

## EXTANT DATA ANALYSIS

### Educational Experiences of English Learners: College Preparatory Courses and Programs, 2011–12

March 2016

There are disparities in academic achievement and college or career readiness between English learner students (ELs) and all other students. For example, a smaller percentage of ELs than non-ELs graduate from high school;<sup>1</sup> and those ELs who do graduate are less likely to enroll in postsecondary institutions.<sup>2</sup> Research has shown positive relationships between advanced mathematics and science course-taking in high school and academic outcomes such as high school graduation and postsecondary participation and completion, even after accounting for differences in student performance and motivation.<sup>3</sup> However, ELs may be instructed in schools with fewer options for rigorous advanced coursework or may be enrolled in less academically rigorous courses due to their lower levels of proficiency in English and on state assessments.<sup>4</sup> Other factors that may inhibit ELs' enrollment in rigorous courses include lack of course prerequisites and the low expectations of school staff.<sup>5</sup>

Using data from the 2011–12 Civil Rights Data Collection (CRDC),<sup>6</sup> this brief examines the extent to which ELs have access to and participate in advanced coursework and other college preparatory activities. The analyses compare schools with high (greater than 20 percent), medium (between 5 and 20 percent), and low (less than 5 percent) concentrations of ELs. Specifically, the brief addresses the following questions:

- (1) Do schools with high concentrations of ELs offer college preparatory courses and programs at a rate similar to schools with low concentrations of ELs?
- (2) Do ELs who have access to these opportunities participate at the same rates as non-ELs?

The relationship between English learner (EL) school composition and EL access to and participation in college preparatory courses and programs is complex, involving multiple interrelated student, school, and district factors not analyzed here (such as students' prior academic achievement, school-level funding, and availability of instructional staff and resources). These analyses are based on national data; findings may vary across states. Additionally, the CRDC data present two limitations for understanding the educational experiences of ELs. First, since ELs who attain English proficiency are reclassified and exit the EL subgroup, the composition of that subgroup is continuously changing; as a result, comparisons of the academic outcomes of ELs to their English proficient peers will be imperfect.<sup>7</sup> Second, these data do not allow us to identify important characteristics of ELs, such as whether they are recent arrivals to the U.S. or long-term ELs, which may contribute to lower academic performance in English, compared with ELs in other circumstances. Answering the question of *why* ELs perform below non-ELs is outside the scope of this analysis and causality cannot be established based on the descriptive comparisons presented.

This brief is part of a series of extant data analyses about the educational experiences of ELs. The topics of the other two briefs are instructional staff and retention and completion. Those briefs present descriptive analyses of the 2011–12 CRDC data to explore ELs' exposure to novice, uncertified, or frequently absent teachers and the educational success of ELs with respect to grade retention, high school graduation, and GED preparation program participation and credential attainment.<sup>8</sup>

## HIGHLIGHTS

- Schools with the highest concentrations of English learner (EL) students were less likely to offer college preparation courses and programs than schools with lower concentrations of ELs. For example, 24 percent of schools with high EL concentrations offered calculus, compared to 61 percent of schools with low EL concentrations.
- Among students who attended schools that offered mathematics, science, and Advanced Placement (AP) courses, ELs were underrepresented in most of those courses or programs, with the exception of a few courses required in many states for high school graduation.

- Among students enrolled in Advanced Placement (AP) courses, a smaller percentage of ELs than non-ELs took and passed AP exams. ELs were also underrepresented among the students taking SAT or ACT exams.

## COURSE AND PROGRAM ACCESS

While participation in rigorous courses and challenging academic programs is one of the first steps toward college and career readiness, ELs may not attend schools that offer these courses and programs and, as a consequence, may not have access to the types of academic programs that help students prepare for postsecondary education. Because schools with the highest concentrations of ELs are more likely to be high poverty schools,<sup>9</sup> and high poverty schools are less likely to offer advanced courses,<sup>10</sup> we might expect a lower percentage of schools with high proportions of ELs to offer mathematics, science, and Advanced Placement (AP) courses.

This section examines whether the schools that offered grades 7 through 12 provided access to algebra I, as well as whether schools that offered grades 9 through 12 provided access to high-level mathematics, science, and Advanced Placement (AP) courses.<sup>11</sup> This section also examines test participation data to determine the extent to which students in these schools took SAT/ACT exams. There are two sets of analyses presented in this section. The first set provides information about the percentage of all schools that offered various courses and programs and the percentages of ELs and non-ELs who were enrolled in schools with these course offerings. The second set of analyses compares course offerings and exam participation between schools with high concentrations of ELs and schools with lower EL concentrations.<sup>12</sup> The course offerings at schools with high EL concentrations is important because the small percentage of schools that have high concentrations of ELs affects a large segment of the total EL population — these schools enroll more than 50 percent of all ELs in schools that offer grade 7 or 8 and 40 percent of the ELs who attend schools that offer grades 9 through 12 (see Exhibit A1). The analysis found that in most cases, schools with the highest concentrations of ELs were less likely to offer college and career preparatory courses and programs than schools with lower concentrations of ELs.

### COURSE OFFERINGS IN ALL SCHOOLS

**Less than 70 percent of all schools with grades 9 through 12 offered calculus, advanced mathematics, chemistry, or physics. Less than 50 percent of all schools with grades 9 through 12 offered AP courses.**

Schools with grades 9 through 12 offered calculus at the lowest rate (44 percent) of any of the math courses examined in these analyses. A larger proportion of schools offered advanced mathematics<sup>13</sup> (61 percent), algebra II (73 percent), geometry (77 percent), or algebra I (79 percent) in those grades. Thirty-nine percent of schools offered all of the aforementioned the full range of math courses.

While less than 70 percent of schools with grades 9 through 12 offered physics (55 percent) or chemistry (66 percent), 78 percent of schools offered biology. Fifty-two percent of schools offered all of the aforementioned science courses.

Overall, only 46 percent of schools with grades 9 through 12 offered any AP course; schools offered AP math and AP science more frequently than AP foreign language courses.

**Across most courses examined in these analyses, a lower proportion of ELs than non-ELs were enrolled in schools that offered a particular course.**

The exceptions were algebra I in grade 7 or 8 and AP language. Seventy-eight percent of all ELs, compared to 77 percent of non-ELs were enrolled in schools offering algebra I in grade 7 or 8. Regarding AP language courses, 50 percent of all ELs were enrolled in schools offering AP language courses, compared to 43 percent of non-ELs (Exhibit 1).

**Exhibit 1**

**Percentage of students enrolled in schools offering specific mathematics, science, or AP courses: 2011–12**

<b>Course</b>	<b>Percentage of schools offering course</b>	<b>Percentage of ELs enrolled in schools offering course</b>	<b>Percentage of non-ELs enrolled in schools offering course</b>
<b>Mathematics (grades 7 or 8)</b>			
Algebra I	63	78	77
<b>Mathematics (grades 9-12)</b>			
Algebra I	79	82	88
Geometry	77	80	88
Algebra II	73	79	87
Advanced mathematics	61	71	82
Calculus	44	61	71
All mathematics courses	39	56	65
<b>Science (grades 9-12)</b>			
Biology	78	82	90
Chemistry	66	76	86
Physics	55	70	80
All science courses	52	68	78
<b>AP course (grades 9-12)</b>			
AP Math	36	61	67
AP Science	32	57	63
AP Language	18	50	43
AP Other	42	66	73
Any AP course	46	69	76

**Exhibit reads:** Sixty-three percent of schools offering grades 7 or 8 offered algebra I in those grades; 78 percent of all ELs and 77 percent of non-ELs enrolled in schools offering grades 7 or 8 were enrolled in schools that offered algebra I in those grades.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

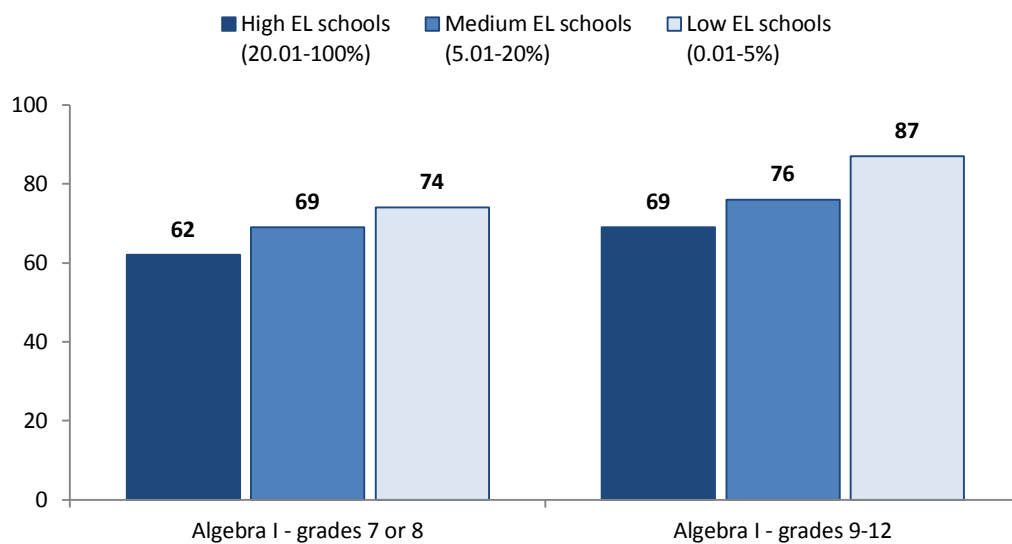
## COURSE OFFERINGS IN LOW, MEDIUM, AND HIGH EL SCHOOLS

### Schools with the highest concentrations of ELs were less likely to offer algebra I than schools with medium or low EL concentrations.

This was true even though ELs as a whole were as likely as non-ELs to be enrolled in schools that offered algebra I (in grade 7 or 8). As shown in Exhibit 2, 62 percent of schools with high concentrations of ELs offered algebra I in grade 7 or 8. In comparison, 69 percent of schools with medium concentrations of ELs, and 74 percent of schools with low concentrations of ELs offered algebra I in grade 7 or 8.

A similar pattern existed at the high school level — schools with high concentrations of ELs offered algebra I in grades 9 through 12 at a lower rate than schools with medium and low EL concentrations (69 percent compared with 76 and 87 percent, respectively).

**Exhibit 2**  
**Percentage of schools offering algebra I, by grade offered and school-level EL concentration: 2011–12**



**Exhibit reads:** In 2011–12, among the schools that offered grade 7 or 8 and had a high concentration of ELs, 62 percent offered algebra I.

Note: Because some schools offer grade 7 or 8 and at least one of grades 9 through 12, they contributed to both the percentages for grade 7 or 8 and the percentages for grades 9 through 12. See Exhibit A1 for the number of schools and students at each level of EL concentration.

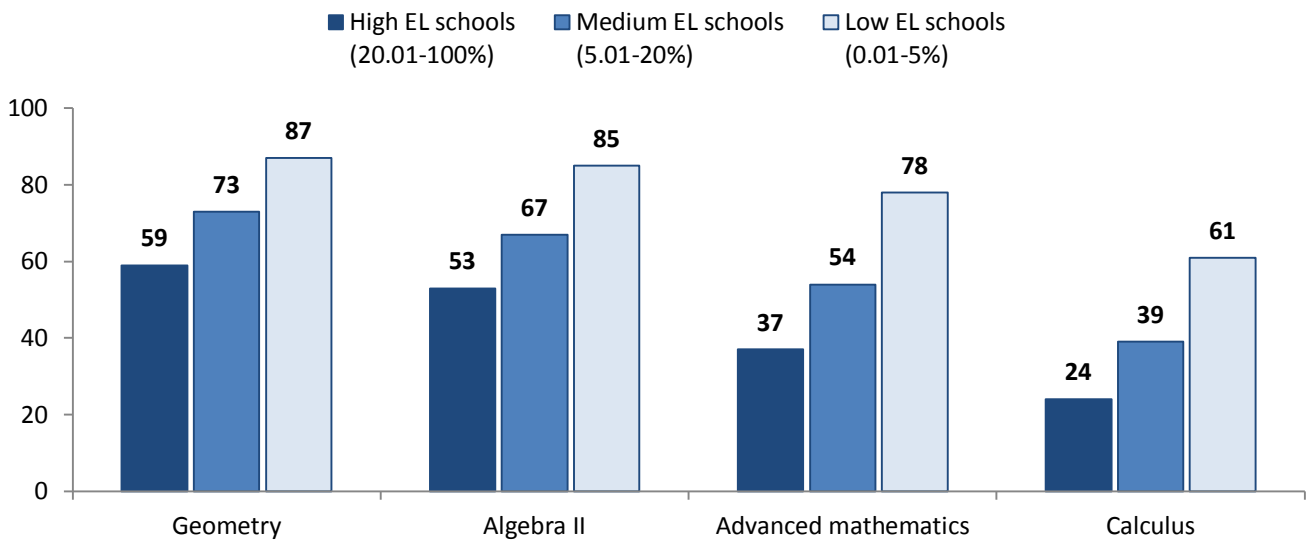
Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

**Schools with the highest concentrations of ELs offered advanced high school mathematics courses at substantially<sup>14</sup> lower rates than schools with low concentrations of ELs.**

Among schools with high concentrations of ELs, 59 percent offered geometry and 53 percent offered algebra II. In comparison, 87 percent of schools with low concentrations of ELs offered geometry and 85 percent offered algebra II.

Overall, schools offered advanced mathematics and calculus at lower rates than they offered geometry and algebra II. The percentage of these schools with high concentrations of ELs that offered advanced mathematics (37 percent) was less than half the percentage of schools with low concentrations of ELs that offered advanced mathematics (78 percent). Similarly, just 24 percent of schools with high concentrations of ELs offered calculus compared with 61 percent of schools with low concentrations of ELs; this represents a gap of 37 percentage points.

**Exhibit 3**  
**Percentage of schools offering mathematics courses in grades 9 through 12, by course offering and school-level EL concentration: 2011–12**



**Exhibit reads:** In 2011–12, among the schools that offered at least one of grades 9 through 12 (or ungraded) and had a high concentration of ELs, 59 percent offered geometry.

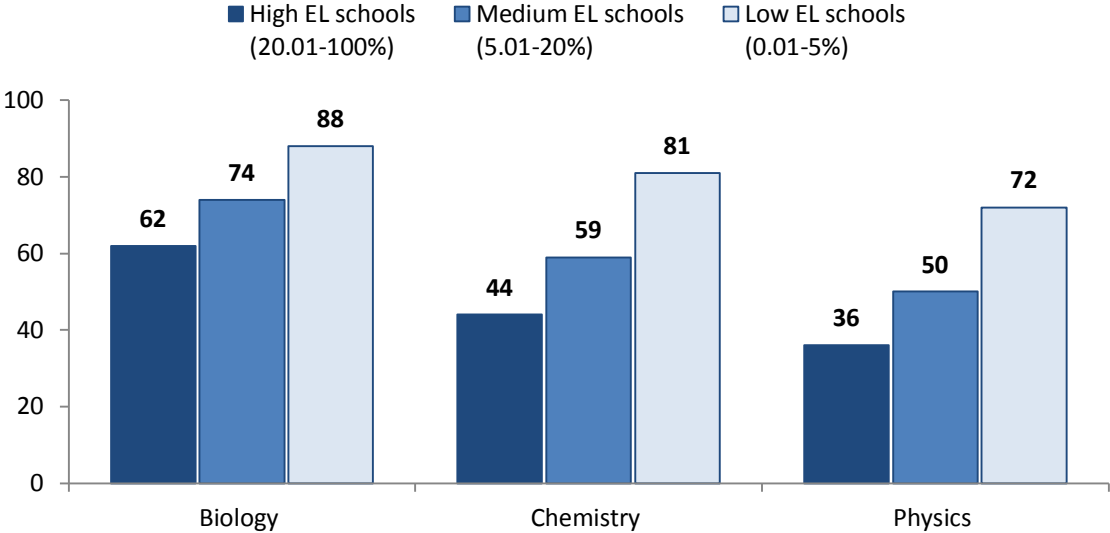
Note: Advanced mathematics courses include trigonometry, elementary analysis, analytic geometry, statistics, and pre-calculus. See Exhibit A1 for the number of schools and students at each level of EL concentration.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

Following the same pattern as the advanced high school mathematics courses, schools with the highest concentrations of ELs offered high school science courses at substantially<sup>15</sup> lower rates than schools with low concentrations of ELs.

Among schools with high concentrations of ELs, 62 percent offered biology, 44 percent offered chemistry, and 36 percent offered physics. In contrast, 88 percent of schools with low concentrations of ELs offered biology, while 81 percent offered chemistry, and 72 percent offered physics.

**Exhibit 4**  
**Percentage of schools offering science courses in grades 9 through 12, by course offering and school-level EL concentration: 2011–12**



**Exhibit reads:** In 2011–12, among the schools that offered at least one of grades 9 through 12 (or ungraded) and had a high concentration of ELs, 62 percent offered biology.

Note: See Exhibit A1 for the number of schools and students at each level of EL concentration.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

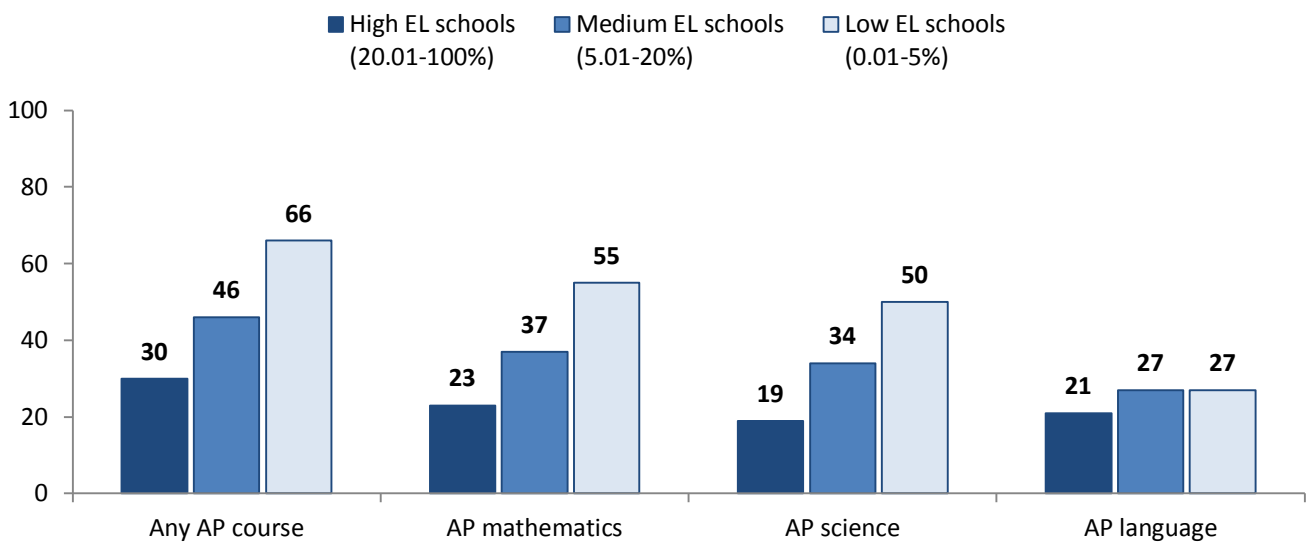
**Schools with the highest concentrations of ELs also offered specific Advanced Placement (AP) courses at substantially lower rates than schools with low concentrations of ELs.**

Thirty percent of schools with high concentrations of ELs offered at least one AP course. This rate is less than half that for schools with low concentrations of ELs (66 percent).

The findings are similar for AP mathematics and science courses — schools with high concentrations of ELs offered AP mathematics and AP science courses at rates less than half the rates of schools with low concentrations of ELs.

The pattern with AP foreign language courses differs slightly. While schools with high percentages of ELs offered AP language courses at rates lower than schools with lower concentrations of ELs, the gap between the percentage for schools with high concentrations of ELs and the percentage for schools with low concentrations of ELs is much smaller, at 6 percentage points (21 percent compared with 27 percent, respectively).

**Exhibit 5**  
**Percentage of schools offering advanced placement (AP) courses in grades 9 through 12, by course offering and school-level EL concentration: 2011–12**



**Exhibit reads:** In 2011–12, among the schools offering at least one of grades 9 through 12 (or ungraded) and had a high concentration of ELs, 30 percent offered at least one AP course.

Note: AP language refers to any foreign language for which schools offer AP testing. See Exhibit A1 for the number of schools and students at each level of EL concentration.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

**The percentage of schools with students taking the SAT or ACT exam was lower among schools with high concentrations of ELs than it was among schools with low or medium concentrations of ELs.**

Fifty-six percent of schools with high concentrations of ELs had any students who took an SAT or ACT exam. In comparison, 73 percent of schools with medium concentrations of ELs and 88 percent of schools with low concentrations of ELs had any students who took an SAT or ACT exam.

## COURSE AND PROGRAM ENROLLMENT (COMPOSITION)

For students in schools that offer challenging academic courses and programs, enrollment in those courses and programs is the next step toward college and career readiness. Students who participate in more rigorous courses are more likely to attend college (and in particular, four-year institutions) and are slightly more likely to graduate from college than students who do not participate.<sup>16</sup> The availability of challenging academic courses and programs, however, does not guarantee that students will enroll in them. Prior research suggests unequal participation by ELs in those courses.<sup>17</sup>

Student participation in rigorous courses is influenced by state, school, and student factors. States set minimum course requirements for high school graduation; many states use these minimum requirements to ensure that students complete rigorous, college-preparatory coursework. For example, 61 percent of states require completion of algebra I for graduation, and 49 percent require completion of biology. Completion of geometry and algebra II are also required in many states (47 percent and 31 percent, respectively).<sup>18</sup> Such course requirements have been shown to influence students' course taking decisions.<sup>19</sup> School resources, such as the availability of college-preparatory counseling and advisement and school policies and procedures for placing students on an academic track, also play a role in determining which courses students take.<sup>20</sup> In addition to students' prior academic performance, tracking decisions may be influenced by students' socioeconomic and other background factors.<sup>21</sup> School staff working with students considered at risk of not graduating from high school may focus on getting students to meet minimum graduation requirements rather than becoming fully prepared for college coursework.<sup>22</sup> Student readiness for advanced coursework, such as prior academic performance or completion of course prerequisites, also plays an important role in course taking decisions.<sup>23</sup> Students' social capital and familiarity with school processes may also play a role in whether students select more rigorous courses.<sup>24</sup>

These factors are compounded by ELs' lower levels of proficiency in English and on state assessments<sup>25</sup> and the effects of being less familiar with or less comfortable using academic counseling resources.<sup>26</sup> Due to these factors, we might not expect to see ELs participating in the most rigorous courses. Research indicates that rather than preparing ELs for postsecondary enrollment, school staff often focus on helping ELs graduate from high school.<sup>27</sup> Therefore, we might expect to see more EL participation in courses required for high school graduation.

This section addresses whether ELs in schools that offer high-level mathematics, science, and AP courses have enrollment in these courses that is comparable to their representation in the student body as a whole (composition). The section also examines the EL and non-EL representation among students who took SAT or ACT exams and among students who participated in International Baccalaureate (IB) or gifted and talented programs. These analyses conclude that, in comparison with their representation in the student body as a whole, ELs are underrepresented in virtually all of the college and career readiness courses and programs examined.

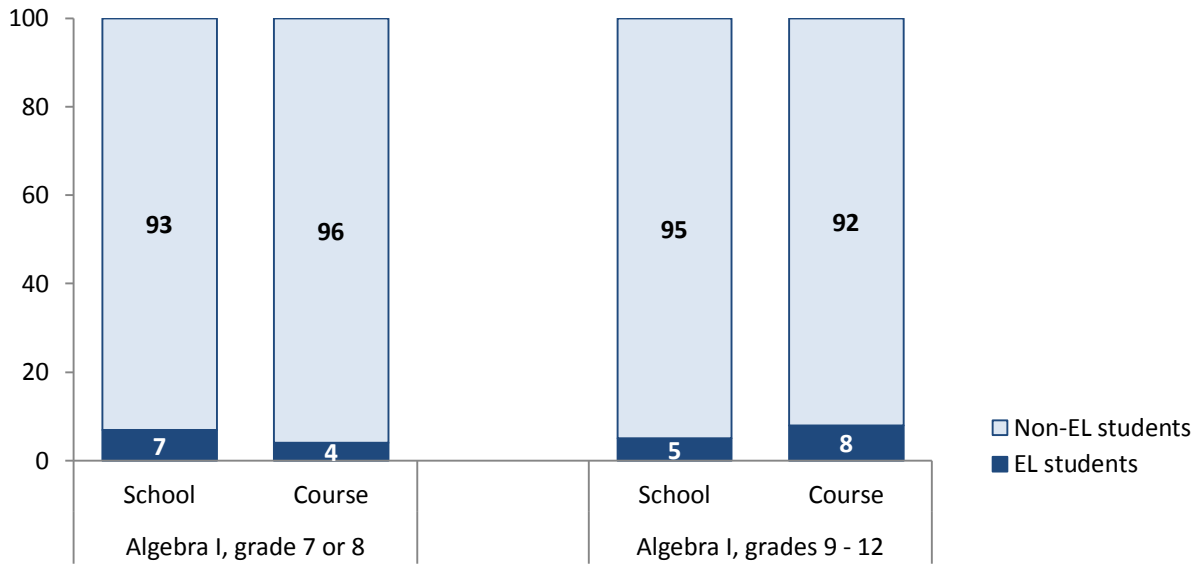


**ELs were underrepresented among the students enrolled in algebra I in grade 7 or 8 and overrepresented among students enrolled in algebra I in grades 9 through 12.**

Seven percent of students enrolled in schools offering algebra I in grade 7 or 8 were ELs. However, just 4 percent of students enrolled in algebra I in those grades were ELs.

Conversely, the percentage of ELs enrolled in algebra I in grades 9 through 12 was 3 percentage points higher than EL enrollment in schools offering algebra I in those grades (8 percent compared with 5 percent).

**Exhibit 6**  
**Student and course enrollment in schools offering algebra I, by English learner status and grades offered: 2011–12**



**Exhibit reads:** In 2011–12, in schools that offered algebra I in grades 7 or 8, 4 percent of students enrolled in algebra I in grades 7 or 8 were ELs, and 96 percent were non-ELs.

Note: See Exhibit A2 for the number of students in schools offering algebra I and the number enrolled in algebra I.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

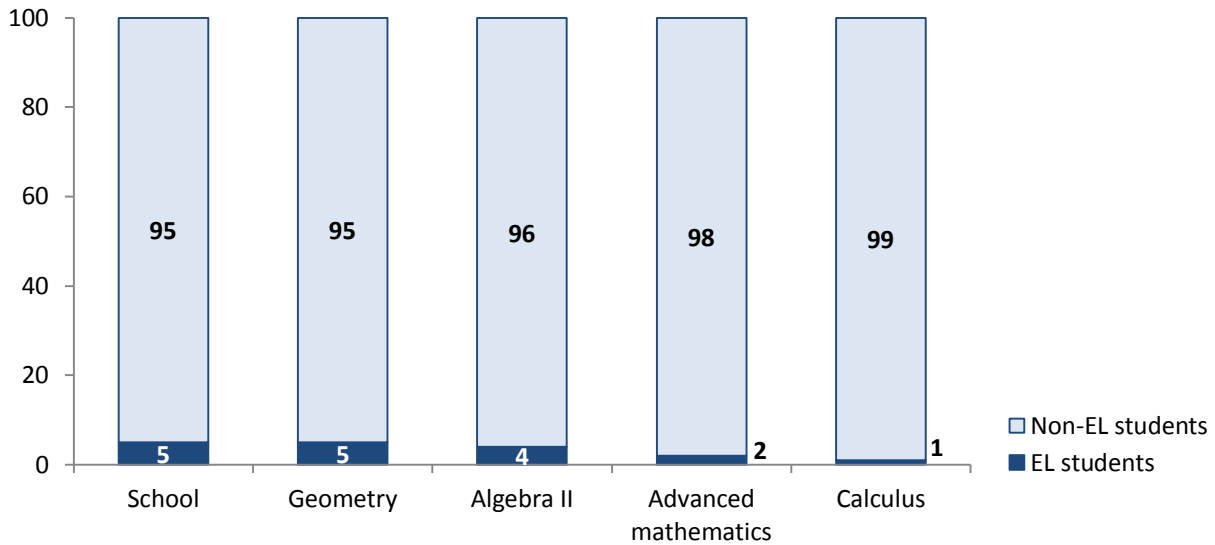
**While ELs were underrepresented in algebra II, advanced mathematics, and calculus courses, they were not underrepresented in geometry courses.**

In geometry, EL course enrollment was equal to EL school enrollment (5 percent). In algebra II however, while ELs made up 4 percent of students enrolled in the course, they made up 5 percent of enrollment in schools that offered the course.

For advanced mathematics and calculus, the EL proportion of course enrollment (2 and 1 percent, respectively) was considerably lower than their proportion of school enrollment (5 percent).

**Exhibit 7**

**Student and course enrollment in schools offering specific mathematics courses beyond algebra I in grades 9 through 12, by English learner status: 2011–12**



**Exhibit reads:** In 2011–12, 5 percent of students enrolled in schools offering mathematics courses beyond algebra I in grades 9 through 12 were ELs, and 95 percent were non-ELs.

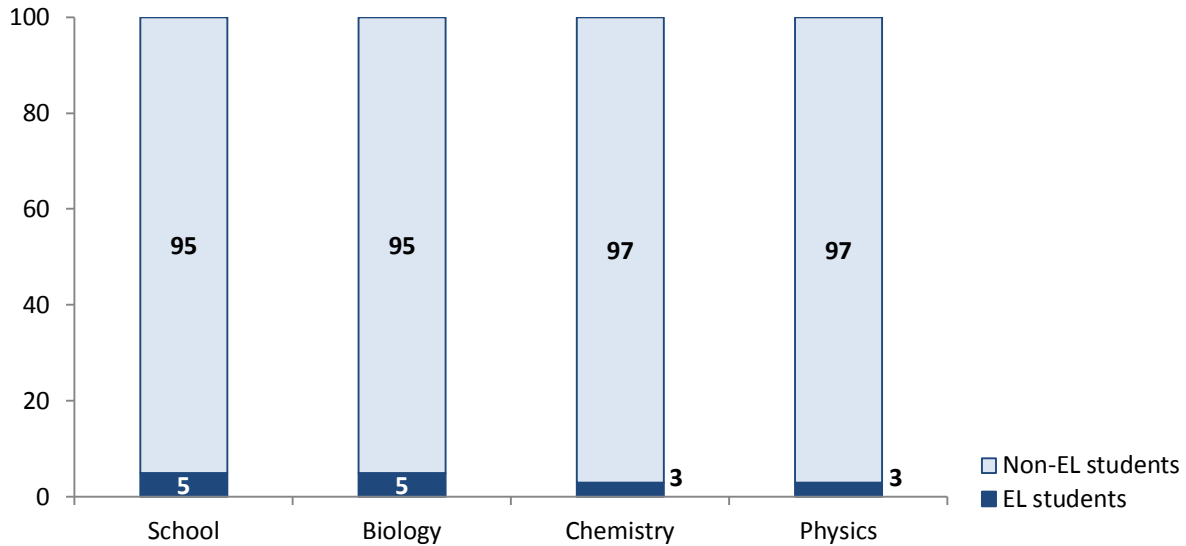
Note: Advanced mathematics courses include trigonometry, elementary analysis, analytic geometry, statistics, and pre-calculus. See Exhibit A2 for the number of students in schools offering each course and the number enrolled in that course.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

**ELs were not underrepresented in biology courses but were underrepresented in chemistry and physics courses.**

In biology, EL course enrollment was equal to EL school enrollment (5 percent). However, for chemistry and physics, ELs comprised just 3 percent of students enrolled in each course compared with 5 percent of students enrolled in the schools offering each course.

**Exhibit 8**  
**Student and course enrollment in schools offering specific science courses in grades 9 through 12, by English learner status: 2011–12**



**Exhibit reads:** In 2011–12, 5 percent of students enrolled in schools offering specific science courses in grades 9 through 12 were ELs, and 95 percent were non-ELs.

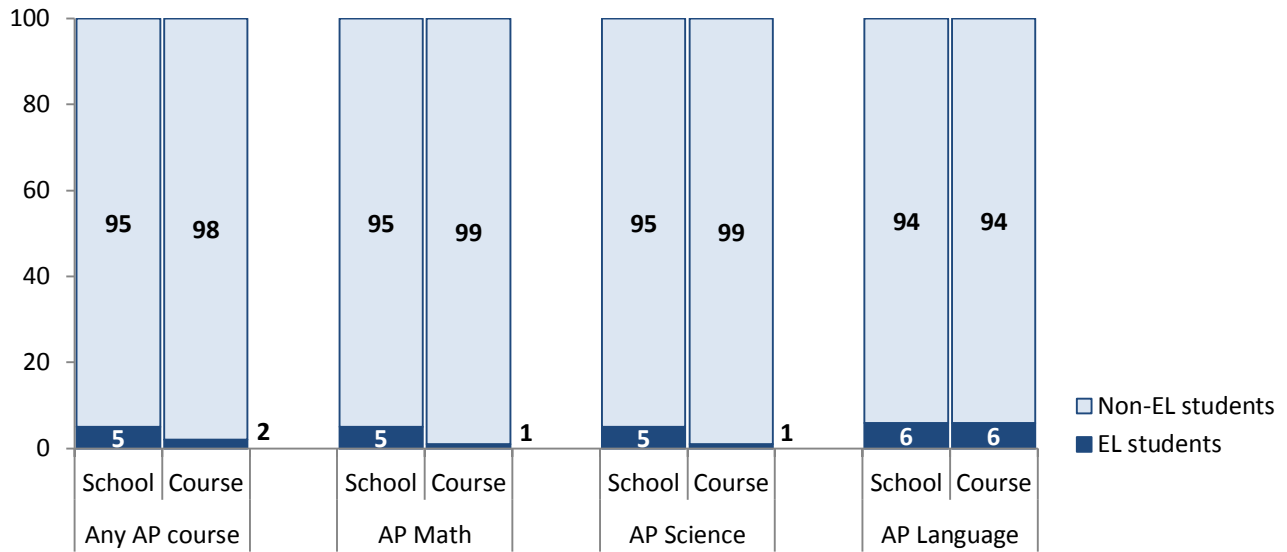
Note: See Exhibit A2 for the number of students in schools offering each course and the number enrolled in that course.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

**With the exception of AP foreign language courses, ELs were underrepresented in AP courses.**

Five percent of students enrolled in schools offering AP courses were ELs. In comparison, just 2 percent of the students enrolled in any AP course were ELs. For AP mathematics and science, just 1 percent of the students enrolled were ELs. For AP foreign language courses, EL course enrollment was equal to EL school enrollment (6 percent).

**Exhibit 9**  
**Student and course enrollment in schools offering Advanced Placement (AP) courses in grades 9 through 12, by English learner status: 2011–12**



**Exhibit reads:** In 2011–12, 5 percent of students enrolled in schools offering any AP course in grades 9 through 12 were ELs, and 95 percent were non-ELs.

Note: AP language refers to any foreign language for which AP testing is offered. See Exhibit A2 for the number of students in schools offering each AP course and the number enrolled in that course.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

**ELs were underrepresented in both gifted or talented (GT) and International Baccalaureate (IB) programs.**

In schools offering GT programs in at least one of grades 7 through 12, ELs represented 7 percent of students enrolled in the schools but only 1 percent of students actually enrolled in those programs.

Similarly, while ELs represented 6 percent of students enrolled in schools offering grades 9 through 12 and offering IB programs, they only represented 3 percent of students enrolled in IB programs.

## ADVANCED PLACEMENT AND COLLEGE ENTRANCE EXAMS

Patterns of student participation and success on Advanced Placement (AP) and college entrance exams are also important indicators of college and career readiness.<sup>28</sup> This section examines EL participation in AP and college entrance exams, as well as their performance on AP exams (measured by passing rates), and compares these findings with those for non-ELs. These analyses revealed that a smaller percentage of ELs than non-ELs took or passed AP exams and that ELs represented a smaller percentage of the students taking SAT or ACT exams than they represented in the student population as a whole.

### Among students who took AP courses, a smaller percentage of ELs than non-ELs took AP exams.

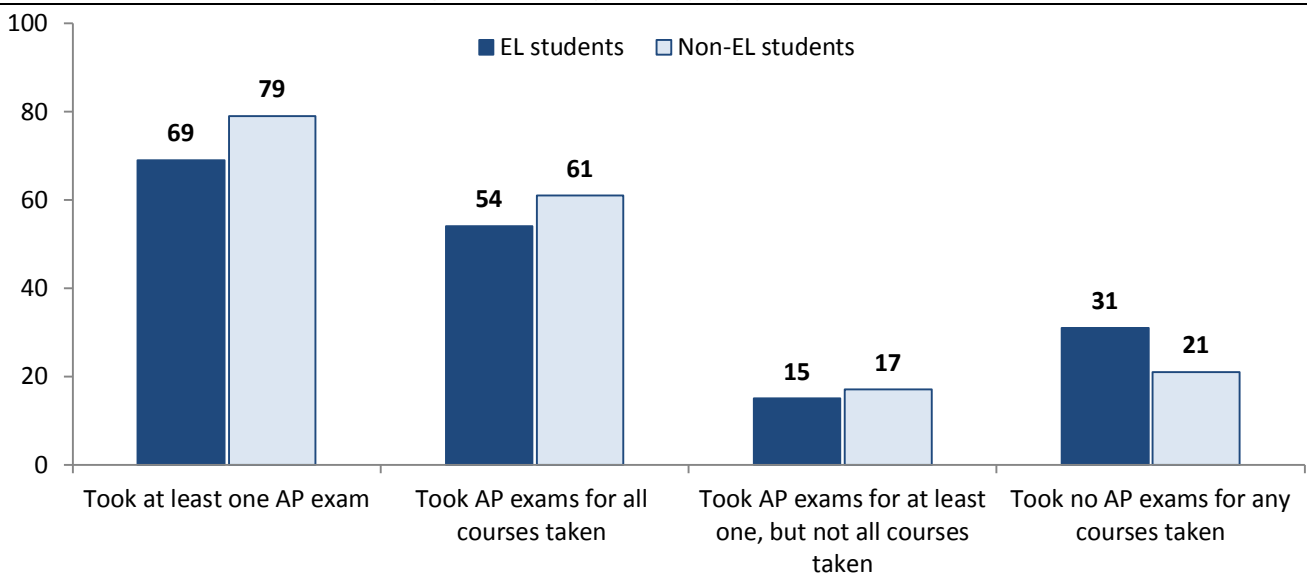
Sixty-nine percent of the ELs who took AP courses took at least one AP exam, and 54 percent took exams for all courses in which they were enrolled.

In comparison, 79 percent of non-ELs who took AP courses took at least one AP exam, and 61 percent took AP exams in all courses in which they were enrolled.

ELs were more likely than non-ELs to take no AP exams for the AP courses in which they were enrolled (31 percent compared with 21 percent).

Exhibit 10

#### Percentage of students taking Advanced Placement (AP) exams, among students taking AP courses (in schools offering AP courses in grades 9 through 12), by English learner status: 2011–12



**Exhibit reads:** In 2011–12, 69 percent of ELs took AP exams for all or some of the advanced placement (AP) courses they took.

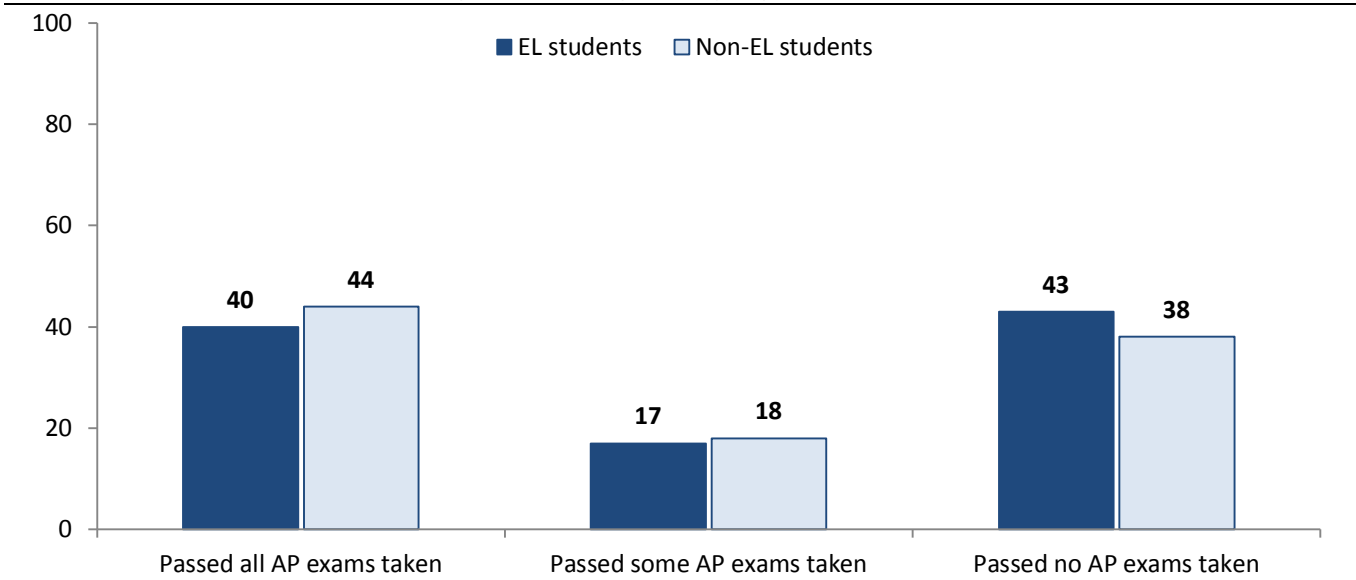
Note: Due to data anomalies, the sum of the number of students reported who (1) took exams for all courses, (2) took exams for one or some courses, and (3) took no exams for courses is used as a proxy for number of students who took AP courses.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

### Among students who took AP exams, a smaller percentage of ELs than non-ELs passed all of their exams.

The percentage of ELs who passed all of their AP exams (40 percent) was four percentage points lower than the percentage of non-ELs who passed all AP exams taken (44 percent). However, ELs who took AP exams were about as likely as non-ELs to pass some (but not all) of those exams (17 percent compared with 18 percent, respectively).

**Exhibit 11**  
**Percentage of students passing AP exams, among students taking AP courses (in schools offering advanced placement (AP) courses in grades 9 through 12), by English learner status: 2011–12**



**Exhibit reads:** In 2011–12, among ELs who took AP exams (in schools offering AP courses in grades 9 through 12), 40 percent passed all AP exams taken.

Note: Due to data anomalies, the sum of the number of students reported who (1) passed all exams taken, (2) passed one or some exams taken, and (3) passed no exams taken is used as a proxy for number of students who took AP exams.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

### ELs were underrepresented among students taking SAT or ACT exams.

ELs represented 5 percent of all students enrolled in schools where at least one student took an SAT or ACT exam but represented only 2 percent of those taking SAT or ACT exams.

## CONCLUSION

As noted in the introduction, the relationship between EL school composition and EL access to and participation in college preparatory courses and programs is complex, involving multiple interrelated student, school, district, and state factors that cannot be disentangled using the available data. Although the CRDC data analyzed in this descriptive brief indicate that ELs have less access to advanced coursework, this finding may reflect the socioeconomic status of ELs. That is, ELs are likely to attend higher poverty schools and, as shown in prior research, high poverty schools are less likely to offer these advanced courses and programs. The analyses in this brief also show that, with the exception of a few courses required in many states for high school graduation (i.e. algebra I, geometry, and biology) and AP foreign language, ELs are underrepresented among students enrolled in high-level mathematics, science, and AP courses. Many factors, including lower levels of proficiency in English and on state assessments, likely influence EL course-taking, and such factors are not easily incorporated into school-level data collections such as the CRDC. To address questions such as those discussed in this brief, and to understand whether, even after they achieve English proficiency, former ELs participate in rigorous coursework at rates lower than other students will require nationally representative student-level data not currently available for analysis.<sup>29</sup> The CRDC data provide an opportunity to begin to understand ELs' academic experiences and identify avenues for further research.

## APPENDIX

**Exhibit A1**  
**Number and percentage of schools and student enrollment, by school EL concentration: 2011–12**

Type of school	Number of schools	Percentage of schools	Number of ELs	Percentage of ELs	Number of non-ELs	Percentage of non-ELs
<b>All schools offering grades 7 or 8</b>	<b>30,328</b>	<b>100</b>	<b>1,027,192</b>	<b>100</b>	<b>13,240,932</b>	<b>100</b>
High EL concentration (20.01-100%)	2,908	10	544,020	53	1,050,395	8
Medium EL concentration (5.01-20%)	5,884	19	360,998	35	3,098,641	23
Low EL concentration (0.01-5%)	11,700	39	122,174	12	6,815,143	51
No ELs (0%)	9,836	32	0	0	2,276,753	17
<b>All schools offering any of grades 9 through 12<sup>1</sup></b>	<b>28,352</b>	<b>100</b>	<b>971,713</b>	<b>100</b>	<b>16,478,237</b>	<b>100</b>
High EL concentration (20.01-100%)	2,022	7	387,231	40	840,153	5
Medium EL concentration (5.01-20%)	5,118	18	423,249	44	3,701,199	22
Low EL concentration (0.01-5%)	11,196	39	161,233	17	9,614,712	58
No ELs (0%)	10,016	35	0	0	2,322,173	14
<b>All schools offering any of grades 9 through 12<sup>2</sup></b>	<b>26,375</b>	<b>100</b>	<b>863,144</b>	<b>100</b>	<b>15,594,199</b>	<b>100</b>
High EL concentration (20.01-100%)	1,732	7	323,789	38	709,785	5
Medium EL concentration (5.01-20%)	4,513	17	385,770	45	3,397,301	22
Low EL concentration (0.01-5%)	10,542	40	153,585	18	9,240,897	59
No ELs (0%)	9,588	36	0	0	2,246,216	14
<b>All schools offering any of grades 7 through 12</b>	<b>48,860</b>	<b>100</b>	<b>1,819,893</b>	<b>100</b>	<b>26,554,707</b>	<b>100</b>
High EL concentration (20.01-100%)	4,220	9	843,861	46	1,727,325	7
Medium EL concentration (5.01-20%)	9,430	19	716,179	39	6,206,021	23
Low EL concentration (0.01-5%)	20,104	41	259,853	14	14,917,885	56
No ELs (0%)	15,106	31	0	0	3,703,476	14

<sup>1</sup> These schools were used in the math, science, and AP courses analyses as well as the analyses of IB programs. They include 2,493 schools that did not offer grades 9 through 12, but offered ungraded.

<sup>2</sup> These schools were used in the SAT/ACT analyses only. They include 516 schools that did not offer grades 9 through 12, but offered ungraded and have at least one high-school-age ungraded student.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.

**Exhibit A2**  
**Course, program, and exam access and composition: 2011–12**

Course offering	Percent of schools that offer course, program, or exam					Students enrolled in schools offering course, program, or exam		EL percentage of enrollment or participation		Non-EL percentage of enrollment or participation	
	All schools	High EL Concentration (20.01-100%)	Medium EL Concentration (5.01-20%)	Low EL Concentration (0.01-5%)	No ELs (0%)	ELs	Non-ELs	School	Course, program, or exam	School	Course, program, or exam
<b>Mathematics courses (7 or 8)</b>											
Algebra I	63	62	69	74	45	797,132	10,183,627	7	4	93	96
<b>Mathematics courses (9-12)<sup>1</sup></b>											
Algebra I	79	69	76	87	75	798,897	14,580,829	5	8	95	92
Geometry	77	59	73	87	70	778,334	14,566,732	5	5	95	95
Algebra II	73	53	67	85	66	770,026	14,378,855	5	4	95	96
Advanced mathematics <sup>2</sup>	61	37	54	78	50	689,499	13,545,912	5	2	95	98
Calculus	44	24	39	61	30	592,699	11,626,379	5	1	95	99
Any mathematics course <sup>3</sup>	84	74	81	91	80	834,322	15,234,967	5	NA	95	NA
All mathematics courses <sup>3</sup>	39	21	35	55	26	545,022	10,635,085	5	NA	95	NA
<b>Science courses (9-12)<sup>1</sup></b>											
Biology	78	62	74	88	73	792,457	14,800,989	5	5	95	95
Chemistry	66	44	59	81	57	733,976	14,135,235	5	3	95	97
Physics	55	36	50	72	43	680,362	13,105,461	5	3	95	97
Any science course <sup>3</sup>	80	64	75	89	75	800,732	14,909,476	5	NA	95	NA
All science courses <sup>3</sup>	52	32	47	70	39	663,751	12,890,164	5	NA	95	NA
<b>AP courses (9-12)<sup>1</sup></b>											
AP Math	36	23	37	55	16	596,539	11,081,344	5	1	95	99
AP Science	32	19	34	50	14	554,424	10,442,690	5	1	95	99
AP Language <sup>4</sup>	18	21	27	27	4	487,653	7,057,988	6	6	94	94
AP Other <sup>5</sup>	42	28	43	62	21	644,894	11,982,681	5	1	95	99
Any AP course	46	30	46	66	26	671,715	12,530,619	5	2	95	98
<b>Other courses or programs</b>											
Gifted or talented (7-12)	49	47	56	60	32	1,146,191	16,344,016	7	1	93	99
International Baccalaureate (9-12) <sup>1</sup>	3	2	5	5	1	86,924	1,281,810	6	3	94	97
SAT/ACT exam (9-12) <sup>6</sup>	76	56	73	88	67	738,498	14,053,208	5	2	95	98

<sup>1</sup> This includes 2,493 schools that did not offer grades 9 through 12, but offered ungraded.

<sup>2</sup> Advanced mathematics courses include trigonometry, elementary analysis, analytic geometry, statistics, and pre-calculus.

<sup>3</sup> Schools in the “any mathematics course” category are schools that offered at least one of the mathematics courses listed (algebra I, geometry, algebra II, advanced mathematics, and calculus). Schools in the “all mathematics courses” category are schools that offered all of the mathematics courses listed. Schools in the “any science course” category are schools that offered at least one of the science courses listed (biology, chemistry, and physics). Schools in the “all science courses” category are schools that offered all of the science courses listed.

<sup>4</sup> AP language refers to any foreign language for which AP testing is offered.

<sup>5</sup> Other AP subjects include all AP courses other than mathematics, science, and foreign language, for example, AP computer science and AP history.

<sup>6</sup> This includes 516 schools that did not offer grades 9 through 12, but offered ungraded and have at least one high-school-age ungraded student.

Source: U.S. Department of Education, Office for Civil Rights, Civil Rights Data Collection (CRDC), 2011–12.



## TECHNICAL NOTES

The Civil Rights Data Collection (CRDC) is a biennial (i.e., every other school year) survey required by the U.S. Department of Education's Office for Civil Rights (OCR). The 2011–12 CRDC was designed to include data about every public school in the nation. Generally, school districts submit their data directly to OCR. The CRDC is a mandatory data collection, authorized under the statutes and regulations implementing Title VI of the *Civil Rights Act of 1964*, Title IX of the *Education Amendments of 1972*, Section 504 of the *Rehabilitation Act of 1973*, and the *Department of Education Organization Act* (20 U.S.C. 3413). The regulations implementing these provisions can be found at 34 CFR 100.6(b); 34 CFR 106.71; and 34 CFR 104.61. To learn more about the Civil Rights Data Collection, visit <http://ocrdata.ed.gov>. The CRDC data used in these analyses are privacy protected by rounding student counts in groups of three to prevent the disclosure of individual student information. For example, student counts from one to three are rounded to two and student counts from four to six are rounded to five. Schools that did not meet data quality requirements for specific analyses were excluded from those analyses.

### EXHIBIT CALCULATIONS

Each analysis in this brief only included schools in the CRDC that offered the specific grades relevant to the analysis. Analyses for algebra I included schools that offered grades 7 through 12 or ungraded. Analyses for all other math courses, all science courses, all AP courses, SAT/ACT, and IB programs included schools that offered grades 9 through 12 or ungraded. Although the CRDC collects gifted and talented data from schools offering all grades, the analyses in this brief include only schools that offered grades 7 through 12 or ungraded.<sup>30</sup> These definitions are different from the one OCR used in their analyses of access to math and science courses in its College and Career Readiness Brief.<sup>31</sup> As a result, some of the percentages in this brief differ from those reported by OCR. The rest of these notes describe the calculations used in the analyses.

#### ***Calculations for course and program access (exhibits 2 – 5)***

School-level EL concentration: The school EL concentration is a classification based on the percentage of students in a school who are classified as EL. The percentage is the number of ELs enrolled in the school, divided by the total number of students enrolled in the school, and multiplied by 100. This percentage is then used to determine the school's EL concentration category: high (20.01 percent-100 percent), medium (5.01 percent-20 percent), and low (0.01 percent-5 percent). This brief compares schools with high concentrations of ELs to schools with low concentrations of ELs in order to examine ELs' disproportionate access to or participation in college preparatory courses and programs. The low EL group of schools serves as the comparison for the analyses in this brief rather than the schools with no ELs because the schools with no ELs appear to be a unique group of schools compared to schools with all other levels of EL concentration, with lower mean enrollment (254, compared to 620, 607, and 573 for the low EL, medium EL, and high EL concentration groups, respectively) and lower mean FTE teacher counts (18, compared to 40, 37, and 33 for the other groups, respectively). The schools with no ELs also tended to be in rural areas (52 percent, compared to 33, 20, and 12 percent for the low, medium, and high EL groups, respectively). Tests of the significance of differences between groups of schools were not conducted because these analyses used population data from all U.S. public schools.

Percentage of schools offering course or program: The percentage of schools offering a course or program is the number of schools that offer the course or program, divided by the total number of schools that offer the grade levels relevant for the course or program, and multiplied by 100.<sup>32</sup>

#### ***Calculations for course enrollment (composition)<sup>33</sup> (exhibits 6 - 9)***

EL (or non-EL) percentage of school enrollment: The number of ELs (or non-ELs) enrolled in the school, divided by the total number of students enrolled in those schools, and multiplied by 100. The calculations included only those schools that offered the course or program.<sup>34</sup>

EL (or non-EL) percentage of course or program enrollment: The number of ELs (or non-ELs) enrolled in the course or program, divided by the total number of students enrolled in the course or program, and multiplied by 100. This calculation included only those schools that offered the course or program.<sup>35</sup>

#### ***Calculations for Advanced Placement and college entrance exams (exhibits 10-11)***

Percentage of ELs (or non-ELs) taking AP courses who took AP exams: These percentages are based on students who took AP courses. Students who took AP courses could take AP exams for all of the AP courses taken, for some of the AP courses taken, or for none of the AP courses taken. A student who took just one AP course and took the AP exam for that course counted as taking AP exams for all AP courses taken. A student who took three AP courses and took the AP exam for just two of those courses counted as taking AP exams for some AP courses taken. Students who took at least one AP course but took no AP exams counted as taking no AP exams. Exhibit 12 includes four types of percentages for ELs (and non-ELs):

The percentage of ELs (or non-ELs) who took at least one AP exam is the number of ELs (or non-ELs) who took AP courses and at least one AP exam, divided by the total number of EL (or non-EL) students who took AP courses, and multiplied by 100.

The percentage of ELs (or non-ELs) who took AP exams for all courses taken is the number of ELs (or non-ELs) who took AP courses and took AP exams for all of those courses, divided by the total number of ELs (or non-ELs) who took AP courses, and multiplied by 100.

The percentage of ELs (or non-ELs) who took AP exams for some courses taken is the number of ELs (or non-ELs) who took AP courses and took AP exams for some but not all of those courses, divided by the total number of ELs (or non-ELs) who took AP courses, and multiplied by 100.

Note that the sum of the percentage of ELs (or non-ELs) who took AP exams for all courses taken and the percentage of ELs (or non-ELs) who took AP exams for some courses taken is equal to the percentage of ELs (or non-ELs) who took at least one AP exam.

The percentage of ELs (or non-ELs) who took AP exams for no courses taken is the number of ELs (or non-ELs) who took AP courses and did not take any AP exams, divided by the total number of ELs (or non-ELs) who took AP courses, and multiplied by 100.

Note that the percentage of ELs (or non-ELs) who took AP exams for all courses taken, plus the percentage of ELs (or non-ELs) who took AP exams for some courses taken, plus the percentage of ELs (or non-ELs) who took AP exams for no courses taken, is equal to 100 percent.

Percentage of ELs (and non-ELs) who passed AP exams: These percentages are based on students who took AP exams. Students who took AP exams could pass all, some, or none of those AP exams. A student who took one AP exam and passed that exam counted as passing all AP exams taken. A student who took three AP exams and passed two of those exams counted as passing some AP exams. Students who took at least one AP exam but passed no AP exams counted as passing no AP exams. These percentages exclude students who took AP courses but no AP exams. Exhibit 13 includes three types of percentages for ELs (and non-ELs):

The percentage of ELs (or non-ELs) who passed all AP exams taken is the number of ELs (or non-ELs) who passed all exams, divided by the total number of ELs (or non-ELs) who took AP exams, and multiplied by 100.

The percentage of ELs (or non-ELs) who passed some AP exams taken is the number of ELs (or non-ELs) who passed some, but not all AP exams taken; divided by the total number of ELs (or non-ELs) who took AP exams; and multiplied by 100.

The percentage of ELs (or non-ELs) who passed no AP exams taken is the number of ELs (or non-ELs) who took but did not pass any AP exams, divided by the total number of ELs (or non-ELs) who took AP exams, and multiplied by 100.

Note that the percentage of ELs (or non-ELs) who passed all AP exams taken, plus the percentage of ELs (or non-ELs) who passed some AP exams taken, plus the percentage of ELs (or non-ELs) who passed no AP exams taken, is equal to 100 percent.

## ENDNOTES

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- <sup>1</sup> Based on the four-year adjusted cohort graduation rate (ACGR). The ACGR is the percentage of students from the original cohort who graduated in four years with a regular high school diploma. Data source: U.S. Department of Education, National Center for Education Statistics, “EDFacts/Consolidated State Performance Report (2011–12),” <http://eddataexpress.ed.gov/index.cfm>.
- <sup>2</sup> U.S. Department of Education, National Center for Education Statistics, “Language Minorities and Their Educational and Labor Market Indicators—Recent Trends (NCES 2004–009),” by Steven Klein, Rosio Bugarin, Renee Beltranena, and Edith McArthur (Washington, DC: 2004). Also see: Connecticut State Department of Education, “College Enrollment, Persistence, and Graduation: Statewide Results,” [http://www.sde.ct.gov/sde/lib/sde/pdf/evalresearch/college\\_enrollment\\_persistence\\_graduation\\_statewide\\_results.pdf](http://www.sde.ct.gov/sde/lib/sde/pdf/evalresearch/college_enrollment_persistence_graduation_statewide_results.pdf).
- <sup>3</sup> Paul Attewell and Thurston Domina, “Raising the Bar: Curricular Intensity and Academic Performance,” *Educational Evaluation and Policy Analysis* 30 (2008): 51–71; Mark C. Long, Dylan Conger, and Patrice Iatarola, “Effects of High School Course-Taking on Secondary and Postsecondary Success,” *American Educational Research Journal* 49 (2012): 285–322.
- <sup>4</sup> To meet the federal definition of Limited English Proficient (ESEA section 9101(25)) students must have difficulty in speaking, reading, writing, or understanding the English language; such difficulty must be sufficient to deny them “the ability to meet the state’s proficient level of achievement on state assessments [ESEA] section 1111(b)(3).”
- <sup>5</sup> Laurie Olsen, “Reparable Harm: Fulfilling the Unkept Promise of Educational Opportunity for California’s Long Term English Learners,” *Californians Together*, <https://www.californianstogether.org/reparable-harm-fulfilling-the-unkept-promise-of-educational-opportunity-for-californias-long-term-english-learners/>; Jamal Abedi, “Classification System for English Language Learners: Issues and Recommendations,” *Educational Measurement: Issues and Practice* 27 (2008): 17–31; Sarah Hooker, Margie McHugh, and Michael Fix, “Critical Choices in Post-recession California: Investing in the Educational and Career Success of Immigrant Youth,” *Migration Policy Institute* (2014), <http://www.migrationpolicy.org/research/critical-choices-post-recession-california-educational-career-success-immigrant-youth>; Rebecca M. Callahan, “Tracking and High School English Learners: Limiting Opportunity to Learn,” *American Educational Research Journal* 42 (2005): 305–28; Rebecca M. Callahan, Lindsey Wilkinson, and Chandra Muller, “Academic Achievement and Course Taking Among Language Minority Youth in US Schools: Effects of ESL Placement,” *Educational Evaluation and Policy Analysis* 32 (2010): 84–117.
- <sup>6</sup> The Civil Rights Data Collection (CRDC) is a biennial survey required by the U.S. Department of Education’s Office for Civil Rights (OCR). The 2011–12 CRDC was designed to include data about every public school in the nation. See the technical notes for more information.
- <sup>7</sup> Comparing non-ELs to students who were ever classified as ELs would be the optimal comparison; however, the CRDC data do not support such comparisons.
- <sup>8</sup> These briefs are available at <http://www2.ed.gov/about/offices/list/opepd/ppss/reports.html>.
- <sup>9</sup> Clemencia Cosentino de Cohen and Beatriz Chu Clewell, “Putting English Language Learners on the Educational Map: The *No Child Left Behind Act* Implemented,” *Urban Institute* (2007), <http://www.giarts.org/sites/default/files/Putting-English-Language-Learners-on-the-Educational-Map.pdf>.
- <sup>10</sup> U.S. Department of Education, “The Toolbox Revisited: Paths to Degree Completion from High School Through College,” by Clifford Adelman, (Washington, DC: 2006), <http://www2.ed.gov/rschstat/research/pubs/toolboxrevisit/index.html>.
- <sup>11</sup> Each analysis in this brief only included schools in the CRDC that offered the specific grades relevant to the analysis. Analyses for algebra I included schools that offered grades 7 through 12 or ungraded. Analyses for all other math courses, all science courses, all AP courses, SAT/ACT, and IB programs included schools that offered grades 9 through 12 or ungraded. Although the CRDC collects gifted and talented data from schools offering all grades, the analyses in this brief included only schools that offered grades 7 through 12 or ungraded.
- <sup>12</sup> The low EL concentration group of schools serves as the comparison rather than the schools with no ELs because the schools with no ELs enrolled appear to be a unique group of schools compared to all other levels of EL concentration. These schools have lower mean enrollment (254, compared to 620, 607, and 573 for schools in the low EL, medium EL, and high EL concentration groups, respectively) and lower mean FTE teacher counts (18, compared to 40, 37, and 33 for low, medium, and high EL concentration groups, respectively). Further, although 32 percent of all schools offering grade 7 or 8 and 35 percent of schools offering grades 9 through 12 fall into this no ELs category, they included just 16 and 13 percent of all students enrolled in schools offering these grades. These no ELs schools also tended to be in rural areas (52 percent, compared to 33, 20, and 12 percent for the low, medium, and high EL groups, respectively). The course offering pattern in this group of schools is unclear. The proportions of schools with no ELs that offer high school mathematics and science courses are similar to those of schools with medium EL concentrations. However, schools with no ELs offered algebra in grades 7 or 8 and all AP courses less often than schools at all other levels of EL concentration (see Attachments 1 and 2). Tests of the significance of differences between groups of schools were not conducted because these analyses used population data from all U.S. public schools.
- <sup>13</sup> Advanced mathematics courses include trigonometry, elementary analysis, analytic geometry, statistics, and pre-calculus.

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- <sup>14</sup> Substantially lower refers to a difference of more than 20 percentage points.
- <sup>15</sup> Substantially lower refers to a difference of more than 20 percentage points.
- <sup>16</sup> Attewell & Domina (2008).
- <sup>17</sup> Callahan et al. (2010).
- <sup>18</sup> Achieve, “States’ Graduation Requirements (2014),” <http://www.achieve.org/graduation-requirements>.
- <sup>19</sup> Kathryn S. Schiller and Chandra Muller, “Raising the Bar and Equity? Effects of State High School Graduation Requirements and Accountability Policies on Students’ Mathematics Course Taking,” *Educational Evaluation and Policy Analysis* 25 (2003): 299–318.
- <sup>20</sup> Laura W. Perna and Elizabeth R. Kurban, “Improving College Access and Choice,” in *The State of College Access and Completion: Improving College Success for Students from Underrepresented Groups*, ed. Laura W. Perna and Anthony P. Jones (New York: Routledge, 2013), 10–33; Jeannie Oakes, *Keeping Track: How Schools Structure Inequality*, 2nd ed. (New Haven: Yale University Press, 2005); Attewell & Domina (2008).
- <sup>21</sup> Jomills H. Braddock and Mary M. Williams, “Equality of Educational Opportunity and the Goals 2000, Educate America Act,” in *Implementing Educational Reform: Sociological Perspectives on Educational Policy*, ed. Kathryn M. Borman, Peter W. Cookson, Jr., Alan R. Sadovnik, and Joan Z. Spade (Norwood, NJ: Ablex, 1996), 89–126; John G. Richardson, “The Variable Construction of Educational Risk,” in *Handbook of the Sociology of Education*, ed. Maureen T. Hallinan (New York: Springer, 2006), 307–323.
- <sup>22</sup> Rebecca M. Callahan and Patricia C. Gándara, “On Nobody’s Agenda: Improving English Language Learners’ Access to Higher Education,” in *Teaching Immigrant and Second-language Students: Strategies for Success*, ed. Michael Sadowski (Cambridge, MA: Harvard Education Press, 2004), 107–127.
- <sup>23</sup> Perna & Kurban (2013).
- <sup>24</sup> Perna & Kurban (2013); Oakes (2005).
- <sup>25</sup> To meet the federal definition of Limited English Proficient (ESEA section 9101(25)) students must have difficulty in speaking, reading, writing, or understanding the English language; such difficulty must be sufficient to deny them “the ability to meet the state’s proficient level of achievement on state assessments [ESEA] section 1111(b)(3).”
- <sup>26</sup> Callahan (2005).
- <sup>27</sup> Callahan & Gándara (2004).
- <sup>28</sup> Michael Chajewski, Krista D. Mattern, and Emily J. Shaw, “Examining the Role of Advanced Placement® Exam Participation in 4-Year College Enrollment,” *Educational Measurement: Issues and Practice* 30 (2011): 16–27; Linda Hargrove, Donn Godin, and Barbara Dodd, “College Outcomes Comparisons by AP and non-AP High School Experiences,” *College Board Research Report No. 2008-03, The College Board* (2008), <http://research.collegeboard.org/sites/default/files/publications/2012/7/researchreport-2008-3-college-outcomes-ap-non-ap-high-school-experiences.pdf>; Krista D. Mattern, Emily J. Shaw, and Xinhui Xiong, “The Relationship between AP® Exam Performance and College Outcomes,” *College Board Research Report No. 2009-04, The College Board* (2009), <http://research.collegeboard.org/sites/default/files/publications/2012/7/researchreport-2009-4-relationship-between-ap-exam-performance-college-outcomes.pdf>; Cecilia Speroni, “Determinants of Students’ Success: The Role of Advanced Placement and Dual Enrollment Programs,” *An NCPER Working Paper, National Center for Postsecondary Research* (2011). [http://www.postsecondaryresearch.org/i/a/document/19811\\_Speroni\\_AP\\_DE\\_paper\\_110311\\_FINAL.pdf](http://www.postsecondaryresearch.org/i/a/document/19811_Speroni_AP_DE_paper_110311_FINAL.pdf).
- <sup>29</sup> The CRDC does not include student counts by grade and, therefore, cannot be used to calculate participation rates. It also does not include data disaggregated by former English learner status.
- <sup>30</sup> The analyses of high level mathematics and science, AP courses, and SAT/ACT exams, and IB programs exclude one school with missing student enrollment.
- <sup>31</sup> OCR’s College and Career Readiness Brief also examined the percentage of high schools offering advanced math and science courses using CRDC data, but defined “high schools” as schools offering grades 10 or 11, rather than schools offering grades 9, 10, 11 or 12. Source: U.S. Department of Education, Office for Civil Rights, “Civil Rights Data Collection: Data Snapshot (College and Career Readiness)” (Washington, DC: 2014), <http://www2.ed.gov/about/offices/list/ocr/docs/crdc-college-and-career-readiness-snapshot.pdf>.
- <sup>32</sup> Offering a course means having at least one class in the course and at least one student taking the course. Offering a program means having at least one student enrolled in the program.
- <sup>33</sup> These calculations also apply to the analysis of students taking SAT/ACT exams (page 14) in the Advanced Placement and College Entrance Exams section of the brief.
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<sup>34</sup> Offering a course means having at least one class in the course and at least one student taking the course. Offering a program means having at least one student enrolled in the program.

<sup>35</sup> Offering a course means having at least one class in the course and at least one student taking the course. Offering a program means having at least one student enrolled in the program.