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RELATIONSHIPS AMONG AND BETWEEN ELL STATUS, DEMOGRAPHIC CHARACTERISTICS, ENROLLMENT HISTORY, AND SCHOOL PERSISTENCE

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Jinok Kim

CRESST

National Center for Research
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UCLA | Graduate School of Education & Information Studies

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Jinok Kim
CRESST/University of California, Los Angeles

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National Center for Research on Evaluation,
Standards, and Student Testing (CRESST)
Center for the Study of Evaluation (CSE)
Graduate School of Education & Information Studies
University of California, Los Angeles
300 Charles E. Young Drive North
GSE&IS Bldg., Box 951522
Los Angeles, CA 90095-1522
(310) 206-1532

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RELATIONSHIPS AMONG AND BETWEEN ELL STATUS, DEMOGRAPHIC CHARACTERISTICS, ENROLLMENT HISTORY, AND SCHOOL PERSISTENCE

Jinok Kim
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Abstract

This report examines enrollment history, achievement gaps, and persistence in school for ELL students and reclassified ELL students as compared to non-ELL students. The study uses statewide individual-level data sets merged from students' entry to exit in the state's public school system for graduate cohorts of 2006, 2007, and 2008. Analytic methods include multilevel logistic regression in which students are nested within districts to study correlates of dropouts. The results reconfirmed other literature showing large achievement and socio economic gaps between ELL and non-ELL students in this state. Also, ELL students reclassified later or who remain in ELL status in high school showed larger gaps compared to ELL students reclassified earlier. High school dropout rates are 25% and 15% respectively for ELL and non-ELL students, although multilevel logistic analyses including grade retention, mobility, suspension, and achievement scores at Grade 8 explained the difference. In addition, among ELL students, unlike findings from non-ELL students, academic achievement and grade retention are stronger predictors while behavioral issues and background variables are not significant. These findings may suggest that school persistence in the ELL population may be a different process than that in the non-ELL population. Finally, results show that after accounting for academic achievement, behavioral issues, background, and district contexts, the longer a student is designated as an ELL, the more likely he or she is to drop out. This relationship may suggest that protracted ELL status leads to higher incidence of dropping out of high schools.

Introduction

This report is part of a larger study to assess the validity of states' existing systems of reclassifying English Language Learners (ELLs) in terms of gross consequences of reclassification. The motivation of this project arises from the simple question of when to exit ELL students. The heart of the problem lies in the tension between assuring sufficient English language proficiency (ELP) in mainstream classrooms and avoiding potential negative consequences of protracted ELL status. As part of the effort, the current study examines the academic outcomes and persistence in school for ELL students and reclassified ELL students as compared to non-ELL students. Specifically, using statewide individual-level data sets merged from students' entry to exit in the state's public school system for three cohorts (graduate cohorts of 2006, 2007, and 2008), the current study empirically examines the following research questions:

1. How do we identify ELL students, and ELL students reclassified in different grades, from the state's annual data system merged across years? What are the percentages of ELL students, and what are the reclassification rates at different grades?
2. What are the characteristics of ELL students and reclassified ELL students as compared to non-ELL students based on the state's annual data system?
3. How do ELL and reclassified ELL students perform on average in reading and math state assessments, as compared to non-ELL students?
4. What are ELL students' histories of school enrollment and ELL status from entry to exit in the state public school system? How different are histories across students reclassified in different grades?
5. What are the predictors of high school dropouts that are related to ELL status? Are there identifiable sources that underlie higher average dropout rates for ELL students than for non-ELL students? How does the timing of ELL reclassification relate to ELL students' dropping out of high school? Do district contexts relate to dropout rates above and beyond students' characteristics?

The first question, though it appears basic, represents one of the most critical challenges in studies of ELLs' reclassification systems. The identification of ELL students, let alone the reclassification of them, is not always consistently and clearly defined. When we merge data across years, it may provide more information, but at the same time it can also provide inconsistency within the data we have. Given the fluctuation in identification and reclassification, it is important to clearly describe the conditions that are used to identify ELL students and reclassified ELL students. The first question addresses this issue.

The second question is concerned with comparisons in demographics, which is addressed through descriptive statistics. Though we can find many such statistics in various reports, few have dealt with comparisons across students reclassified in various grade levels. Lack of such studies may be in part due to the difficulty in defining who are reclassified students as well as when they are reclassified. As previously mentioned, we acknowledge the difficulty and do not contend that there should be one correct definition of ELL or reclassified ELL students. However, there may be more than one fairly reasonable way to approximate ELL status and reclassification status. As will be seen in this report, findings from these descriptive comparisons in fact provide a way to check whether our methods of identification and/or state's reclassification systems show any irregular pattern, and from the findings we can infer what the identification and reclassification systems would have been.

The third question is concerned with achievement gaps between ELLs and non-ELLs. This has been examined in various literatures, and the findings of large magnitudes of achievement gaps have been a cause for a concern. We at the National Center for Research on Evaluations,

Standards, and Student Testing (CRESST) have examined achievement gaps not only between ELLs and non-ELLs but also including reclassified ELLs in a cross-sectional study (Kim & Herman, 2009). We also conducted longitudinal studies and tracked achievement trends of ELLs, reclassified ELLs, and non-ELLs (Kim & Herman, 2010). The longitudinal study was a part of this current project and was conducted using data from a different state than the state in this study. In the longitudinal study, we aimed to examine the effect of reclassification on the students' subsequent achievement in mainstream classrooms. The state we examine in this study did not have annual assessment data available to us since, for the graduate cohorts of 2006, 2007, and 2008, state assessment was administered three to four grades at most. Therefore, we report basic descriptive statistics for the achievement gaps of reclassified ELLs and ELLs compared to non-ELLs. In this study, we do not attempt to make causal interpretations between reclassification and subsequent achievement.

The fourth question attempts to delineate the school history of ELLs and reclassified ELL students, such as when they entered and when and how they exited the state's public schools and how many years and in which grades they were identified as ELLs. Examining this question was possible because the enrollment data were available from entry to exit and merged across all years. For many students, we had data available from kindergarten (or preschool) to their graduation at 12^{th} grade. As will be seen, this generates important variables in studying ELL students and reveals potentially important facts that warrant attention. Although the dataset from this state did not allow for a longitudinal study of academic achievement in relation to reclassification, it helped us examine other questions by making available the students' history for all grade spans.

The fifth question is concerned with the relationships between ELL students' reclassification and persistence in school. We start with a broad analysis looking at the correlates of dropout in the entire population and narrow down to more specific analyses for ELL students. These sets of analyses aim to examine whether dropping out of school is a similar process between ELL and non-ELL students. Second, we examine how differences in remaining as an ELL student versus getting reclassified relate to differences in chances of dropping out, for students who have similar academic levels or experiences in school. As will be seen, we use a variable created from the enrollment history of ELL students. Lastly, we conduct analysis that take into account the nested data structure in order to see whether district context or environment is associated with dropout rates above and beyond individual factors.

The rest of this report outlines methods, and presents findings for each research question.

1. How do we identify ELL students, and ELL students reclassified in different grades, from the state's annual data system merged across years? What are the percentages of ELL students, and what are the reclassification rates at different grades?

We defined ELL students as those who were identified as Limited English Proficient (LEP) in any year during their school enrollment. Thus, some students identified as ELLs may have been LEP in only one year of their schooling, while other students identified as ELLs may have been LEP throughout their school years. Table 1 presents the number of non-ELL and ELL students for three cohorts, graduation classes of 2006, 2007, and 2008. The average percentage of ELLs across all three cohorts is 5.7%. The percentages are similar across three cohorts but tend to be slightly greater in more recent cohorts: 5.5% for the class of 2006, 5.6% for the class of 2007, and 6.0% for the class of 2008.

Table 1

Frequencies and Percentages (in parentheses) of Non-ELL and ELL students by Graduation Year

Graduation year	Non-ELL	ELL	Total
2006	8,482	490	8,972
	(94.5)	(5.5)	
2007	8,852	529	9,381
	(94.4)	(5.6)	
2008	9,216	592	9,808
	(94.0)	(6.0)	
	26,550	1,611	28,161
	(94.3)	(5.7)	

We identified the reclassified years of ELL students based on the last year of LEP status. For example, if a student was recorded as LEP in the 6th grade, but no longer classified as LEP in the following grades, we identified the student as reclassified in Grade 6.

Table 2 shows the number of ELL students reclassified in different grades in the three respective cohorts. In all three cohorts, a few consistent patterns emerge about the reclassification. First, about half of the ELL students remained classified as ELL students in high schools (i.e., Grades 9 through 12). Second, among the other half of the ELL students, about one third were reclassified in elementary schools (i.e., through Grade 5) and the other two thirds were reclassified in middle schools (i.e., Grades 6 to 8).

Table 2

Number of Students Reclassified in Different Grades for Each Cohort

Grade Reclassified	2006			2007			2008		
	N	%	Cumulative %	N	%	Cumulative %	N	%	Cumulative %
Before Grade 2	54	11.0	11.0	39	7.4	7.4	44	7.4	7.4
Grades 3-4	34	6.9	18.0	52	9.8	17.2	22	3.7	11.1
Grade 5	15	3.1	21.0	6	1.1	18.4	22	3.7	14.9
Grade 6	3	0.6	21.6	15	2.8	21.2	165	27.9	42.7
Grade 7	5	1.0	22.7	148	28.0	49.2	28	4.7	47.5
Grade 8	149	30.4	53.1	47	8.9	58.1	9	1.5	49.0
Grade 9 or after	230	46.9	100.0	221	41.9	100.0	302	51.0	100.0

Thus, the number of reclassified ELL students was fairly equally distributed across the three cohorts. However, note the exception across each grade in the middle school grades. In the middle grades, a majority of students were reclassified in Grade 8 for the class of 2006, in Grade 7 for the class of 2007, and in Grade 6 for the class of 2008. This indicates that distinctively more ELL students were LEP and reclassified in 2002 (these students correspond to Grades 8, 7, and 6, respectively, for the years of 2006, 2007, and 2008). This may suggest the possibility of an abrupt change in state practices or policies around ELL students in the year of 2002. Thus, students who were ELLs and reclassified in this specific year may include students who are less typical of students who are reclassified in those grades in other years. Specific information with regard to changes in state ELL policies would require correspondence with state personnel.

2. What are the characteristics of ELL students and reclassified ELL students as compared to non-ELL students based on the state's annual data system?

Based on the state's annual data system, we examined descriptive statistics of non-ELL versus ELL students, as well as descriptive statistics among ELL students by reclassification status. This state has a relatively small enrollment size; it also has a relatively smaller percentage of ELL students. Given the small sample sizes in the ELL student population, we collapsed three cohorts into one analysis whenever exploratory analysis indicated consistent results across three cohorts. Table 3 presents descriptive statistics of variables that are available from the state data set, by ELL status, for all three cohorts combined.

In terms of racial composition, this state mainly consists of two races, with White and Black students composing 60 and 30 percent of the student population, respectively. The ethnic

composition of ELL students are 66% percent Hispanic, 17% Asian, 11% Black, and 7% White. This indicates that a majority of the ELL students are Hispanic, although the proportion may not be as high as some other states. In some other states, the percentage of Hispanic students among the ELL population is about or well over 80% (see, e.g., Kim & Herman, 2009).

Table 3

Demographics of All Students in Three cohorts by ELL Status

Variable	All	Non-ELL	ELL
(N)	(28,179)	(26,567)	(1,612)
Female	48.1	48.2	47.2
Indian	0.3	0.4	0.1
Black	29.7	30.8	10.7
Asian	2.6	1.8	16.6
Hispanic	6.6	3.0	65.8
White	60.7	64.0	6.6
FRL	40.4	38.3	74.3
Sped	14.9	15.2	10.9
Dropout	15.8	15.2	24.5
Suspension	29.6	29.7	28.2
Retention	37.6	37.1	45.9
Mobility	34.5	34.2	38.8

Note. FRL = Free or reduced lunch; Sped = Special education

ELL students show more disadvantages in many demographics. Compared to non-ELL students, higher proportions of ELL students receive free or reduced lunch, drop out of high school, are retained in numerous grade levels, and move to other schools during their schooling. The free or reduced lunch status shows a striking difference: 38% of non-ELLs receive free or reduced lunch compared to 74% of ELL students. Other variables do not show as great a disparity, but their differences are nonetheless considerable. A quarter (25%) of ELL students drops out of high school, as compared to 15% of non-ELL students. ELL students have also been retained more (46% versus 37%) and have moved to other schools more (39% versus 34%).

Table 4 presents descriptive statistics of the same set of variables by reclassification status, for all three cohorts combined. For brevity of presentation, we further categorized the reclassification status: (a) reclassified in Grade 2 or before; (b) reclassified in Grades 3 to 5; (c)

reclassified in middle school (Grades 6 to 8); and (d) are ELL students in high school (Grades 9 to 12). The first row of the table shows that, across all three grades, the percentage of students reclassified in Grade 2 or before is 8.5% (N = 137); the percentage of those reclassified between Grade 3 to 5 is 9.4% (N = 151); the percentage of students reclassified in middle school is 35% (N = 569); and the percentage of students who are ELLs in high schools is 47% (N = 753). More detailed division of frequencies by cohort and by reclassified grades are shown in Table 2.

Table 4

Demographics of ELL Students in Three cohorts and By Reclassification Status

Variable	All ELL	Reclp 1	Reclp 2	Reclp 3	Reclp 4
(N)	(1,612)	(137)	(151)	(569)	(753)
Female	47.2	42.3	44.4	48.3	47.9
Indian	0.1	0.7	0.0	0.2	0.0
Black	10.7	12.4	12.6	9.8	10.8
Asian	16.6	20.4	7.9	21.8	13.8
Hispanic	65.8	54.0	72.8	59.6	71.3
White	6.6	12.4	6.6	8.6	4.0
FRL	74.3	66.4	79.5	68.4	79.0
Sped	10.9	11.7	14.6	12.0	9.2
Dropout	24.5	15.3	21.9	17.4	32.1
Suspension	28.2	28.1	35.1	27.6	27.8
Retention	45.9	51.1	48.3	38.3	50.2
Mobility	38.8	53.3	55.6	43.2	29.2

Note. FRL = Free or reduced lunch; Reclp 1 = Reclassified in Grade 2 or before; Reclp 2 = Reclassified in Grades 3–5; Reclp 3 = Reclassified in middle school; Reclp 4 = ELL students in high school; Sped = Special Education

Table 4 shows a rough trend among students reclassified in early grades versus students who are ELLs in high schools. Students reclassified earlier have more favorable backgrounds or outcomes compared to students reclassified later and compared to ELL students in high schools, as can be seen from the free or reduced lunch or dropout status. Note that students who are reclassified in middle school show results that are inconsistent with the overall trend. The middle school category has less students receiving free or reduced lunch and less students who drop out; their percentages in these categories are more similar to those reclassified in Grade 2 or before. This may have resulted from the difference in state policy in abruptly identifying and

reclassifying many ELL students in 2002. Table 4 also shows that the high rate of retention, with the average of 46% retained, is more similar across the reclassification categories, again with the exception of the category of middle school reclassification. High school ELL students have the lowest rates of mobility. This may be due to the fact that many high school ELL students are many recently-arrived students (see following sections), which means that they have attended fewer grade levels in the state school system with less time to move to other schools or districts.

3. How do ELL and reclassified ELL students perform on average in reading and math state assessments, as compared to non-ELL students?

Table 5 shows the descriptive statistics of state math assessment scores by ELL status for all three cohorts combined. First, note the sample size (the "N" column). Tests are taken by most students in Grade 8, followed by Grade 10 and Grade 5, regardless of ELL status. Fewer tests are taken in Grade 9. The small sample size in Grade 3 is due to the fact that the earliest cohort, the graduate class of 2006, did not take the math assessment.

Table 5

Descriptive Statistics of Math Assessment Scores by ELL Status

Variable	N	Mean	SD	Min	Max
For Non-ELL students					
Math3	11,511	418.63	41.25	248	605
Math5	19,968	457.72	41.06	305	656
Math8	22,706	498.90	39.36	280	696
Math9	1,298	494.97	36.10	405	665
Math10	20,516	535.34	40.61	394	757
For ELL students					
Math3	408	398.69	39.67	307	530
Math5	743	442.61	39.17	331	554
Math8	1,162	487.74	38.82	394	695
Math9	117	484.46	31.80	412	583
Math10	1,082	525.09	42.02	385	750

Note. Math3, Math5, Math8, etc. = Standardized math achievement scores at Grade 3, 5, 8, etc.

Although more students took math assessments in Grades 8 and 10, the non-ELL and ELL sample sizes still fall fairly short of their particular population sizes, each being 26,567 and 1,612, respectively (see Table 3). The extent of falling short is differential between ELL and

non-ELL students. Based on the highest sample size, which is in Grade 8 for both ELL and non-ELL students, the rate of students who were not tested is a little over 10% for non-ELL students, while it is close to about a quarter for ELL students. This is consistent in reading and math assessments.

The population sizes of over 26,000 and 1,600 for non-ELL and ELL students are based on students who have enrolled in any time in the state's public school system, thus some of these students may not have attended public schools in the state for the given testing year. For example, they may have moved to other states or to private schools in the state. Or they may have dropped out of high school or did not take the tests while attending the schools. Students who did not take the tests for various reasons while attending schools may be composed of students who tend to be more low-performing. If these students had taken the tests, the mean scores would have likely been lower than they are with those missing. It is notable that ELLs have more than two times the rate of missing test-takers than those of non-ELLs.

In reading, the average gaps between ELL and non-ELLs are about 20 points in Grades 5, 8, and 10, which is about one half of one standard deviation (SD) of reading test scores in all three grades. For math, the average gaps between ELL and non-ELLs are about 15 points, 10 points, and 10 points, respectively, for Grades 5, 8, and 10, which is about one fourth of one SD of math test scores in all three grades. These magnitudes of achievement gaps appear to be relatively smaller than findings from other studies. However, the pattern across content areas emerges consistent with findings from other studies: greater magnitudes of gaps in reading than in math (see, e.g., Kim & Herman, 2009).

Table 6 shows the descriptive statistics of state math assessment scores by reclassification status for all three cohorts combined. We used four categories of reclassification status following the previous section: (a) reclassified in Grade 2 or before, (b) reclassified between Grades 3 and 5, (c) reclassified in middle school (Grades 6 to 8), and (d) ELL students in high school (Grades 9 to 12).

Table 6

Descriptive Statistics of Math Assessment Scores by Reclassification Status

Variable	N	Mean	SD	Min	Max
Reclassified in Grade 2 or before					
Math3	71	406.49	38.07	324	486
Math5	124	453.64	37.65	354	548
Math8	127	497.42	36.28	427	668
Math9	9	505.78	35.52	459	583
Math10	100	534.78	40.45	463	670
Reclassified in Grades 3 through 5					
Math3	74	402.73	33.98	314	486
Math5	134	439.17	35.52	331	510
Math8	138	484.16	31.50	418	574
Math9	10	501.60	22.98	471	545
Math10	113	523.18	34.53	416	626
Reclassified in Grades 6 through 8					
Math3	209	400.80	40.89	307	530
Math5	392	447.13	38.66	351	554
Math8	543	496.96	40.51	400	695
Math9	27	492.15	32.72	430	551
Math10	448	537.50	45.47	385	750
ELLs during high school					
Math3	52	371.75	32.91	309	480
Math5	91	413.11	34.44	352	517
Math8	352	471.32	33.84	394	667
Math9	71	476.42	29.63	412	545
Math10	419	510.02	35.11	434	683

Note. Math3, Math5, Math8, etc. = Standardized math achievement scores at Grade 3, 5, 8, etc.

The average scores for Grades 5, 8, and 10 reflect the expected trend of high scores earned by ELL students reclassified earlier and decreasing scores for ELL students reclassified later (the test was taken by most students in these grades). Specifically, students who were reclassified in Grade 2 or before perform almost as well as non-ELL students. Students who were reclassified later have lower average scores. Students who were not reclassified until high school show the

lowest average performance, with considerable gaps compared to their non-ELL peers. The magnitudes of achievement gaps range from 0.8 to 1 SDs.

The exception for ELL students reclassified in middle school again emerges. The ELL students reclassified in middle school do not follow this pattern and show average scores close to non-ELL students. In fact, the average math test score of these students at Grade 10 is higher than that of non-ELL students in math and close to that of non-ELL students in reading. A majority of these students are the students who were identified and reclassified in large numbers in 2002. As noted repeatedly with the results so far, these may include students not as typical to ELL students.

As for ELL students in high schools, the achievement levels are not only low—as noted, there were gaps of 0.8 to 1 SDs when compared to non-ELLs—but the proportion of students who took the test is also low. For the test which most ELL students took (the test at Grade 10), only 56% of these students took the state math assessment. The other 44% of the students who did not take the test may include students who dropped out of school earlier and students who were attending school at the time but chose not to take the test. If these students had been included in the sample, the average gaps may have been larger.

4. What are the ELL students' history of school enrollment and ELL status from entry to exit in the state public school system? How different are the histories across students reclassified in different grades?

Merging the state annual data sets across all possible grades in the state's school system provides a unique opportunity to examine the history of a student in the state public schools. For example, we can see at which grade a student enters a public school in the state, when the student exits, how he or she exits, whether the student had been an ELL, and if so, when (i.e., at which grades) he or she had been an ELL. Making use of this opportunity, this section presents descriptive statistics of variables created to describe such histories. Specifically, we examine three subgroups of ELLs based on reclassified grades: (a) ELLs reclassified during or before elementary school, (b) ELLs reclassified during middle school, and (c) ELLs in high schools.

History of ELL Students Reclassified in Elementary School (Grade 5 or before)

Table 7 shows the cross tabulation of the first grades students entered in a state's school system and the last grades the students completed in a state's school. A majority of these students (80%) started school in the state at Grade 1 or before in kindergarten or preschool, and more than 90% of these students started school in the state by Grade 2.

Table 7

Cross Tabulation of the First and Last grade in State Public Schools for ELL Students Reclassified During Elementary School Grades or Before

Grade student entered school	Last Grade Student Attended a State Public School				
	9	10	11	12	Total
Pre-K	1	1	2	8	12
	0.35	0.35	0.69	2.78	4.17
Kindergarten	30	11	21	127	189
	10.42	3.82	7.29	44.1	65.63
Grade 1	7	2	2	21	32
	2.43	0.69	0.69	7.29	11.11
Grade 2	3	3	1	20	27
	1.04	1.04	0.35	6.94	9.38
Grade 3	4	2	0	11	17
	1.39	0.69	0.00	3.82	5.90
Grade 4	1	0	0	6	7
	0.35	0.00	0.00	2.08	2.43
Grade 5	0	1	1	2	4
	0.00	0.35	0.35	0.69	1.39
	46	20	27	195	288
	15.97	6.94	9.38	67.71	100.00

Note. Inside parentheses are cell, column, row percentages.

Although a large percentage of these students (about 70%) finish school in 12th Grade, 16%, 7%, and 9% stopped attending school in the state in Grades 9, 10, and 11, respectively. Students who stopped attending school earlier than 12th Grade (less than 100 students overall) include students who dropped out of high school and other students (e.g., moved out of state).

Table 8 presents the number of years in which students were identified as LEP. About forty percent of these students had been identified as LEP for only one year. A majority (about 80%) had been identified as LEP for three years or less.

Table 8

Frequency of the Number of Years in Which Students are marked as LEP for ELL Students Reclassified in Elementary School Grades

Number of Years a Student is Marked as LEP	Frequency	Percent	Cumulative Percent
1	118	40.97	40.97
2	60	20.83	61.81
3	42	14.58	76.39
4	38	13.19	89.58
5	19	6.60	96.18
6	10	3.47	99.65
9	1	0.35	100.00

History of ELL Students Reclassified in Middle School (Grades 6 to 8)

Table 9 shows the cross tabulation of the ELL students' first and last grades in the state's school system. About half of these students started school in the state in Grade 1 or even before in kindergarten or preschool. From Grade 2 and on, the percentage of students who started school in the state at each grade is fairly consistent at 6–10%.

Table 9

Cross Tabulation of the First and Last Grade in State Public Schools for ELL Students Reclassified During Middle School Grades

Grade Student Entered School	Last Grade Student Attended a State Public School					
	8	9	10	11	12	Total
Pre-K	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	2 (0.4)	3 (0.5)
K	1 (0.2)	28 (4.9)	24 (4.2)	20 (3.5)	161 (28.3)	234 (41.1)
1	0 (0.0)	6 (1.1)	5 (0.9)	3 (0.5)	34 (6.0)	48 (8.4)
2	1 (0.2)	7 (1.2)	4 (0.7)	3 (0.5)	27 (4.3)	42 (7.4)
3	0 (0.0)	7 (1.2)	4 (0.7)	3 (0.5)	25 (4.4)	39 (6.9)
4	0 (0.0)	5 (0.9)	2 (0.4)	2 (0.4)	36 (6.3)	45 (7.9)
5	0 (0.0)	7 (1.2)	1 (0.2)	3 (0.5)	33 (5.8)	44 (7.7)
6	0 (0.0)	5 (0.9)	4 (0.7)	3 (0.5)	47 (8.3)	59 (10.4)
7	0 (0.0)	3 (0.5)	4 (0.7)	1 (0.2)	24 (4.2)	32 (5.6)
8	1 (0.2)	5 (0.9)	4 (0.7)	3 (0.5)	10 (1.8)	23 (4.0)
Total	3 (0.5)	73 (12.8)	52 (9.1)	42 (7.4)	399 (70.1)	569 (100.0)

Note. Inside parentheses are cell, column, row percentages.

A majority of these students (70%) finish school in 12th grade. Thirteen percent, 9%, and 7% of the students stopped attending school in Grades 9, 10, and 11, respectively. Students who stopped attending a state's school earlier than 12th Grade (more than 150 students overall) include students who dropped out of high school and other students (e.g., moved out of state).

Table 10 presents the number of years students were identified as LEP. About a quarter (25%) of these students have been identified as LEP for only one year; about a half (50%) have been LEP for one or two years. A majority (over 70%) have been identified as LEP for four years or less.

Table 10

Frequency of the Number of Years in which Students are Marked as LEP for ELL Students Reclassified in Middle School Grades

Number of Years	Frequency	%	Cum. %
1	142	24.96	24.96
2	126	22.14	47.10
3	83	14.59	61.69
4	56	9.84	71.53
5	47	8.26	79.79
6	45	7.91	87.70
7	32	5.62	93.32
8	23	4.04	97.36
9	13	2.28	99.65
10	2	0.35	100.00

History of Students Who Were ELLs in High School (Grades 9 to 12)

Table 11 shows the cross tabulation of the first grades students enrolled in a state's school and the last grades students attended a state's school. Over half of these students started school in the state in Grades 7, 8, and 9, with most started in Grade 9 (about 40%). This indicates that more than half of students who are identified as ELLs in high schools are recently-arrived students. Less than 15% of students started in school in the state at Grade 3 or earlier. From Grades 4 to 6, there is a fairly consistent percentage of students (5-7%) who started school in the state at each grade. Based on these percentages, we may infer that more than 50% of ELL students in high schools are recently-arrived students, while significant percentage of ELL students in high schools are long-term ELLs.

Table 11

Cross Tabulation of First Year Grade and Last Year Grade in the State Public School System for ELL Students in High Schools

	Last Grade Student Attended a State Public School				
First Grade Attended	9	10	11	12	Total
Pre-K	0	0	1	1	2
	(0.0)	(0.0)	(0.1)	(0.1)	(0.3)
Kindergarten	15	9	4	20	48
	(2.0)	(1.2)	(0.5)	(2.7)	(6.4)
1	6	0	1	14	21
	(0.8)	(0.0)	(0.1)	(1.9)	(2.8)
2	7	0	2	7	16
	(0.9)	(0.0)	(0.3)	(0.9)	(2.1)
3	6	8	2	6	22
	(0.8)	(1.1)	(0.3)	(0.8)	(2.9)
4	9	9	0	18	36
	(1.2)	(1.2)	(0.0)	(2.4)	(4.8)
5	19	3	5	21	48
	(2.5)	(0.4)	(0.7)	(2.8)	(6.4)
6	13	6	3	31	53
	(1.7)	(0.8)	(0.4)	(4.1)	(7.0)
7	23	16	13	42	94
	(3.1)	(2.1)	(1.7)	(5.6)	(12.5)
8	29	13	13	62	117
	(3.9)	(1.7)	(1.7)	(8.2)	(15.5)
9	74	69	43	107	293
	(9.8)	(9.2)	(5.7)	(14.2)	(38.9)
10	0	0	0	1	1
	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)
11	0	0	0	2	2
	(0.0)	(0.0)	(0.0)	(0.3)	(0.3)
	201	133	87	332	753
	(26.7)	(17.7)	(11.6)	(44.1)	(100.0)

Note. Inside parentheses are cell, row, and column percentages.

Only 44% of these students finish school in the state at 12th grade. Twenty-seven percent, 18%, and 12% of students attended their last year of a state's school in Grades 9, 10, and 11, respectively. Students who stopped attending a state's school prior to 12th grade (more than 420 students overall) include students who dropped out of high school and other students (e.g., moved out of state).

This cross tabulation clearly shows that many ELLs in high school have spent a short time in the state's education system. In the most extreme cases, many students (over 180 students) entered a school in the state in 9th grade, and they either exited in 9th grade (74 students), 10th grade (69 students), or 11th grade (43 students). These students have spent less than one or two grades in the state's schools. These extreme cases compose 24% of the high school ELL population.

Table 12 presents the number of years in which high school ELL students were identified as LEP. About 9% of these students have been identified as LEP for only one year. A majority (about 70%) have been identified as LEP for three years or more. Given that these students tend to spend fewer years in the state's schools, this finding implies that many of these students have been ELLs for most of their school years. Table 13 takes a close look at this issue by showing the cross tabulation of the number of grades that these students spent in the state's public schools and the number of years in which these students were identified as LEP. The grey colored cells in the table indicate the students that were most likely identified as LEP throughout their school years since the number of years identified as LEP is equal to or greater than the number of grades that they were in the school system. For the cases in which the LEP-identified years are greater than the grade span in the school system, it means that the students have been retained and have been LEP in the retained years. In the striped cells in the table, students have been identified as LEP only one year less than their entire grade span in the state's schools. Combining both grey and striped areas represent a majority of these students (83%). This indicates that students who were ELLs in high school were identified as LEP throughout the grade span they attended state's schools or just one grade less than the grade span.

Table 12

Frequency of the Number of Years in which the Students are Identified as LEP for ELL Students in High School

Number of Years	Frequency	%	Cum. %
1	64	8.50	8.50
2	113	15.01	23.51
3	133	17.66	41.17
4	136	18.06	59.23
5	89	11.82	71.05
6	51	6.77	77.82
7	55	7.30	85.13
8	41	5.44	90.57
9	30	3.98	94.56
10	16	2.12	96.68
11	8	1.06	97.74
12	7	0.93	98.67
13	6	0.80	99.47
14	3	0.40	99.87
15	1	0.13	100.00

Table 13

Cross Tabulation of the Number of Grade Years in the State Public School System and the Number of Years that Students Were Identified as LEP (for ELL Students in High School)

# of Years in a State Public School	Number of Years Students were Marked as LEP								
	1	2	3	4	5	6	7	8	Total
1	47	21	5	0	1	0	0	0	74
	(6.2)	(2.8)	(0.7)	(0.0)	(0.1)	(0.0)	(0.0)	(0.0)	(9.8)
2	10	57	19	11	3	0	0	0	100
	(1.3)	(7.6)	(2.5)	(1.5)	(0.4)	(0.0)	(0.0)	(0.0)	(13.3)
3	1	15	34	18	9	3	0	0	80
	(0.1)	(2.0)	(4.5)	(2.4)	(1.2)	(0.4)	(0.0)	(0.0)	(10.6)
4	5	14	49	60	15	3	2	0	149
	(0.7)	(1.9)	(6.5)	(8.0)	(2.0)	(0.4)	(0.3)	(0.0)	(19.8)
5	1	4	10	28	30	9	12	2	100
	(0.1)	(0.5)	(1.3)	(3.7)	(4.0)	(1.2)	(1.6)	(0.3)	(13.3)
6	0	0	5	8	17	14	8	2	57
	(0.0)	(0.0)	(0.7)	(1.1)	(2.3)	(1.9)	(1.1)	(0.3)	(7.6)
7	0	0	4	4	3	12	13	10	51
	(0.0)	(0.0)	(0.5)	(0.5)	(0.4)	(1.6)	(1.7)	(1.3)	(6.8)
8	0	1	1	3	2	4	10	9	36
	(0.0)	(0.1)	(0.1)	(0.4)	(0.3)	(0.5)	(1.3)	(1.2)	(4.8)
9	0	0	0	2	1	0	5	10	26
	(0.0)	(0.0)	(0.0)	(0.3)	(0.1)	(0.0)	(0.7)	(1.3)	(3.5)
10	0	0	2	0	3	2	0	6	23
	(0.0)	(0.0)	(0.3)	(0.0)	(0.4)	(0.3)	(0.0)	(0.8)	(3.1)
11	0	0	1	0	2	1	2	1	17
	(0.0)	(0.0)	(0.1)	(0.0)	(0.3)	(0.1)	(0.3)	(0.1)	(2.3)
12	0	0	1	2	1	1	3	1	18
	(0.0)	(0.0)	(0.1)	(0.3)	(0.1)	(0.1)	(0.4)	(0.1)	(2.4)
13	0	1	2	0	2	2	0	0	21
	(0.0)	(0.1)	(0.3)	(0.0)	(0.3)	(0.3)	(0.0)	(0.0)	(2.8)
14	0	0	0	0	0	0	0	0	1
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)
	64	113	133	136	89	51	55	41	753
	(8.5)	(15.0)	(17.7)	(18.1)	(11.8)	(6.8)	(7.3)	(5.4)	(100.0)

Note. Cells shaded grey indicate students identified as LEP during their entire grade span in the state's schools.. Striped cells indicate that students have been identified as LEP only one year less than their entire grade span in the state's schools.

5. What are the predictors of high school drop outs that are related to ELL status? Are there identifiable sources that underlie higher average dropout rate for ELL students than non-ELL students? How does the timing of ELL reclassification relate to ELL students' dropping out of high school? Do district contexts relate to dropout rates above and beyond students' characteristics?

State enrollment data include two variables that are related to dropout status. One variable indicates exit type, or how students leave the state's school system. This variable has six categories: graduated with diploma, graduated with certificate, adult/GED graduate, still in school, dropout, and unknown. This exit type variable indicates that about 13% of students dropped out of the school system. Another variable shows the number of dropouts during school years. Thus, for many students who never dropped out, the variable is coded as 0. We use this variable and classify students into two categories: those who have dropped out once or more and students who never dropped out.

Comparing information from the above two variables (see Table 14), 81% of students are indicated as dropouts. About 6–7% of students who have dropped out appear to eventually graduate, 1% with a diploma and 5% with an adult/GED certificate. The rest of these students' statuses are either "unknown" or "still in school." Although the exit type variable provides more divisions, some of the categories may be unclear regarding students' status and include students who may have dropped out. Therefore, this section uses the two categories created from the number of times students have dropped out. Hence, by "dropout student," we mean a student who has dropped out once or more during their school years.

Table 14

Cross Tabulation of the Exit Type Variable and the Dropout Status Variable

Exit Type	Dropout status 0	Dropout status 1	Total	
Adult/GED Graduate	461	224	685	(2.4)
	(1.9)	(5.0)		
Dropout	0	3612	3,612	(12.8)
	(0.0)	(81.3)		
Graduated w/Certificate	193	6	199	(0.7)
	(0.8)	(0.1)		
Graduated w/Diploma	18,418	61	18,479	(65.6)
	(77.6)	(1.4)		
Still in School	1,086	349	1,435	(5.1)
	(4.6)	(7.9)		
Unknown	3579	189	3,768	(13.4)
	(15.1)	(4.3)		
Total	23737	4441	28,178	
	(84.2)	(15.8)	(100.0)	

Note. Inside parentheses are shown column, row, and cell percentages.

ELL students in general drop out from school more than non-ELL students, as shown in the previous demographic comparison (see Tables 3 and 4). Among 1,612 ELL students, 395 students dropped out, which is a staggering 24.50%, in contrast to the relatively small 15% for non-ELL students. Especially ELL students in high schools drop out more (32%).

In this section, we first run a series of logistic regressions with dropout as an outcome for all students to examine factors that are related to students dropping out of schools. We included ELL status as a factor as well as other demographics and variables (e.g., suspension , grade retention) that are available from the state data. Then we also ran a series of logistic regressions for only ELL students to see whether sets of factors contributing to dropout are distinct between ELL and non-ELL students. The analysis focusing on ELL students also includes students' years as ELLs over their years of enrollment in the state's schools in order to see how the timing of reclassification relate to dropping out of high school. Lastly, we examined district factors that are related to district proportions of dropouts as a beginning step in studying potential contextual effects above and beyond characteristics of individual students.

Correlates of Dropping Out in ELL and Non-ELL Students

First, we include student variables that we hypothesize to be associated with dropout, but one variable at a time only, to see their bivariate associations with dropout. The results are shown in the left panel of Table 15. In terms of bivariate relationships, ELL status was a significant predictor of dropout with the estimated odds of 1.8. ELL students are nearly two times more likely to drop out than non-ELL students. Student race was a significant predictor; Black and Hispanic students on average have higher odds of dropping out than White students do, with the estimated odds of 1.7 and 2.6, respectively. Asian students are less likely to drop out with the estimated odds of 0.6. Female students are also less likely to drop out with the estimated odds of 0.7. Experiences of suspension, mobility, and retention in schools are all significantly related to dropping out: students who have been suspended, who have moved to other schools, or who have been retained at one or more grade levels have significantly higher odds of dropping out of school, with the estimated odds of 2.4, 3.0, and 8.2, respectively. As apparent from the results, the single most important predictor of dropping out in bivariate relationships is whether a student has repeated one or more grade levels or not. The odds of dropping out of school are eight times higher among students who have been retained in one or more grade levels as compared to students who have never been retained. ELL status is a significant predictor of dropping out, but many other variables show higher magnitudes in their bivariate relationships to the odds of dropping out, such as Hispanic students, history of suspension, or mobility, let alone retention.

The middle panel of Table 15 shows results from several logistic regression analyses including each of the variables in addition to retention. These analyses were done to see whether each variable was still significantly related to dropping out after controlling for the single most prominent factor, grade retention. All variables seem to contribute to dropping out when retention is held constant, except student race. Holding retention constant, the associated higher likelihood of dropping out for Black students and the associated lower likelihood for Asian students are explained away. Although the estimated odds for Black students are still significant probably due to the large sample size, the magnitude is very small and substantively trivial. However, the significantly higher likelihood of dropping out for Hispanic students still remains. Holding retention constant, the odds of dropping out are still nearly twice as high for Hispanic students than they are for White students.

The right panel of Table 15 shows academic achievement as predictors. We included standardized math and reading achievement scores at Grade 8. The odds of dropping out decrease to nearly half in reading and more than half in math for students whose test scores are one SD higher. We separate out academic achievement in the last panel of the table to note the difference in sample sizes. The number of students without test scores is considerably smaller

than the total sample size with other variables. Thus, with test scores included as predictors, we may deal with a sample different than the entire student population.

Table 15

Results from Sets of Logistic Regression Analyses Including One or Two Predictors Only

Variables	With One Type of Variable at a Time							With One Type of Variable and Retention							With Math and Reading		
(N)	(28,175)	(28,192)	(28,192)	(28,192)	(28,192)	(28,192)	(28,192)	(28,175)	(28,192)	(28,192)	(28,192)	(28,192)	(28,192)	(28,192)	(23,869)	(23,859)	(23,809)
ELL	1.81**							1.63**									
Indian		1.25							1.07								
Black		1.72**							1.09**								
Asian		0.62**							0.93								
Hispanic		2.56**							1.86**								
Female			0.70**							0.86**							
FRL				2.94**							1.71**						
Suspension					2.41**							1.44**					
Mobility						3.02**							1.62**				
Retention							8.23**	8.20**	7.95**	8.10**	7.01**	7.50**	6.99**				
Math8														0.45**		0.58**	
Read8															0.51**	0.73**	

Note. ELL = English language learner; FRL = Free or reduced lunch; Math8 = Standardized math achievement scores at Grade 8; Read8 = Standardized reading achievement scores at Grade 8. * $p < 0.10$ ** $p < 0.05$.

Table 16 shows results from logistic regression analyses including many of these variables in a model. Retention still remained the single most outstanding predictor of dropping out, holding constant all the other characteristics in the regression model. The estimated odds of dropping out are about 6 to 6.5 times as high among students who have been retained. Also, even though all these student variables are correlated to some extent, they seem to contribute to dropping out in unique ways as well. When all variables are included in a logistic regression model, predictors that showed significant bivariate relationships to dropping out typically still turned out significant, holding constant all the other variables in these models, with the exception of the race variables as noted above.

Table 16

Results from Analyses of Logistic Regression, Models 1–6

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
N	28175		28175		23804		23864		23864		23869	
ELL	1.13		1.51	**	0.99		1.03		1.20	**		
Retention	5.97	**	5.92	**	6.40	**	6.42	**	6.46	**	6.42	**
Indian	0.98				0.98		0.98				0.98	
Black	0.83	**			0.60	**	0.61	**			0.61	**
Asian	0.89				0.67	**	0.69	*			0.70	*
Hispanic	1.40	**			0.98		0.97				0.98	
FRL	1.54	**	1.48	**	1.60	**	1.62	**	1.41	**	1.62	**
Female	0.85	**	0.85	**	0.83	**	0.81	**	0.81	**	0.81	**
Suspension	1.34	**	1.31	**	1.41	**	1.41	**	1.33	**	1.41	**
Mobility	1.48	**	1.46	**	1.52	**	1.52	**	1.47	**	1.52	**
Math8					0.77	**	0.73	**	0.78	**	0.73	**
Read8					0.93	**						

Note. ELL = English language learner; FRL = Free or reduced lunch; Math8 = Math achievement scores at Grade 8; Read8 = Reading achievement scores at Grade 8. * $p < 0.10$ ** $p < 0.05$.

Specifically, Model 1 (M1) includes free or reduced lunch (FRL) status, gender, suspension history, and student mobility as predictors in addition to ELL status, retention, and race indicators. Asian and Black student indicators become insignificant when the retention variable is included, as noted earlier (see Table 15). With the additional variables such as FRL, suspension, and mobility, the indicator of being a Black student, in fact, becomes significant in the opposite way, meaning that after additionally controlling for these variables, Black students tend to have significantly lower odds of dropping out as compared to White students. However, the Hispanic student indicator remains significant after controlling for all variables in M1. Model 2 (M2) drops the race variables in comparison to M1. The results show that coefficients of

predictors stay similar to M1, while the coefficient of ELL increases appreciably (the estimated odds increases from 1.1 to 1.5). The Hispanic indicator was significant for M1, so when it was dropped in M2, the ELL variable appears to have picked up some of the association. Thus, the higher association with drop out in Hispanic students compared to White students is partly because a large majority of ELL students is Hispanic students. Model 3 (M3) includes math and reading achievement scores at Grade 8 in addition to all predictors in M1. Most coefficients of predictors stay similar to M1, but all race indicators become non-significant. Thus, when the academic achievement scores are additionally included in the model, the Hispanic indicator is no longer significant. Model 4 (M4) includes only one of the predictors in the achievement scores, which is math scores, given the high correlation between math and reading scores. All results are very similar to M3, including the non-significant coefficients of the race variables. Model 5 (M5) includes the same set of variables as M4 but drops the race variables. Model 6 (M6) includes the race variables but drops the ELL variable to see whether correlation between ELL and race variables make the Hispanic student indicator insignificant. Without the ELL variable, the Hispanic student indicator is still insignificant. Based on the results, we conclude that models without race variables work better. The race variables are either explained away (i.e., the Hispanic student indicator) or become significant in the opposite direction (i.e., the Black student indicator).

With regard to model fit statistics, M3 is the model with the most predictors, and M5 fits the data as well as M3 and includes the set of variables that are significant. We chose M5 to interpret each parameter since M5 is both parsimonious and well-fitting. Holding constant all the other variables in Model 5, the odds of dropping out are 6.5 times as high among students who have been retained, 1.4 times as high among students who receive free or reduced lunch, 1.3 times higher among students who have been suspended, and 1.5 times higher for students who have been transferred to other schools. The odds are also 0.8 times as low for female students; and 0.8 times as low for students whose math scores at grade 8 are higher by one SD. Holding constant all the other variables, ELL status stays significant in this model. ELL students are 1.2 times more likely to drop out of high school than non-ELL students with similar characteristics. Results from Table 15 indicate that ELL students are 1.8 times more likely to drop out when no variable is controlled for; and that ELL students are 1.6 times more likely to drop out holding constant grade retention. Thus, the student characteristics in Model 5 mostly explained away the difference in dropout between ELL and non-ELL students, though not completely.

Correlates of Dropping Out Among ELL Students

We attempt to examine whether factors influencing the dropout outcome for ELL students are similar to the set of factors found to be significant for both ELL and non-ELL students. We

started with basically the same analytic strategy as the previous section analyzing both ELL and non-ELL students. We first examined bivariate relationships by including one predictor at a time, followed by examining bivariate relationships, holding constant the experience of having been retained. Then we included all variables in a logistic regression model to find a model that fits well to the data and has the most predictive power.

The left panel of Table 17 shows results from the analysis of bivariate associations. Student race was a significant predictor: Black students and Hispanic students on average have higher odds of dropping out than White students do, with the estimated odds of 2.3 and 5.7. Suspension history, mobility, and retention in schools are all significantly related to dropping out. Students who have been suspended, who have moved to other schools, or who have been retained at one or more grade levels have significantly higher odds of dropping out of school, with estimated odds of 1.6, 1.2, and 5.1, respectively.

In bivariate relationships, all variables turn out to be significant predictors of dropping out, with the exception of student gender. Also, as with all student results, retention is the single most powerful predictor among student characteristics.

Table 17

Results from Sets of Logistic Regressions Including One or Two Predictors Only

Variables	With One Type of Variable at a Time						With One Type of Variable and Retention					With Math and Reading		
(N)	(1,612)	(1,612)	(1,612)	(1,612)	(1,612)	(1,612)	(1,612)	(1,612)	(1,612)	(1,612)	(1,612)	(1,162)	(1,132)	(1,130)
Indian	0.00						0.00							
Black	2.31**						2.20*							
Asian	1.34						1.99							
Hispanic	5.74**						4.87**							
Female		0.82						0.95						
FRL			1.59**						1.11					
Suspension				1.65**						1.09				
Mobility					1.18						0.84			
Retention						5.12**	4.31**	5.09**	5.03**	5.02**	5.31**			
Math8												0.35**		0.42**
Read8													0.47**	0.76**

Note. FRL = Free or reduced lunch; Math8 = Math achievement scores at Grade 8; Read8 = Reading achievement scores at Grade 8. * $p < 0.10$ ** $p < 0.05$.

However, in contrast to the results from all students including both non-ELLs and ELLs, the coefficients of the race variables are greater, while the coefficients of the other variables are fairly smaller than those from the analysis of all students. This may suggest that the dropout phenomena among the ELL population should not be expected to be the same as that among all students. For example, the magnitude of the estimated odds for suspension and mobility are only 1.6 and 1.2 among the ELL population (as compared to 2.4 and 3.0 among all students), which implies a much smaller predictive power. Even the estimated odds for retention are 5.1. This magnitude is considerable, and it implies that the odds of dropping out of school are five times as high for ELL students who have been retained as compared to ELL students who have never been retained. However, note that it was eight times as high for all students. Whether a student has been retained or not remains the single most important predictor of dropping out in bivariate relationships among ELL students. Thus, we continued several logistic regression analyses including each of the variables in addition to retention for ELL students only, similar to our analyses of all students. The results are shown in the middle panel of Table 17.

These analyses were performed to see whether each variable is still significantly related to dropping out after controlling for the single most prominent factor, retention. Whereas in the entire student population all variables remained significant, holding constant retention, , in the ELL student population no variable stayed significant except being a Hispanic student. Given the stark difference in results compared to those from all students, we first suspected lack of statistical power. However, from the estimated odds shown in the middle panel of Table 17, the magnitudes are fairly trivial substantively as well. The results may suggest that with the same set of predictors, the explanation of the phenomenon is far more limited among the ELL population. Therefore, understanding dropout among ELL students with the same set of variables as non-ELL students may be difficult.

The right panel of Table 17 shows academic achievement as predictors. We included standardized math and reading achievements at Grade 8. The odds of dropping out decreases to more than half for students whose test scores are 1 SD higher (0.35 times as low in math and 0.47 times as low in reading). The estimated odds are 0.45 and 0.51 in the entire population (see Table 15), which implies that academic achievement is associated with drop out among ELL students to a greater extent than among non-ELL students. Note that we separated out academic achievement in the last panel of the table to indicate the reduction in sample sizes. We retained only 72% of the sample compared to the analysis of other variables as predictors, and with this sample, the average dropout rate decreased from 24.5% to 21.2%. This suggests that, if the ELL students with missing test scores had taken the test,

the association between academic achievement and drop out among the ELL population might have been even stronger.

We conducted the same set of analyses (M1–M5) without the ELL indicator (see Table 18), which led us to the same conclusion as previously stated. The only significant predictors are retention, being a Hispanic student, and math scores, holding constant all the other characteristics in the regression model.

Table 18

Results from Analyses of Logistic Regression Models 1–5

Variables	M1		M2		M3		M4		M5	
N	1612		1612		1130		1162		1162	
Retention	4.50	**	5.10	**	5.62	**	5.69	**	6.10	**
Indian	0.00				0.00		0.00			
Black	2.33	*			1.91		2.11			
Asian	1.94				1.85		2.14			
Hispanic	5.46	**			3.92	**	4.27	**		
FRL	0.78		1.13		0.84		0.82		1.09	
Female	0.92		0.96		0.82		0.79		0.80	
Suspension	1.06		1.08		1.22		1.23		1.21	
Mobility	0.79	*	0.83		0.98		0.92		0.97	
Math8					0.57	**	0.51	**	0.50	**
Read8					0.83					

Note. FRL = Free or reduced lunch; Math8 = Math achievement scores at Grade 8; Read8 = Reading achievement scores at Grade 8.

This motivated us to further explore other variables that may be more relevant to the ELL population than to the non-ELL population. The earlier section on student enrollment history showed that the ELL population is very heterogeneous with regard to when they entered states' public schools, how long they stayed in the state's school system, and how long they remained as ELL student status. How long students remained as ELLs may suggest that the timing of reclassification is associated with dropouts. Thus we examined three additional student characteristics related to enrollment history: a) the grade year when an ELL student first entered the public school system in the state; b) whether the student is a recent arrival or not; and c) the proportion of grade years that a student had ELL status over all years a student was in the system. For the grade year when an ELL student first entered in a state's school, we used the first grade year the student appeared in the state's enrollment data. Next, to identify whether students are recent arrivals or not, we dichotomized ELL students into those who entered in 6th Grade or before and those who entered in 7th Grade or

later. Lastly, we considered how many grade years students were identified as ELLs. Given that the grade spans in which students stayed in the state school system varied appreciably among ELL students, instead of just counting the number of grade years of ELL status, we calculated proportions of ELL status among the grade span for ELL students. That is, the number of years an ELL student retained his/her ELL status over the number of years the student stayed in the state school system is defined as the last variable of interest. Table 19 presents the results from analyses focusing on these variables.

Table 19

Results from Sets of Logistic Regressions Focusing on Predictors More Relevant to the ELL Student Population

Variables	One Predictor at a Time			One predictor and Retention			Two Predictors		MLE P
N	1612			1612			1612		1162
Firstyear	1.06**			1.09**			0.97		
Recent arrival		1.61**			1.87**			0.94	
LEPyears			3.74**			3.74**	4.62**	3.93**	2.20**
Retention				5.58**	5.41**	5.08**			6.58**
Math8									0.55**

Note. Firstyear = The year when an ELL student entered the public school system in the state; Recent-arrival = Whether an ELL student arrived before or during 6th grade (coded 0) or after 6th grade (coded 1); LEPyears = The number of years students showed ELL status divided by the number of years students stayed in the states' public schools; Retention = Whether a student is retained (coded 1, and 0 otherwise); Math8 = Math achievement scores at Grade 8.

The left panel of Table 19 presents results from bivariate relationships. It shows that all three variables—the grade in which ELL students entered, whether the entering year is before 7th grade or not, and the proportion of years with ELL status out of their total school years—turn out to be significant predictors. After controlling for the Retention variable (see the middle panel of the same table), the results show that all three variables not only remain significant but also yield coefficients of very similar magnitudes.

However, when we put this new set of variables together (see the third panel of the same table), the two variables showing the entering year become insignificant, and the proportion of ELL years remain significant. This is due to considerable correlations among these variables. For example, students who enter later in the school system also tend to have longer years designated as ELL students. From the last column of Table 19, it is notable that the proportion of ELL years still remains significant with a considerable magnitude (the

estimated odds = 2.16), controlling for the two strongest predictors, which are whether students have been retained and math achievement scores in Grade 8.

We additionally included these variables of interest in the similar set of models that we used for both ELL and non-ELL students (as shown in Tables 16 and 18). Table 20 presents the results. Consistent with the results above, retention, being a Hispanic student, and math scores at Grade 8 were highly significant in all models. In addition, the proportion of ELL years was significant in all models, with similar magnitudes of coefficients to those found in the analyses focusing on a smaller set of variables.

Table 20

Results from Analyses of Logistic Regressions Including Predictors Relevant to All Students and to ELL Students

Variables (N)	M1 (1612)		M2 (1162)		M3 (1162)	
Retention	4.41	**	5.63	**	6.04	**
Indian	0.00		0.00			
Black	1.88		1.92			
Asian	1.71		1.87			
Hispanic	4.41	**	3.81	**		
FRL	0.70	**	0.75		0.99	
Female	0.90		0.79		0.80	
Suspension	1.10		1.22		1.19	
Mobility	1.01		1.03		1.10	
Math8			0.56	**	0.55	**
LEPyears	3.49	**	2.09	**	2.28	**

Note. Firstyear = The year when an ELL student entered the public school system in the state; FRL = Free or reduced lunch; Math8 = Math achievement scores at Grade 8; LEPyears = The number of years students showed ELL status divided by the number of years students stayed in the states' public schools.

It is notable that, in analyses including a wide set of variables, the proportion of the ELL years turns out consistently significant. Apparently, controlling for or holding constant all the other variables, the number of years students stayed as ELLs may be directly associated with reclassification practices and policies. When students have similar experiences in terms of retention, suspension, mobility, and demographic backgrounds (e.g., the same gender or free or reduced lunch status), in addition to a similar level of academic achievement, students who remain ELLs longer tend to drop out more frequently. The estimated odds that range from 2.09 to 3.49 compare students having minimal time in ELL

status (e.g., only one year designated as an ELL student from many years enrolled in state schools) to students who stay in ELL status for the time that they were enrolled in the school system. In a finer scale that compares 10% change in proportion, the odds of 2.09 translate to the odds of 1.08, while the odds of 3.49 translate to the odds of 1.14. That is, when students stay as ELLs 10% longer than other ELLs during their school years, their chances of dropping out are multiplied by 1.14 or 1.08, despite similar backgrounds, experiences, and academic levels.

District-level Correlates of Dropping Out

The findings of this report so far have identified important correlates of dropping out in the student level. The next step of the analysis is to incorporate student- and district-levels in a single analysis and examine the process of dropout more systematically by simultaneously estimating how much of the variability is influenced by district factors as well as by individual factors.

The state has 24 districts, so our analyses of district characteristics are somewhat challenged by the small sample size (N = 24). In addition, we did not have direct measures of district characteristics such as district-level dropout prevention interventions and district-wide ELL instructional support but only had district aggregate measures that had sizable correlations among them. Thus, in this section, we used district aggregate measures from the student characteristics in the extant state data and examined them in multilevel logistic models one by one in separate models. We first present results from the analysis of the entire student population and then present results from the analysis of the ELL student population only.

District factors in ELL and non-ELL students. Table 21 presents descriptive statistics of district-level variables that were examined in the analysis, while Table 22 presents correlations among these variables. All these aggregate measures are the district means of student-level variables examined in earlier sections. With an exception of the math achievement scores, the original student-level variables were all binary indicator variables. Thus, the district means represent the district proportions of certain categories: AVRETENTION is the district proportion of retained students; AVFRL is the district proportions of students receiving free or reduced lunch; AVSUSPENSION is the district proportions of those who have been suspended; and AVELL is the district proportions of ELL students. AVMATH8 is the district average of math achievement scores of 8th graders. As can be clearly seen in Table 21, districts look very diverse in terms of all district factors. For example, district rates of retained students range from 7% to 90%. The mean math score

of one district is 1.8 SD higher than the state average, while the mean score of another district is 0.7 SD lower than the average.

Table 21

Descriptive Statistics of District-Level Variables for All Students

Variable	*N*	*M*	*SD*	Min	Max
AVRETENTION	24	0.40	0.18	0.07	0.90
AVFRL	24	0.40	0.14	0.04	0.65
AVSUSPENSION	24	0.26	0.11	0.04	0.43
AVMOBILITY	24	0.37	0.16	0.11	0.95
AVMATH8	24	-0.03	0.48	-0.73	1.77
AVELL	24	0.04	0.03	0.01	0.12

Table 22 shows highly sizable correlations among district aggregate variables. For example, average math scores correlate with the other variables with correlations of 0.6 to 0.8 in the negative direction. The district proportion of retention is highly correlated with all other variables, especially its correlation with the proportion of students who moved to other schools (r = 0.89). The district proportion of ELL students is significant with two variables: the proportion of students who receive free or reduced lunch (r = 0.50) and the proportion of students who have been suspended (r = 0.53).

Table 22

Correlations Among District-Level Variables for All Students

	AVRETENTION	AVFRL	AVSUSPENSION	AVMOBILITY	AVMATH8	AVELL
AVRETENTION	1	0.72	0.46	0.89	-0.77	0.27
		(0.00)	(0.03)	(0.00)	(0.00)	(0.21)
AVFRL		1	0.52	0.64	-0.73	0.50
			(0.01)	(0.00)	(0.00)	(0.01)
AVSUSPENSION			1	0.28	-0.55	0.53
				(0.18)	(0.01)	(0.01)
AVMOBILITY				1	-0.65	0.20
					(0.00)	(0.36)
AVMATH8					1	-0.13
						(0.53)
AVELL						1

Note. Inside parentheses are shown the associated p-values.

We use multilevel logistic regression analysis in which students are nested within districts. Our base model examined the same set of student-level variables in the earlier section (see Model 5 in Table 16) taking into account the nesting structure. Next, we add district factors one by one to the base model. We centered all student-level variables around their sample means; thus, the coefficients of district-level factors capture contextual effects (see Raudenbush & Bryk, 2002). Table 23 presents the results in odds ratio scale for the fixed effects as well as the variance components representing the variability in dropout rates across districts.

Table 23

Results from Multilevel Logistic Regression analysis for ELL and non-ELL students

Variables	M1		M2		M3		M4		M5		M6		M7	
Fixed effects														
ELL	1.13		1.13		1.13		1.13		1.13		1.13		1.13	
Retention	6.08	**	6.08	**	6.07	**	6.08	**	6.09	**	6.06	**	6.09	**
FRL	1.36	**	1.37	**	1.36	**	1.36	**	1.37	**	1.36	**	1.36	**
Female	0.81	**	0.81	**	0.81	**	0.81	**	0.81	**	0.81	**	0.81	**
Suspension	1.29	**	1.29	**	1.29	**	1.29	**	1.29	**	1.29	**	1.29	**
Mobility	1.45	**	1.45	**	1.45	**	1.45	**	1.45	**	1.45	**	1.45	**
Math8	0.80	**	0.80	**	0.80	**	0.80	**	0.80	**	0.80	**	0.80	**
AVRETENTION			1.61	**										
AVFRL					1.56	**								
AVSUSPENSION							1.45	**						
AVMOBILITY									1.59	**				
AVMATH8											0.26	**		
AVELL													2.65	*
Variance Components														
Estimate	0.55		0.05		0.21		0.40		0.24		0.22		0.48	
(SE)	(0.19)		(0.02)		(0.08)		(0.14)		(0.08)		(0.08)		(0.17)	

* $p < 0.10$ ** $p < 0.05$

In our base model (M1), ELL status became insignificant. Other than that, the odds ratio of all student-level variables stay very similar to those in the model that did not take into account the district nesting (Model 5 in Table 16). The variance component is 0.55, which indicates the wide range of dropout rates across districts.

Models 2 to 7 examine the district-level factors in Tables 21 and 22 one by one. All the district characteristics turn out to be significant. We scaled the district variables in a way that one unit increase is 10% change in the proportion. Among all the district factors, district retention rate shows the most notable result in the same way as student grade retention was the strongest predictor in the student level. Holding constant student-level retention, if a student with similar characteristics is in a district with 10% more retention rate, the student is

1.6 times more likely to drop out of high school. Furthermore, district retention rates explain away most between-district variability in terms of drop out. The variance component drops from 0.55 to 0.05.

Other variables that decrease the variance component to about half or more are district proportions of students receiving free or reduced lunch; proportions of students who have transferred; and district mean math achievement scores. Holding constant all student characteristics including student math scores, if a student is in a district with 1 SD higher than the state average, the student is only a quarter times likely to drop out of high school.

District factors in ELL students only. Table 24 presents descriptive statistics of district-level variables that were examined in the analysis, while Table 25 presents correlations among these variables. AVLEPYEAR is the district average of ELL years over all years in the state's schools (i.e., the district mean of LEPyear, which is the years students spent as ELLs divided by the number of years students were enrolled in the state public schools). AVFIRSTYEAR is the district average of the first grade when ELL students first entered in the state's schools. All other variables are defined in the same way as in Table 21.

Table 24

Descriptive Statistics of District-Level Variables for ELL Students Only

Variable	*N*	*M*	*SD*	Min	Max
AVRETENTION	24	0.41	0.22	0.00	1.00
AVFRL	24	0.73	0.20	0.14	1.00
AVSUSPENSION	24	0.25	0.23	0.00	1.00
AVMOBILITY	24	0.40	0.17	0.00	1.00
AVMATH8	23	-0.11	0.59	-0.72	2.08
AVLEPYEAR	24	0.46	0.16	0.17	0.69
AVFIRSTGRADE	24	3.34	1.48	0.00	4.86

The descriptive statistics and correlations in Tables 24 and 25 would need to be interpreted with even more caution in the ELL student population. Not only is the number of districts small (N=23 or 24) but also the number of ELL students in some districts is extremely small (give some numbers). Given the caveats, here are some suggestive patterns. Although district factors in the ELL population also show high correlations among them, the magnitudes appear to be lower than in the entire population. In the ELL population, district retention rates are highly correlated with math achievement scores, and district mobility rates with correlations over 0.60. District average LEPyears is significantly correlated with district

average FRL (r = 0.40) and district average math scores (r = -0.47). The district average of the first grade ELLs started in a state's school is 3.34. This variable is highly correlated with district average LEPyears (r = 0.75) but did not correlate with any other variables. This may imply that for districts in which more ELL students enter in later grades, there are more ELL students who stay longer in ELL status.

Table 25

Correlations Among District-Level Variables for ELL Students Only

	AVRETENTION	AVFRL	AVSUSPENSION	AVMOBILITY	AVMATH8	AVLEPYEAR	AVFIRSTGRADE
AVRETENTION	1.00	0.44	-0.20	0.60	-0.74	0.55	0.28
		(0.03)	(0.35)	(0.00)	(0.00)	(0.01)	(0.18)
AVFRL		1.00	0.32	0.10	-0.75	0.40	-0.06
			(0.13)	(0.65)	(0.00)	(0.05)	(0.78)
AVSUSPENSION			1.00	-0.64	-0.10	0.11	-0.18
				(0.00)	(0.64)	(0.62)	(0.39)
AVMOBILITY				1.00	-0.18	0.19	0.06
					(0.42)	(0.38)	(0.78)
AVMATH8					1.00	-0.47	-0.28
						(0.02)	(0.19)
AVLEPYEAR						1.00	0.75
							(0.00)
AVFIRSTGRADE							1.00

Note. Inside parentheses are shown the associated p-values.

In analyzing ELL student population, we use a set of multilevel logistic regression analysis similar to the analysis of the entire ELL and non-ELL students, in which students are nested within districts. The first two models examine the same set of student-level variables in the earlier section (see Model 5 in Table 16) taking into account the nesting structure. Next, we add district factors one by one to the base model. We also center all student-level variables around their sample means. Table 26 presents the results in odds ratio scale as well as the conditional variability in dropout rates across districts.

Table 26

Results from Multilevel Logistic Regression analysis for ELL students

Variables	M1		M2		M3		M4		M5		M6		M7		M8	
Fixed Effects																
Retention	5.31	**	5.28	**	5.34	**	5.25	**	5.29	**	5.25	**	5.21	**	5.25	**
FRL	1.13		1.05		1.05		1.05		1.05		1.05		1.04		1.04	
Female	0.74	*	0.74	*	0.74	*	0.74	*	0.74	*	0.74	*	0.75	*	0.74	*
Suspension	1.06		1.06		1.05		1.06		1.05		1.07		1.06		1.05	
Mobility	0.92		1.00		1.00		1.00		1.00		1.00		1.00		1.01	
Math8	0.53	**	0.56	**	0.56	**	0.56	**	0.56	**	0.56	**	0.55	**	0.56	**
LEPyear			1.79	**	1.87	**	1.79	**	1.79	**	1.81	**	1.81	**	1.84	**
AVRETENTION					2.04	**										
AVFRL							1.30	*								
AVSUSPENSION									1.13							
AVMOBILITY											1.48					
AVMATH8													0.13	**		
AVLEPYEAR															1.75	**
Variance Components																
Estimate	0.72		0.73		0.06		0.66		0.72		0.65		0.36		0.36	
(SE)	(0.35)		(0.36)		(0.07)		(0.34)		(0.37)		(0.34)		(0.22)		(0.22)	

* $p < 0.10$ ** $p < 0.05$

Model 1 takes into account district nesting in the model with the same set of student-level variables as in Model 5 in Table 20. Being a female student approaches significance in the nested model instead of being insignificant in the previous non-nested model. Model 2 is a nested model for Model 3 of Table 20. Being a female student also approaches significance instead of insignificance. The students' length of ELL status over their enrollment years have a slightly lower odds ratio in the nested model (the estimated odds ratio of 1.8 versus 2.3) but remain significant. Other than those results just mentioned, the odds ratio of student-level variables stay very similar to those in the model that did not take into account the district nesting (Model 5 in Table 16). The variance component is 0.72, which indicates the wide range of dropout rates across districts.

Models 3 to 8 add the district-level factors one by one to Model 2. District average retention rates, district average rates of FRL students, district average math scores, and district average length of LEPyears turn out to be significant. On the other hand, district average suspension and mobility rates are not significant predictors of dropouts. We again scaled the district variables in a way that one unit increase is a 10% change in the proportion. Consistent with all the above results in this section, district retention rate was the strongest predictor among the district-level variables. Holding constant student-level retention, if an ELL student with similar characteristics is in a district with 10% more retention rate, the student is two times more likely to drop out of high school. Furthermore, district retention rates explain away most between-district variability in dropout. The estimated variance component drops from 0.72 to 0.06.

Other variables that decrease the variance component to about a half or more are district mean math achievement scores and district average ELL years over all enrollment years. Holding constant all ELL student characteristics including their math scores, if a student is in a district in which the district average math scores for ELL students is 1 SD higher than the state average math scores for ELL students, the student is only 1/8 times likely to drop out of high school. Holding constant all ELL student characteristics including their LEPyears over enrollment years, if an ELL student is in a district with 10% longer district average LEPyears over enrollment, an ELL student is 1.75 times more likely to drop out of high school.

Conclusion

This report uses one state's annual student data systems to create a longitudinal data base across the entire grade spans in which students were enrolled in the state's schools. Such data were available for three cohorts, which were the cohorts who graduated in 2005-06,

2006-07, and 2007-08. The report begins, based on the extant data, by identifying ELL students and whether and when they are reclassified. We defined ELL students as those who were identified as Limited English Proficient (LEP) in any year during their school enrollment, and defined year of reclassification as the last year of LEP status in the enrollment data. The process indicated that, in the 2001-02 school year, distinctively more ELL students were identified both as LEP and as reclassified than in prior or subsequent years. Because this school year corresponds to middle school years for the three graduation cohorts, the data suggest that ELL students who were reclassified in middle school are an atypical group of ELL students. Given the caveat, 5.5-6.0% of the state school population was classified as ELL. In all three cohorts, about half of the state's ELL students remained classified as ELLs through high school. Among the other half of the ELL students, about one third were reclassified in elementary school (i.e., through Grade 5) and the other two thirds were reclassified in middle school (Grades 6 to 8).

Various descriptive statistics reconfirm findings from prior literature in terms of appreciable achievement gaps and differences in demographics and behaviors between ELL and non-ELL students. In terms of demographics, the largest differences between ELL and non-ELL students exist in ethnic composition and FRL status. While 3% of the state's non-ELL students are Hispanic, 66% of the ELL students are Hispanic. Also, while 38% of the non-ELL students receive free or reduced lunch, 74% of the ELL students receive free or reduced lunch. No substantial difference exists in suspension and mobility between ELL and non-ELL students, and a relatively smaller gap exists in grade retention (37% among non-ELLs, and 46% among ELLs. As for the association between the timing of reclassification and demographic and behavioral data, we compared the same set of variables across ELL students reclassified in different grades. We found that ELL students who are reclassified earlier tend to be more similar to non-ELL students, whereas ELL students who remain as ELLs in high school tend to show more severe gaps to non-ELL students.

Enrollment histories are delineated through basic descriptive statistics such as frequencies or cross tabulations. Although generated by basic methods, empirical results on enrollment histories by ELL reclassification period have not been widely studied. Related results revealed some surprising facts about ELLs at the high school level. Over half of them started in the state's schools in Grades 7, 8, and 9, with about 40% entering in Grade 9. Many of these students did not stay long in the state's schools either. About 30% of high-school ELL students remained less than two years in the state's schools. That said, a majority of high school ELL students remained classified as ELLs during their entire years of enrollment

in the state's school system. 83% of high-school ELLs were designated as LEP either during their entire time or just one year less than their entire time in the state's system.

The last section of this report examines school persistence in light of ELL status or ELL reclassification. ELL students have higher dropout rates than non-ELL students, 25% as compared to 15%. Also, ELL students reclassified later have higher dropout rates: 15% among students reclassified in Grade 2 or before; 22% among students reclassified in Grade 5 or before; and 33% among ELL students in high school. These represent significant gaps, and these are definitive results in a sense that we used the entire student population in the state – and in addition, we pulled three cohorts together. However, we also conducted logistic regression and multilevel logistic regression analyses to gain a better understanding about individual and contextual factors related to dropping out. For example, although ELL students drop out of high school more frequently than non-ELL students, ELL students also have more disadvantaged backgrounds and lower academic performance. Thus, it is uncertain whether ELL status itself is a particular driving force that leads to students dropping out of school or whether the higher dropout of ELL students is due to their disadvantageous backgrounds or lower performance. Our analyses and results address such issues.

Analysis of the entire student population, both ELL and non-ELL students, show that higher odds of dropping out for ELL students are explained by a model that takes into account district nesting structure and includes grade retention, free or reduced lunch, student gender, suspension, mobility, and math achievement scores at Grade 8. This might explain what lies behind the higher dropout rates for ELL students: some combinations of poverty, lower achievement, and potentially negative experiences such as grade retention and suspension.

Analysis of only the ELL student population with the same set of variables suggests that school persistence or dropping out of high schools might be a different process for ELL students than for non-ELL students. For the entire student population, student behavior such as suspensions, or background variables (e.g., free or reduced lunch), and school transfers are consistently strong predictors. In contrast, for the ELL student population, those behavioral and background variables do not show much association. Academic achievement is a strong predictor in the entire student population, but it appears to be a stronger predictor for the ELL student population. Also, student retention remains the strongest predictor among the ELL students. Thus, these results may imply that ELL students drop out more due to lower academic achievement rather than behavioral or other issues when compared to non-ELL students.

Analysis of the variables created from ELL students' enrollment history were intended to investigate associations between ELL reclassification and dropouts. It is notable that, controlling for all the other factors and contextual effects, one variable remained consistently significant: the proportion of years designated as ELLs to the number of years of enrollment the state's school system. Thus, after accounting for academic achievement, behavioral issues, background, and district contexts, the longer a student is designated as LEP or ELL, the more likely he or she is to drop out. This may suggest that protracted ELL status might lead to higher incidence of dropping out of high schools.

Finally, our study is bounded by a number of limitations. Although the study results identified district contextual effects – for example, district retention rates and district average achievement levels over and above student characteristics for the ELL student population– the available information was limited to aggregate student characteristics. District factors such as district-wide dropout prevention programs, instructional support for ELL students, and retention policy, may be important but are unknown. Likewise, as for the student factors, in the ELL student analysis student ethnicity was not accounted for by the other variables in the models. This finding may suggest that there may be important variables omitted in predicting ELLs' dropping out. Proportion of LEP designated years may be a beginning of an effort searching for important omitted variables, but it is possible that there are more critical factors. For example, although the data provides the first grade year when ELL students entered in a state's school, we do not have information about the academic preparation or levels of English proficiency prior to entering the state's school system. Such might provide more accurate prediction of school persistence. All in all, further study that collects additional data based on detailed knowledge on how ELLs drop out would be warranted. Lastly, the findings of this report are based on one state, which might be sensitive to the state's context. Thus, similar analyses in more states would need to be preceded before the findings can be generalized to other states.

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