four years to catch up. We used a similar approach for students in the grades 4-8 analysis.

Table 1

Grades 8-12 Student Cohorts

Student Cohort	School Year Taking EXPLORE (Grade 8)	School Year Taking the ACT (Grade 12)	Number of Students
2003-2007	2002-03	2006-07	87,486
2004-2008	2003-04	2007-08	92,810
2005-2009	2004-05	2008-09	95,101
2006-2010	2005-06	2009-10	115,828*

*Data on these students were used to calculate the statistics in Table 10.

In addition, to examine the overall percentage of far off track students reaching college readiness benchmarks by the end of high school, we used a set of descriptive statistics provided by the ACT research department on all high school seniors in the 2009-10 school year who took the ACT in the previous three years (Table 2).⁴ In cases where the student took the ACT more

⁴ In the dataset of 2010 graduating seniors, we defined low-income students as those who reported an annual family income of less than \$30,000. We did not have student income statistics for our eighth grade EXPLORE data. For our school-level analysis for the EXPLORE-ACT cohorts, statistics on school-wide percentages of students eligible for the free and reduced price school lunch (FRSL) program in the 2008-09 school year came from the U.S. Department of Education's Common Core of Data. Arkansas school and student level FRSL data came from the Arkansas Department of Education.

than once, the ACT scores were from the most recent occasion that the student took the test. To examine the percentage of eighth grade students who typically might be far off track, we calculated descriptive statistics on all eighth grade students who took EXPLORE in the 2009-10 school year (Table 3).

Table 2

2010 ACT Graduating Seniors File

Student Population	Number of Students	Number of Students in States with Universal 11th Grade ACT Participation*
2009-10 twelfth graders taking the ACT in the current or the three previous years (results from most recent test taken)	1,568,835	436,413

* Data on these students were used to calculate the statistics mentioned in the first page of this report.

Table 3

2010 EXPLORE Eighth Grade File

Student Population	Number of Students*
Eighth graders taking EXPLORE in the 2009-10 school year	783,916

* Data on these students were used to calculate the statistics in Table 9.

Grades 4-8. For the analysis of students catching up in middle school, we acquired data on two cohorts of Arkansas students (Table 4) who took the Arkansas Benchmark Exams (ABE) in literacy and mathematics in fourth grade and EXPLORE reading and mathematics in eighth grade. At the time of the analysis, Arkansas was the only state for which we had longitudinal cohort data linking the fourth grade state test to eighth grade EXPLORE, and there was no

national equivalent of the EXPLORE test in grade 4. To examine the percentage of far off track students in a broader population of Arkansas students, we used descriptive statistics calculated on all fourth grade students who took the Arkansas Benchmark Exams in 2010 (Table 5).

Table 4

Arkansas Grades 4-8 Student Cohorts

Student Cohort	School Year Taking Arkansas Benchmark Exam (Grade 4)	Year Taking EXPLORE (Grade 8)	Number of Students
2005-2009	2004-05	2008-09	17,741
2006-2010	2005-06	2009-10	20,252

Table 5

Arkansas 2010 Grade 4 Snapshot File

Student Population	Number of Students Tested in Literacy*	Number of Students Tested in Mathematics*
Students taking the fourth grade Arkansas Benchmark Exam in 2010	35,922	35,959

* Data on these students were used to calculate the statistics in Table 11.

Division of Students into Academic Preparation Groups

Grades 8-12. We classified eighth grade students into three academic preparation groups in each of four subject areas (English, mathematics, reading, and science) based on their performance on EXPLORE in these areas:

- “On Track” students met the College Readiness Benchmark score on EXPLORE (Table 6) in the subject.
- “Off Track” students missed the Benchmark by one standard deviation or less.
- “Far Off Track” students scored more than a full standard deviation below the Benchmark.⁵

⁵ Standard deviations were chosen as the yardstick because they provide a common metric across different grades and tests. A one-standard deviation difference in scores is quite large: in reading and mathematics, it is roughly the difference between scoring at the Basic and Proficient levels on the National Assessment of Educational Progress (NAEP), or between the 16th and the 50th percentiles on a norm-referenced standardized test. The size of a standard deviation on EXPLORE in 2010 was 4.2 points in English, 3.9 in mathematics, 3.9 in reading, and 3.3 in science. Standard deviations on the ACT in 2010 were 6.4 points in English, 5.3 in mathematics, 6.2 in reading, and 5.1 in science.

Table 6

Student Academic Preparation Levels on EXPLORE

Academic Preparation Level	English	Mathematics	Reading	Science
On Track Met or exceeded the College Readiness Benchmark	13 or above	17 or above	15 or above	20 or above
Off Track No more than one standard deviation below the Benchmark	9 - 12	14 - 16	12 - 14	17 - 19
Far Off Track More than one standard deviation below the Benchmark	8 or below	13 or below	11 or below	16 or below

For example, a score of 15 or better in EXPLORE Reading indicated that a student was On Track; Off Track students scored from 12 to 14, while students scoring 11 or below were classified as Far Off Track. Similarly, Table 7 shows the ACT scores indicating that a student is On Track (meeting the ACT College Readiness Benchmark), Off Track, or Far Off Track.

Table 7

Student Academic Preparation Levels on the ACT

Academic Preparation Level	English	Mathematics	Reading	Science
On Track Met or exceeded the College Readiness Benchmark	18 or above	22 or above	21 or above	24 or above
Off Track No more than one standard deviation below the Benchmark	12 - 17	17 - 21	15 - 20	19 - 23
Far Off Track More than one standard deviation below the Benchmark	11 or below	16 or below	14 or below	18 or below

In EXPLORE English, few students scored at the Far Off Track level of 8 or below. Thus, we focused our analysis on Far Off Track students in the other three subjects.

Grades 4-8. Similarly, we classified fourth grade students in the two Arkansas cohorts as On Track, Off Track, and Far Off Track based on their scores on the Arkansas Benchmark Exams (ABE). This classification required identifying target scores for On Track students on the fourth grade ABE in literacy and mathematics based on a link to the eighth grade EXPLORE tests in reading and mathematics. This was done by using logistic regression to identify the seventh grade ABE score in each subject in the 2006-07 school year associated with a 50% or better probability of meeting or exceeding the eighth grade benchmark on EXPLORE in the 2007-08 school year in the corresponding subject. Corresponding targets in grades 3-6 were identified by selecting the ABE scores in those grades in 2006-07 that were the same number of standard deviations above the mean score in their grade as the seventh grade target was above the

mean for seventh grade.⁶ This led to the identification of the fourth grade On Track targets shown in Table 8.

Table 8

Student Academic Preparation Levels on the Grade 4 Arkansas Benchmark Exams

Academic Preparation Level	Literacy	Mathematics
On Track Met or exceeded the College and Career Readiness Target	700 and above	659 and above
Off Track No more than one standard deviation below the Target	516 - 699	560 - 658
Far Off Track More than one standard deviation below the Target	515 or below	559 or below

Analysis of Success of Far Off Track Students in Higher Performing Schools

Grades 8-12. Because Far Off Track students were defined based on their previous poor performance on EXPLORE, the aggregate percentage of those students catching up might be expected to be low. However, it is possible that higher performing high schools may greatly increase the percentage of these students who catch up. With this in mind, we identified the top 10 percent of schools in each subject, based on their percentage of Far Off Track students on EXPLORE who met the College Readiness Benchmark on the ACT, and compared their results with the average of all schools in that subject.

Because an analysis of top schools with Far Off Track students might identify mostly schools serving lower poverty (more advantaged) student populations, we also disaggregated high schools into two categories based on student poverty rates: higher poverty schools with

⁶ For additional details, see National Center for Educational Achievement|ACT (2011).

more than 50 percent economically disadvantaged students and lower poverty schools with 50 percent or fewer of those students. Economically disadvantaged students were defined as those eligible for the free and reduced price lunch program.⁷ We ranked schools within these two income categories based on the percentage of Far Off Track eighth graders who met College Readiness Benchmarks in twelfth grade. We identified the top 10 percent of schools in each income category and compared their average results with the average of all schools in the same income category.

For all of these calculations with school-level statistics, we used the twelfth grade test takers from the most recent two cohorts (2005-2009 and 2006-2010 in Table 1) who were enrolled in the same school when they took PLAN and the ACT.⁸ We limited the analysis to schools that had at least 10 students in each cohort from the prior achievement group in question and at least 30 such students across both cohorts combined. These decisions were driven by the tradeoff between including more schools in the analysis and requiring more students per school to make the school-level results more statistically reliable. We also limited the analysis to schools that had data from all years in the analysis, so that schools would not be compared with other schools with data from fewer cohorts. This last criterion led us to restrict the school-level analysis to the 2005-2009 and 2006-2010 cohorts, as many schools had missing data for the 2003-2007 and 2004-2008 cohorts.⁹

⁷ Statistics on school-wide percentages of students eligible for the free and reduced price lunch program in the 2008-09 school year came from the U.S. Department of Education's Common Core of Data.

⁸ This was the best indicator we had to identify students who were continuously enrolled in the high schools whose performance was being assessed.

⁹ The Grades 8-12 analysis included 140 high schools in reading, 213 in mathematics, and 719 in science. Science had more Far Off Track students; hence more schools met the threshold for enough students. Of these the top 10 percent consisted of 14, 21, and 71 schools, respectively. The respective numbers of higher poverty schools by subject were 66, 98, and 309 (of which 6, 9, and 30 were in the top 10 percent); there were 74, 115, and 410 lower poverty schools, of which 7, 11, and 41 were in the top 10 percent. Top schools in one subject were not necessarily higher performing in the other two subjects.

Grades 4-8. To compare results for Far Off Track fourth grade students in more successful schools with the average for all schools, we ranked schools with eighth grade students based on the percentage of Far Off Track fourth grade students who met College Readiness Benchmarks on EXPLORE in those schools in eighth grade. We identified the top 10 percent of schools in each subject and compared their results with the average of all schools in that subject.¹⁰

As was the case in high school, we also disaggregated schools with eighth grade students into higher and lower poverty schools and ranked the schools in these two categories based on the percentage of Far Off Track fourth graders who met College Readiness Benchmarks in eighth grade. We identified the top 10 percent of schools in each income category and compared their average results with the average of all schools in the same category.

For these calculations with school-level statistics, we used the subset of students who were enrolled in no more than two schools in fifth through eighth grade. As was done with the grades 8-12 analysis, we limited the analysis to schools that had at least 10 students in each cohort from the prior achievement group in question and at least 30 such students across both cohorts combined. By doing so we increased the reliability of the school-level statistics.¹¹

¹⁰ In cases where students spent part of their time in elementary school between fourth and eighth grade, this success measure pertains to a combination of middle or junior high schools and their feeder elementary schools. 30 percent of the students in this sample transitioned to a new school in sixth grade, 55 percent in seventh grade, 7 percent in eighth grade, and 7 percent stayed in the same school between fifth and eighth grades.

¹¹ The Grades 4-8 analysis included 75 schools in literacy/reading and 104 schools in mathematics. Of these the top 10 percent consisted of 7 and 10 schools, respectively. The respective numbers of higher poverty schools by subject were 51 and 69, of which 5 and 7 were in the top 10 percent; there were 24 and 35 lower poverty schools, of which 2 and 3 were in the top 10 percent. Top schools in one subject were not necessarily higher performing in the other subject.

Closing Academic Preparation Gaps in High School

What Percentage of Students Were Far Off Track in Eighth Grade in 2010?

In 2010, EXPLORE was administered to almost 800,000 eighth grade students nationwide (Table 3). The bottom row of Table 9 shows that just over one-fourth of these students (27 and 28 percent, respectively) were Far Off Track in reading and mathematics. The corresponding proportions for African American and Hispanic students were in the 40-50% range. Likewise, over half of all students (52%) were Far Off Track in science, but for minority students, the corresponding proportion of students exceeded two-thirds—67% for Hispanic and 74% for African American students. These statistics are similar to other estimates of the prevalence of poor academic preparation among eighth grade students.¹²

Table 9

Student Academic Preparation Levels of All 2009-10 8th Grade EXPLORE Test Takers

Student Academic Preparation	Reading			Mathematics			Science		
	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students
On Track	43%	24%	26%	37%	15%	21%	16%	4%	7%
Off Track	30%	33%	32%	35%	35%	37%	32%	21%	26%
Far Off Track	27%	43%	42%	28%	50%	41%	52%	74%	67%

The students in the high school cohorts, however, were a more select group, staying in school for at least three years and taking three different college readiness tests (i.e., EXPLORE, PLAN, and ACT). Therefore they were likely to be better prepared on average than the

¹² For example, using “Below Basic” on the National Assessment of Educational Progress (NAEP) as an indicator of “Far Off Track,” in 2009 roughly one-fourth of eighth grade students overall and 40-50% of African American and Hispanic students were Below Basic in reading and mathematics. In science, about one-third of students overall but a clear majority of African American and Hispanic students were Below Basic.

nationwide population of EXPLORE test takers. This is apparent by comparing the percentages of Far Off Track students in the bottom row of Table 10 (representing the most recent high school cohort in our study) with those in the bottom row of Table 9. For example, 43% of African American EXPLORE test takers nationwide were Far Off Track in reading, compared with 29% in our sample. Favorable selection effects could also mean that the Far Off Track students in our study cohorts were more academically motivated than their Far Off Track counterparts nationally. This would imply that the catching-up results of a national longitudinal probability sample, if one existed, would be worse than those shown in this paper.¹³

Table 10

8th Grade Academic Preparation Levels of the 2006 EXPLORE-2010 ACT Student Cohort

Student Academic Preparation	Reading			Mathematics			Science		
	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students
On Track	53%	26%	39%	46%	19%	32%	17%	4%	10%
Off Track	35%	46%	42%	39%	46%	45%	41%	25%	35%
Far Off Track	12%	29%	19%	15%	35%	23%	42%	70%	55%

How Many Far Off Track 8th Graders Reached College Readiness Benchmarks in 12th Grade?

Based on an analysis of the four cohorts listed in Table 1, few Far Off Track eighth grade students reached College Readiness Benchmarks by twelfth grade. Only about 3% of Far Off Track eighth graders met the twelfth grade Benchmark in mathematics, 10% in reading, and 6%

¹³ The cohort in Table 10 had fewer minority students (15 and 6 percent African American and Hispanic students, respectively) than the snapshot group in Table 9 (19 and 18 percent). However, of greater note are the differences in academic preparation between Tables 9 and 10 within the African American and Hispanic demographic groups.

in science (Figure 1).¹⁴ Success rates for Off Track students were higher: 19% in mathematics, 29% in reading, and 32% in science. By contrast, the majority of On Track eighth graders were college and career ready in Grade 12. Results from each of the four cohorts analyzed separately were similar, showing a slight improvement trend when earlier and later cohorts are compared.

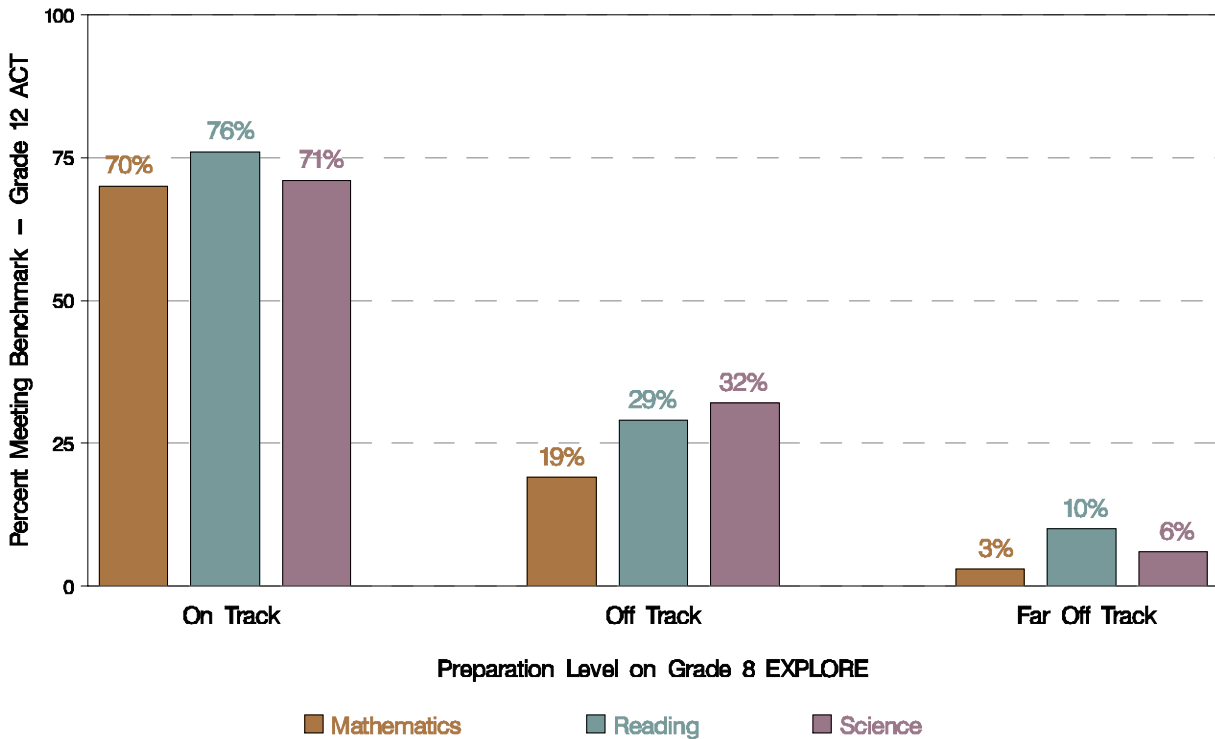


Figure 1. Percentage meeting the ACT College Readiness Benchmarks (Grade 12) given their eighth grade EXPLORE performance

To see if these results were biased by the omission of students taking their most recent test in eleventh grade—many of whom may have not taken a twelfth grade test because they were satisfied with their results—we also examined results for all four EXPLORE-ACT cohorts after adding in students whose most recent test was in eleventh grade. This yielded slightly better

¹⁴ Results for English are not included because, as noted earlier, few students scored at the Far Off Track level of 8 or below on the EXPLORE English exam.

results than those in Figure 1 for On Track students and slightly worse results for Far Off Track students.¹⁵

How Did Results for Far Off Track Students Vary Across High Schools?

Figure 2 shows how the results for Far Off Track students in the top 10 percent of schools compared with the average result for all schools. The more successful schools were able to get 14, 28, and 19 percent of their Far Off Track eighth graders to College Readiness Benchmarks by twelfth grade in mathematics, reading, and science, respectively.¹⁶

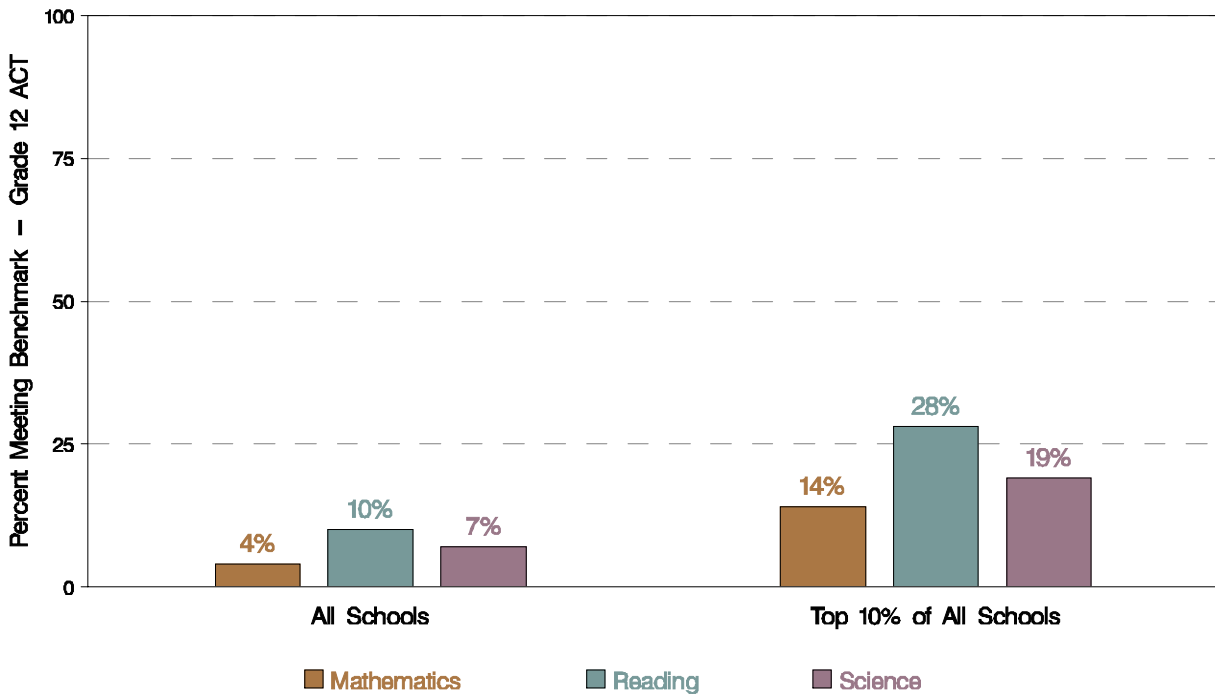


Figure 2. Percentage of Far Off Track eighth grade students meeting College Readiness Benchmarks on the ACT in grade 12, by school performance level

¹⁵ For example, with students taking their final test in 11th grade included, the results in Figure 1 for On Track students are 72, 77, and 73 percent in mathematics, reading, and science respectively, and 3, 9, and 6 percent for Far Off Track students.

¹⁶ The percentages of Far Off Track students from all schools in Figure 2 differ slightly from those in Figure 1 because of the difference in the number of cohorts analyzed (two vs. four) and the restriction of the analysis in Figure 2 to schools with at least 30 Far Off Track students.

Figures 3 and 4 show the same analysis when schools are disaggregated by school-wide poverty rate. The top 10% of higher poverty high schools were able to increase the percentage of students meeting benchmarks from 3 to 9 percent in mathematics, 6 to 17 percent in reading, and 3 to 12 percent in science (Figure 3). It is noteworthy that the more successful higher poverty schools outperformed the average for lower poverty schools, which averaged 5 percent of Far Off Track students meeting the ACT benchmark in mathematics, 14 percent in reading, and 9 percent in science (Figure 4).

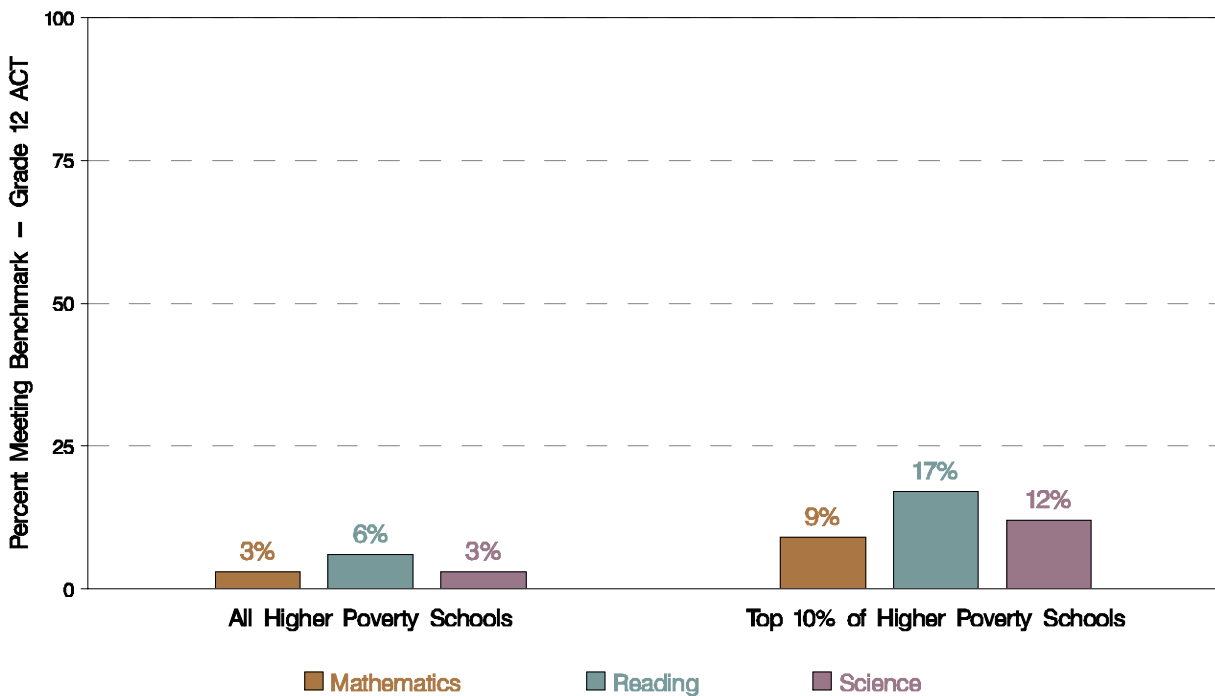


Figure 3. Higher poverty (more disadvantaged) schools (>50-100% economically disadvantaged students): Percentage of Far Off Track eighth grade students meeting College Readiness Benchmarks on the ACT in grade 12

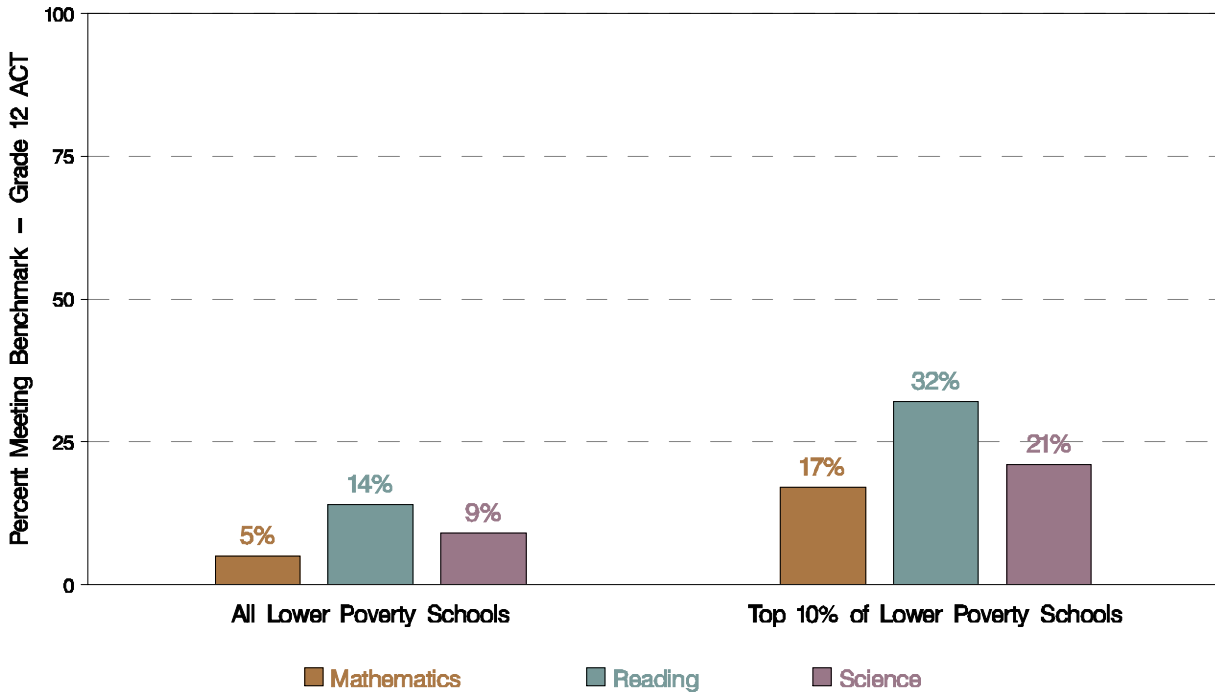


Figure 4. Lower poverty (more advantaged) schools (0-50% economically disadvantaged students): Percentage of Far Off Track eighth grade students meeting College Readiness Benchmarks on the ACT in grade 12

Figures 5-7 show success rates by high school with students who were Far Off Track in eighth grade, using star symbols to identify schools in the top 10 percent in their income category. Outliers were scarce, particularly among higher poverty high schools; no higher poverty high school got more than 20 percent of its Far Off Track students to college and career readiness by their senior year in any of the three subjects. Catching up students who are Far Off Track in eighth grade is a daunting challenge even for the most effective high schools. These results are consistent with the findings in *The Forgotten Middle* (ACT, 2008a) about the importance of preparing students well before eighth grade, and they motivated our analysis in the following section on catching up Far Off Track fourth grade students.

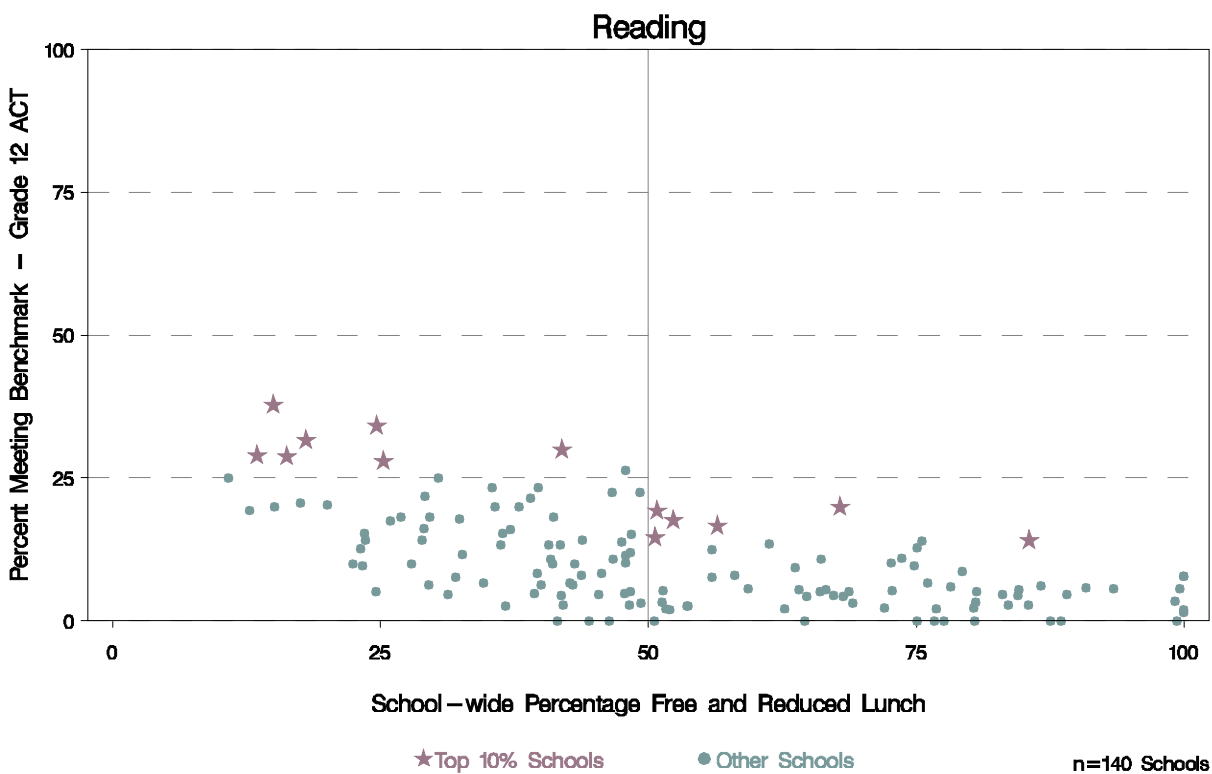


Figure 5. Percentage of Far Off Track eighth graders meeting the ACT Reading Benchmark in twelfth grade, by school poverty and performance level

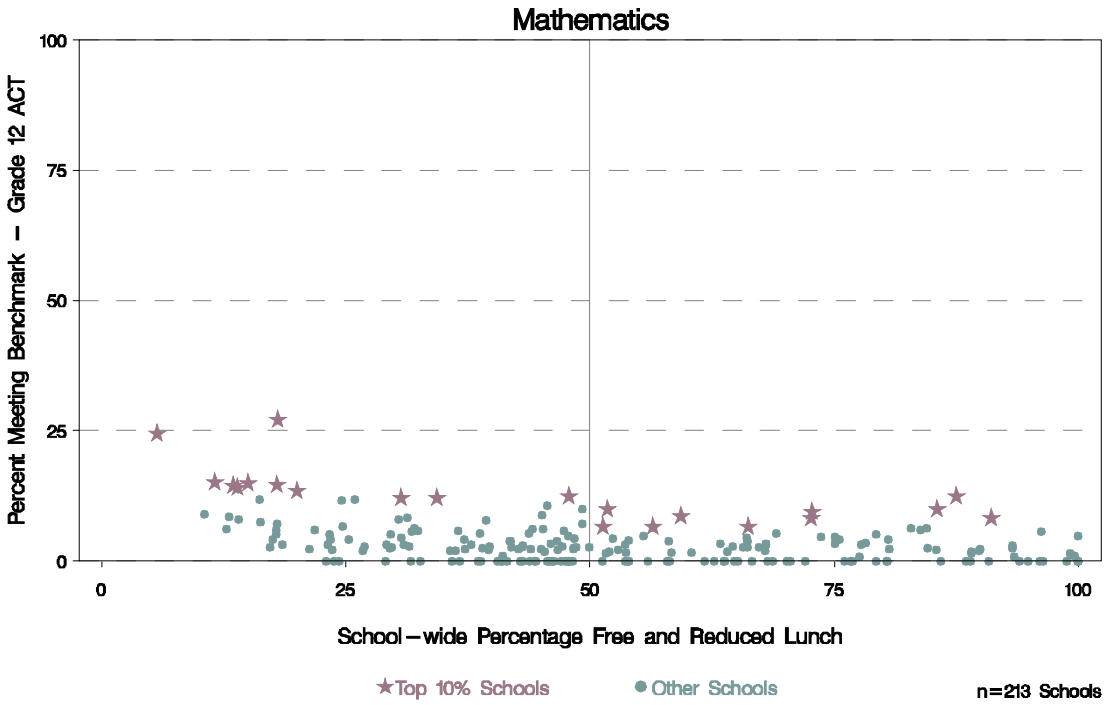


Figure 6. Percentage of Far Off Track eighth graders meeting the ACT Mathematics Benchmark in twelfth grade, by school poverty and performance level

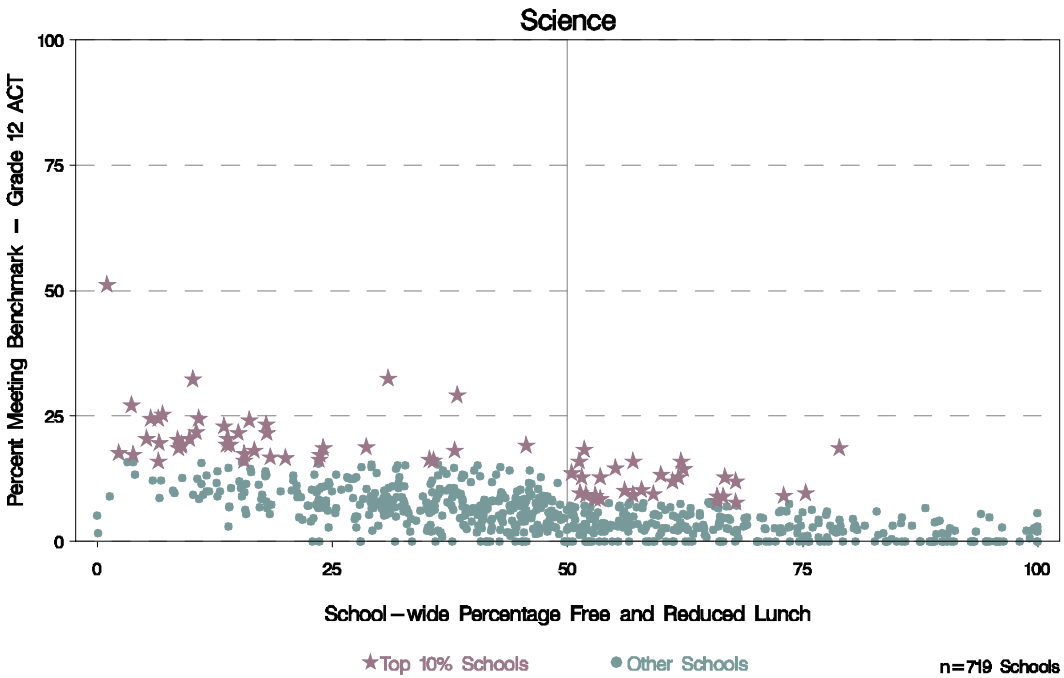


Figure 7. Percentage of Far Off Track eighth graders meeting the ACT Science Benchmark in twelfth grade, by school poverty and performance level

Closing Academic Preparation Gaps in Grades 4-8

How Many Students Were Far Off Track Leaving Grade 4 in 2010?

In the spring of 2010 the Arkansas Benchmark Exams (ABE) in literacy and mathematics were administered to about 36,000 fourth grade students (Table 5). (The literacy test measured a combination of reading and writing.) About one-fifth of students—18 and 22 percent, respectively—were Far Off Track in literacy and mathematics, but these percentages were substantially higher for African American (29 and 38 percent) and Hispanic students (24 and 26 percent) (Table 11).

Table 11

Student Academic Preparation Levels on the 2010 4th Grade Arkansas Benchmark Exam

Student Academic Preparation	Literacy			Mathematics		
	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students
On track	46%	28%	33%	45%	25%	38%
Off track	37%	43%	43%	33%	37%	36%
Far off track	18%	29%	24%	22%	38%	26%

How Many Far Off Track Fourth Graders Reached College Readiness Benchmarks by Eighth Grade?

To examine the percentage of Far Off Track fourth grade students reaching College Readiness Benchmarks by eighth grade, we used a sample of about 38,000 students who took the fourth grade ABE in 2004-05 or 2005-06 and the eighth grade EXPLORE four years later (Table 4). As with the students followed from grades 8 through 12, Far Off Track fourth graders had a very low chance of reaching College Readiness Benchmarks in eighth grade—only a 10%

chance in eighth grade mathematics and a 9% chance in eighth grade reading (Figure 8). Off Track students had a somewhat higher chance—46% in mathematics and 37% in reading—while On Track fourth graders had an 82% chance in mathematics and 75% probability in reading of staying on track.

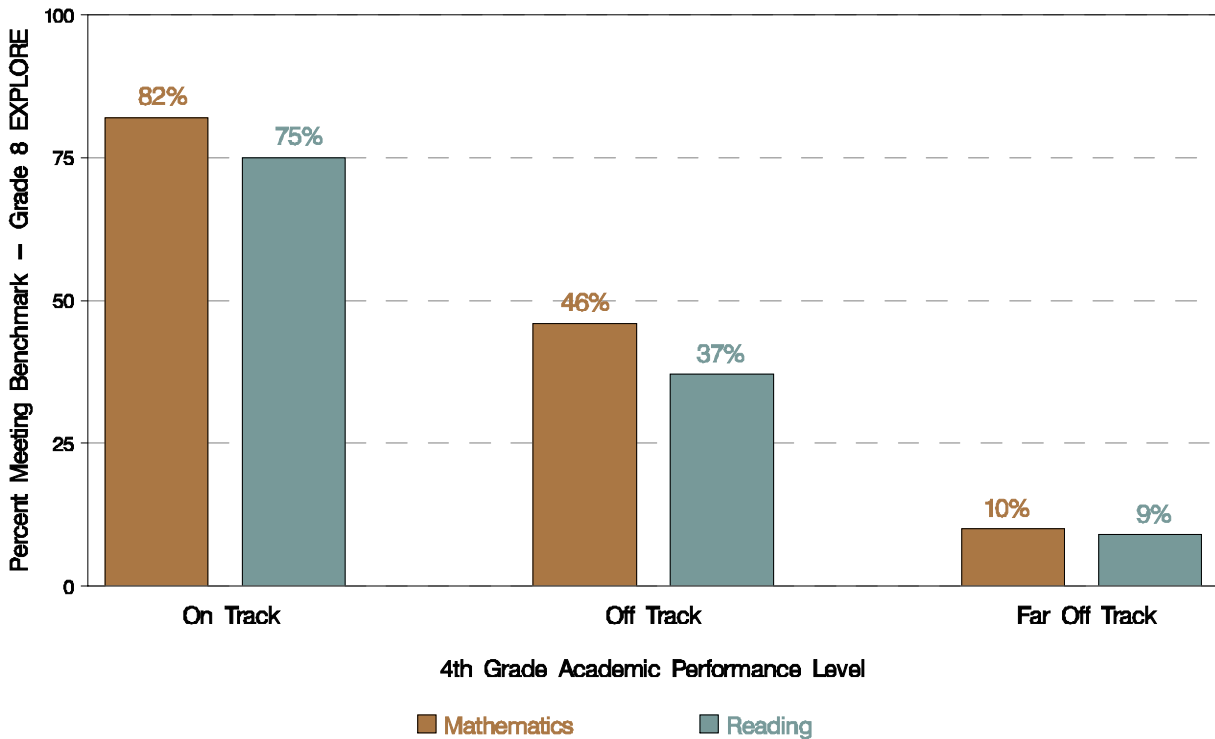


Figure 8. Percentage meeting the ACT College Readiness Benchmarks on EXPLORE in Grade 8, given their fourth grade Arkansas Benchmark Exam performance

Comparing Figures 1 and 8, success rates with each group of students in mathematics were higher in grade 8 than in grade 12, suggesting that it may be easier to catch students up in that subject in the upper elementary and middle school grades. However, the same pattern did not hold consistently in reading. Data from additional states may shed further light on the relative difficulty of catching up students in earlier and later grades.

How Did Results for Far Off Track Students Vary Across Schools?

Figure 9 shows how the results for Far Off Track students in the top 10 percent of schools compared with the average result for all schools. More successful schools were able to get 23 and 21 percent of previously Far Off Track Students to College Readiness Benchmarks in eighth grade mathematics and reading, respectively.

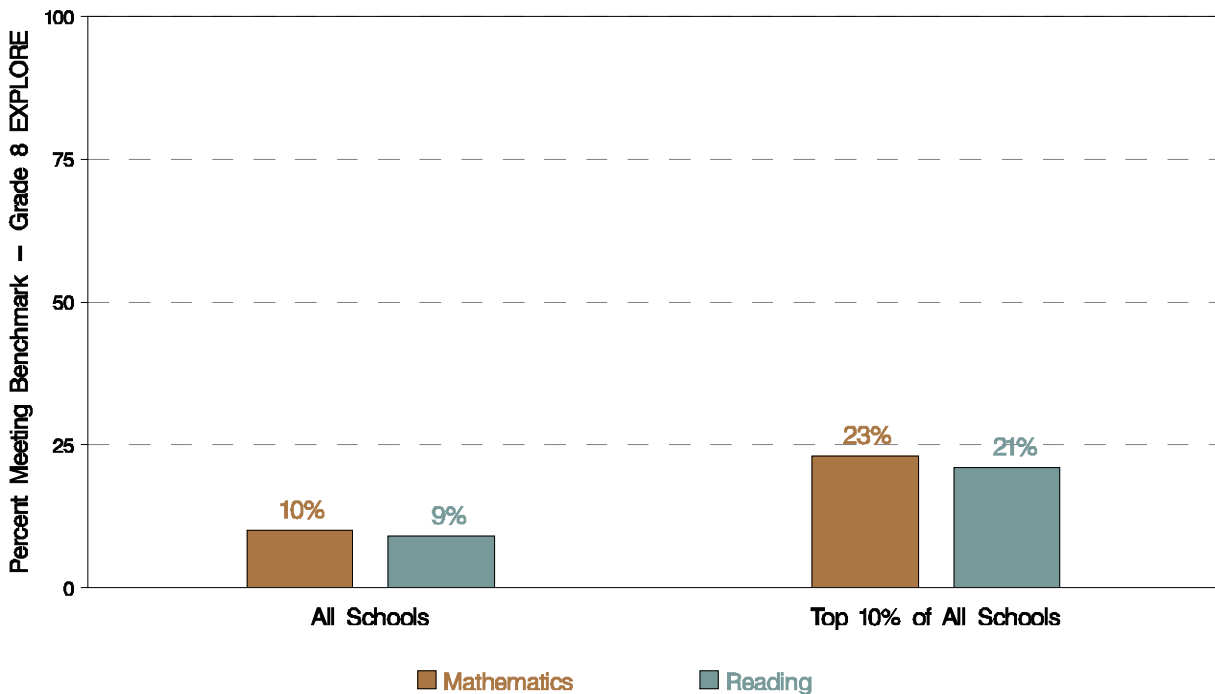


Figure 9. Percentage of Far Off Track fourth grade students meeting College Readiness Benchmarks on EXPLORE in grade 8, by school performance level

The top 10% of higher poverty schools were able to increase the percentage of students meeting benchmarks from 8 to 20 percent in mathematics and 7 to 16 percent in literacy/reading (Figure 10). As was the case in high school, the more successful higher poverty elementary-middle school combinations outperformed the average for lower poverty schools. For the latter group, 13% of Far Off Track fourth grade students met benchmarks in eighth grade reading and mathematics (Figure 11).

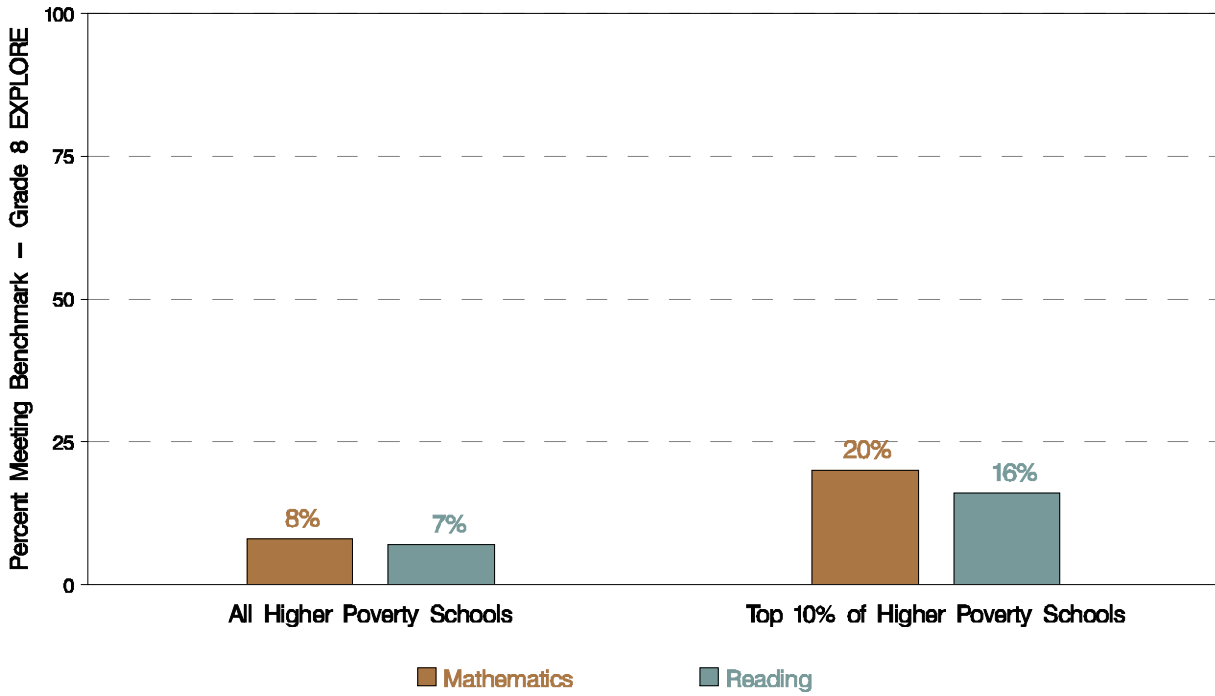


Figure 10. Higher poverty (more disadvantaged) schools (>50-100% economically disadvantaged students): Percentage of Far Off Track fourth grade students meeting College Readiness Benchmarks on EXPLORE in grade 8

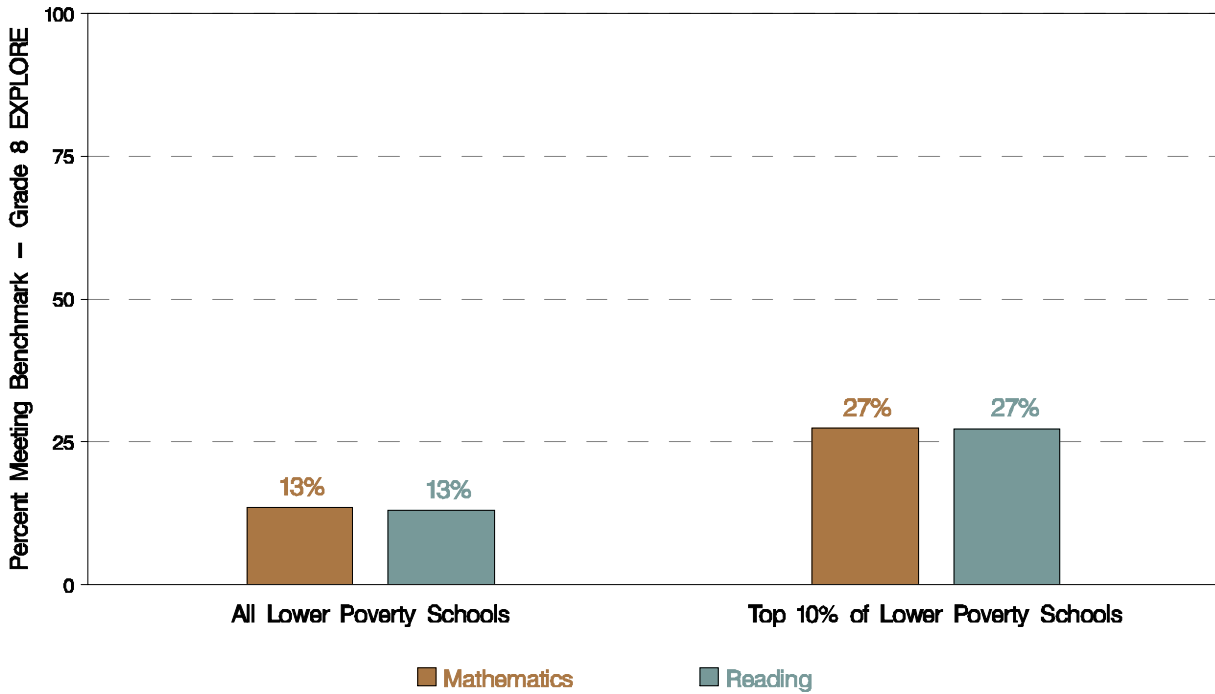


Figure 11. Lower poverty (more advantaged) schools (0-50% economically disadvantaged students): Percentage of Far Off Track fourth grade students meeting College Readiness Benchmarks on EXPLORE in grade 8¹⁷

Figures 12 and 13 show success rates by middle school, with students who were Far Off Track in fourth grade. As was the case in high school, outliers were scarce. No middle school with its feeder elementary schools got more than about 30 percent of Far Off Track students to college and career readiness by Grade 8 in reading or mathematics. That statistic declined to 10 percent for schools with 80 percent or more students qualifying for the free or reduced lunch program.

¹⁷ The percentages appear to be identical for mathematics and reading because of rounding. Rounded to one decimal place, the respective percentages for all lower poverty schools in mathematics and reading were 13.5 and 13.0 percent, and for the top 10% of lower poverty schools, they were 27.4 and 27.3 percent.

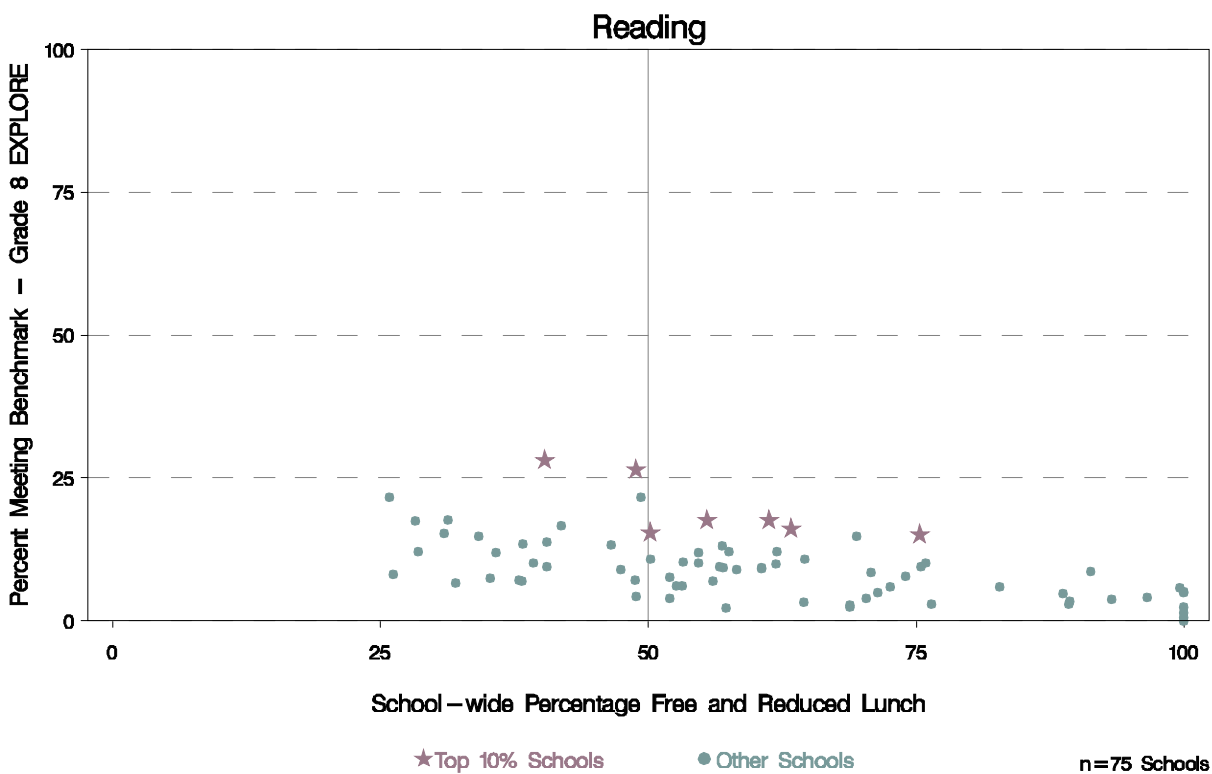


Figure 12. Percentage of Far Off Track fourth graders meeting the EXPLORE Reading Benchmark in eighth grade, by school poverty and performance level

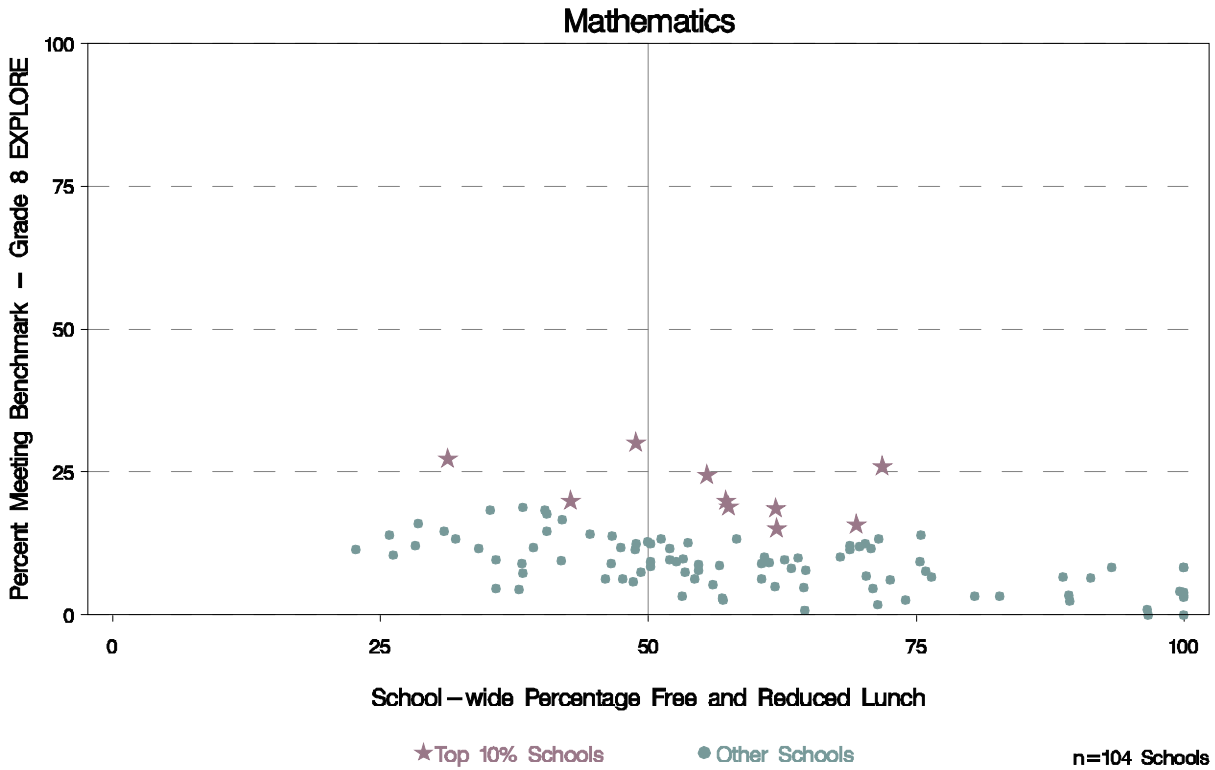


Figure 13. Percentage of Far Off Track fourth graders meeting the EXPLORE Mathematics Benchmark in eighth grade, by school poverty and performance level

Conclusion

In the datasets in the study, relatively few Far Off Track students in eighth grade were On Track four years later. Even at the more successful higher poverty high schools, typically fewer than 20% of those students attained the College Readiness Benchmarks by twelfth grade. Results starting in fourth grade were similar, with a hint that helping students catch up in mathematics might be easier in the middle grades than in high school.

These results are consistent with the general view that it is difficult for students who are far behind their well-prepared peers to catch up to them later. While *overestimating* the difficulty of catching up would be problematic because it might encourage educators and policymakers to give up on students, *underestimating* the difficulty would also be a mistake: Educators might be

inclined to choose strategies and interventions that are too little and too late. For their part, policymakers who underestimate the difficulty of the problem might hold schools to accountability targets that are not attainable over the period in question, creating strong incentives for leaders at various levels in the system to seek to lower standards and artificially inflate test scores. Or policymakers might reduce funding for prevention and intervention programs.

The high percentage of students who are below college and career readiness achievement targets at all grade levels—and the difficulty of catching them up—should also lead educators and policymakers to focus on the importance of an early start and an emphasis on prevention over remediation. Prevention strategies might be conceived more broadly—for example, changing the regular academic program to give every student access to a content- and vocabulary-rich curriculum beginning in the early years (Common Core State Standards Initiative, 2010; ACT, 2012a); and implementing programs and strategies that improve students' attendance and academic behaviors (Sawyer & Gibson, 2012; Diamond, Barnett, Thomas, & Munro, 2007a; Diamond Barnett, Thomas, & Munro, 2007b). Efforts to close academic preparation gaps should begin as early as possible, be more intensive, and take as long as necessary. Even if starting earlier does not reduce the amount of time it takes to catch students up, starting earlier gives students more time to catch up. In addition, a database might be developed to learn more about how effective various programs and interventions are at catching students up from how far behind over what length of time (Dougherty, 2010).

These findings should also affect the requirements that local, state, and federal accountability systems place on schools. For example, reasonable growth goals might be set based on student performance in more successful schools (ACT, 2010b; ACT 2012b), and goals

for percentages of students reaching college and career readiness should take into account the students' starting points and the number of years the school has available to catch them up. Based on the information in this paper, policymakers should not assume that rapid catching up is possible if only educators try harder. In general, policy and practice should be informed by data on the success of real students in actual schools.

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