What's Happening

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English learner student characteristics and time to reclassification: An example from Washington state

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Key findings

This study used a statistical model to estimate the time it would take English learner students to be reclassified as former English learner students. It found that:

- Students who entered kindergarten as English learner students took a median of 3.8 years to develop the English proficiency necessary to be reclassified as former English learner students.
- English learner students entering kindergarten with advanced English proficiency were more likely to be reclassified in their first eight years of school than those entering with basic proficiency (which includes beginning and advanced beginning) or intermediate proficiency.
- Female English learner students were more likely than male English learner students to be reclassified in their first eight years of school.
- Speakers of Chinese, Vietnamese, or Russian or Ukrainian (combined) were more likely to be reclassified in their first eight years of school than speakers of Somali or Spanish.

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Summary

How long does it typically take English learner students to develop English language proficiency? And how does this time vary by student characteristics such as English proficiency at entry to kindergarten, gender, and home language? The answers to these questions can provide valuable information to districts and schools. For example, this information can identify students who may take longer to reach proficiency and therefore may need additional support. Such information can also inform assessment and accountability systems and help establish targets that take specific factors, such as English proficiency at entry to kindergarten, into account. A deeper understanding of the time students need to gain English proficiency can help school districts evaluate the effectiveness of their programs for English learner students and adjust those programs accordingly.

Regional Educational Laboratory (REL) Northwest undertook this study in partnership with the Road Map Project to help its members understand more about their English learner student populations. The Road Map Project is a cradle-to-career initiative involving seven districts in Washington state (Auburn, Federal Way, Highline, Kent, Renton, Seattle, and Tukwila). These districts have the highest levels of poverty and the lowest levels of academic achievement in the Seattle metropolitan area. Nearly a quarter (22 percent) of English learner students in Washington attended schools in the Road Map Project school districts in 2012/13. The goal of the Road Map Project is to double by 2020 the percentage of students who are college or career ready.

The study examined English learner students who entered kindergarten between 2005/06 and 2011/12 in seven cohorts. It used a statistical model to estimate the time it would likely take English learner students in the seven Road Map Project districts to reach a grade-specific proficiency level on Washington's English language proficiency assessment and to be reclassified as former English learner students, regardless of whether they had been reclassified within the study period. The study also examined how this time differs for subgroups of students, taking into account student demographic characteristics and differences between cohorts and schools.

This study has four primary findings:

- Students who entered kindergarten as English learner students took a median of 3.8 years to develop the English proficiency necessary to be reclassified as former English learner students.
- English learner students entering kindergarten with advanced English proficiency were more likely to be reclassified in their first eight years of school than those entering with basic proficiency (which includes beginning and advanced beginning) or intermediate proficiency. Students entering with advanced English proficiency took a median of 3.0 years to be reclassified, and those entering with basic or intermediate proficiency took a median of 4.4 years.
- Female English learner students were more likely than male English learner students to be reclassified in their first eight years of school. Female English learner students took a median of 3.6 years to be reclassified, and male English learner student took a median of 4.1 years.
- Speakers of Chinese, Vietnamese, or Russian or Ukrainian (combined) were more likely to be reclassified in their first eight years of school than speakers of Somali or Spanish. Chinese speakers took the shortest median time to be reclassified (2.8 years), followed by speakers of Vietnamese (2.9 years), Russian or Ukrainian (3.2 years), Spanish (3.7 years), and Somali (3.9 years).

Contents

Why this study?

What does it mean to be proficient in English? Understanding language proficiency is important for educators who work with English learner students because English proficiency is linked to academic success. Students who have not reached proficiency in English struggle to learn grade-level content, take longer to graduate, and graduate at much lower rates than their English-proficient peers (Callahan, 2013; Gwynne, Pareja, Ehrlich, & Allensworth, 2012; Kim, 2011).

The question of what it means to be proficient in a language has occupied researchers and policymakers for decades (for example, Cummins, 1979; Hakuta, Butler, & Witt, 2000). However, on a practical level each state establishes its own definition of proficiency. The Elementary and Secondary Education Act, as reauthorized by the No Child Left Behind Act of 2001 and the Every Student Succeeds Act of 2015, requires each state to set rules for how it classifies students as English learner students and how it determines when those students have reached proficiency and can be reclassified as former English learner students. States are required to make those determinations using, at a minimum, an English language performance assessment and its associated proficiency levels. Each level is benchmarked to a specific score, typically referred to as a cutscore.

Students who have not reached proficiency in English struggle to learn grade-level content, take longer to graduate, and graduate at much lower rates than their English-proficient peers

Ideally, state assessments and cutscores would allow researchers to compare results across states, which could result in a more consistent definition of English proficiency in the United States. But in practice both assessments and cutscores vary from state to state—in many cases even across districts within a state—making it difficult to compare results (Hill, Weston, & Hayes, 2014; Wolf et al., 2008). Despite these difficulties, researchers and policymakers continue to seek a common definition of English language proficiency (Cook & MacDonald, 2014; Linquanti & Cook, 2013).

In Washington state all districts are required to use the same assessment, a Washington English language proficiency assessment,[1] and the same cutscores to classify students into four levels of proficiency: basic (which includes beginning and advanced beginning, level 1), intermediate (level 2), advanced (level 3), and transitional (level 4; see appendix A). Using the same assessment and proficiency levels provides a consistent interpretation of English language proficiency within the state. Students who score at the basic through advanced levels of proficiency are classified as English learner students and are eligible for English learner services. Those who score at or above the cutscore for the transitional level are reclassified as former English learner students and are no longer eligible for those services.

All students whose parents indicate on the Washington Home Language Survey that they speak a language other than English at home are assessed using a Washington English language proficiency assessment. In addition, teachers may request that students be assessed if they appear to have limited English proficiency. Students identified as possibly being English learners are assessed when they first enter a Washington school and are then assessed annually until they reach the transitional level of proficiency. Once they reach this level they are reclassified from English learner student to former English learner student and are no longer eligible for services.[2] There is some evidence that elementary and middle school English learner students who achieve the transitional level on the Washington English language proficiency assessment are indeed ready to join mainstream

content-area classes and can perform comparably to non–English learner students on the state math and science assessments (Autio, Deussen, & Davis, 2010; Parr & Lobdell, 2014).

Washington school districts recently began monitoring English learner student progress over the entire course of their schooling, including the amount of time former English learner students spent classified as English learners in Washington schools. This information allows districts to calculate, for the first time, how many years it took their English learner students to be reclassified. Previously, districts monitored individual English learner student progress annually. This meant that districts were able to determine only how many students had been reclassified in a given year and not how many years it took them to be reclassified, which is the main focus of this study.

Washington state has seen substantial growth in the number of students classified as English learners. In the eight-year study period 2005/06–2012/13 the English learner student population increased 32 percent, from 72,871 to 96,199 students, while the non–English learner student population grew just 4 percent. In 2012/13 nearly a quarter (22 percent) of all English learner students in Washington attended schools in the Road Map Project school districts, while 14 percent of all Washington students attended schools in these districts (Office of Superintendent of Public Instruction, ELL enrollment download files). The Road Map Project and the background of the study are described in box 1.

This study examined the time it takes English learner students to be reclassified in the context of their English proficiency at entry to kindergarten, their gender, and their home language. This is the first published study to examine time to reclassification in Washington using survival analysis

What the study examined

English learner students vary by English proficiency at entry to kindergarten, age at entry to a Washington state public school, and other demographic and individual characteristics such as home language and literacy in the home language. Previous studies have found many of these variables to be related to English learner student performance and time to reclassification.[3] This study examined the time it takes English learner students to be reclassified in the context of their English proficiency at entry to kindergarten, their gender, and their home language. This is the first published study to examine time to reclassification in Washington using survival analysis. This analytic technique accounts for all students in the population, even those who had not been reclassified by the end of the study period, while also accounting for the effects of student demographics and differences across schools.

The study answered the following research questions:

- How long does it take, on average, for English learner students who enter Road Map Project districts in kindergarten to be reclassified?
- How does time to reclassification for these students vary by English proficiency at entry to kindergarten, gender, and home language?
- How does likelihood of reclassification for these students in their first eight years of school vary by English proficiency at entry to kindergarten, gender, and home language?

Time to reclassification is often expressed as a single measure of time representing the average number of years it takes English learner students to be reclassified as former English learner students. While descriptive statistics on time to reclassification are easily understood and intuitive to many educators, they do not account for the effects of student demographics or school context. To account for these differences, it is necessary to create a

Box 1. Study background

The Road Map Project is a cradle-to-career initiative involving seven school districts (Auburn, Federal Way, Highline, Kent, Renton, Seattle, and Tukwila) that have the highest levels of poverty and lowest levels of academic achievement in the Seattle metropolitan area. Its goal is to double by 2020 the percentage of students who are college or career ready. Achieving this goal requires meeting the needs of English learner students, who constituted 14 percent of all Road Map Project district students in 2012/13. Nationally, English learner students are less likely to graduate from high school than their peers (Callahan, 2013; Gwynne et al., 2012; Kim, 2011). In Road Map Project districts in 2012/13, 54 percent of current English learner students failed to graduate on time,[1] compared with 24 percent of all Washington students and 28 percent of all students in the Road Map Project districts (Came & Ireland, 2013; Community Center for Education Results, 2013).

To understand more about the state's English learner students, the Road Map Project English Language Learner Workgroup requested that Regional Educational Laboratory (REL) Northwest examine how long it takes the districts' English learner students to be reclassified. The workgroup, a REL research alliance, includes federal program directors, English learner student program coordinators, and data analysts from the seven Road Map Project districts, as well as stakeholders from local education agencies, regional community colleges, and community-based organizations. The workgroup wanted to understand not only how long it takes English learner students in their districts to be reclassified, but also how this time varies by English language proficiency at entry into kindergarten and by student demographics. Stakeholders from other districts in the state and from the Washington Office of Superintendent of Public Instruction[2] also expressed interest in the results of this study and in using its findings to compare their English learner students' times to reclassification to those in the Road Map Project districts.

This is the second of two studies conducted by REL Northwest to examine the time it takes English learner students to be reclassified. These studies used two different methods to calculate time to reclassification. The first study (Greenberg Motamedi, 2015) measured the average time to reclassification for English learner students in Road Map Project district elementary schools (3.2 years for students entering in kindergarten), as well as the percentage of students who were reclassified by or before the end of the study period (85 percent). The current study employed a statistical model using survival analysis to estimate time to reclassification.

Notes

1. This percentage represents students who are classified as English learner students at the end of grade 12, not those who have been reclassified. It is a small proportion of all students who enter Washington schools as English learner students.

2. The Office of Superintendent of Public Instruction provides funding, guidance, and oversight for all district English learner student programs through the Transitional Bilingual Instructional Program.

statistical model that predicts the likelihood of reclassification for English learner students. The statistical model used to conduct this study is described in more detail in appendix A, and the data sources, data sample, and methods used to conduct the study are summarized in box 2.

Box 2. Data sources and methods

Data sources. This study used data from two Washington Office of Superintendent of Public Instruction K–12 datasets collected from 2005/06 to 2012/13. The Comprehensive Education Data and Research System is a student-level dataset that includes enrollment, demographic characteristics, special program status, and district/school information for all students enrolled in Washington state public schools (Office of Superintendent of Public Instruction, 2012). The Transitional Bilingual Instructional Program database contains information specific to students classified as English learner students, such as English language assessment results and information from the Home Language Survey, including the language reported as being spoken at home (home language). Both datasets include unique student identifiers used by the Office of Superintendent of Public Instruction to match students' data across the two datasets.

Sample. The study included 16,957 English learner students who entered kindergarten between 2005/06 and 2011/12 in seven cohorts. Cohort 1 enrolled in kindergarten in 2005/06 and had eight years of complete data at the time of the study; cohort 7 enrolled in kindergarten in 2011/12 and had two years of complete data (see tables A2 and A3 in appendix A). Approximately 80 percent of all K–12 English learner students in the Road Map Project districts in 2012/13 are represented in the study sample. Students who are not represented in the sample were members of other cohorts or entered Road Map Project district schools after kindergarten. All other students are part of the study sample.

The study examined five language groups, each having home speakers who constituted at least 3 percent of the total sample: Spanish, Vietnamese, Russian or Ukrainian (combined), Somali, and Chinese (Cantonese and Mandarin; see table A4 in appendix A). The 160 other languages spoken at home by English learner students were combined into an "other languages" category (Office of Superintendent of Public Instruction, ELL enrollment download files).

Methods. This study used discrete-time survival analysis to estimate the time it takes students to be reclassified and the likelihood of reclassification in their first eight years of school for subgroups of students in comparison with other subgroups. A model using survival analysis was created to predict variation in time to reclassification according to the student characteristics of English proficiency at entry to kindergarten, gender, and home language (Singer & Willett, 2003).

The amount of time students were classified as an English learner was based on their year of enrollment into the English learner program (which is the same as the student's kindergarten year) and the year of each student's reclassification or final record, whichever came first. By the end of the 2012/13 school year (the last year included in the analysis), some of the students had not yet been reclassified. For example, some students in cohort 7, who entered kindergarten in 2011/12, had not been reclassified by the end of first grade (2012/13). Students may have been reclassified later (for example, in 2013/14), but this is not observed in the data. To account for the fact that reclassification was not observed for all students, survival analysis was used to create a model that includes students without reclassification dates and cohorts with limited data available for analysis (Singer & Willett, 2003).

Time to reclassification can be associated with English proficiency at entry to kindergarten, gender, and home language, but their relative importance is unclear. To clarify the relationship between specific characteristics and time to reclassification, analyses for each variable controlled for the other two variables—that is, each characteristic's unique contribution was isolated by including it in a model that statistically removes its association and tests whether the other characteristics are still associated with reclassification. The study included a school-level variable to account for clustering of students in schools and a cohort variable to account for the different number of years that each cohort had spent in school and, consequently, the years of data available for analysis.

What the study found

The results of this study are reported as the median time to reclassification, or the number of years predicted by the model that it takes for 50 percent of English learner students to be reclassified as former English learner students, and the predicted likelihood of reclassification for subgroups of English learner students.

The median time to reclassification for English learner students who began kindergarten in a Road Map Project district between 2005/06 and 2011/12 was 3.8 years

The analysis found that it took 3.8 years after beginning kindergarten for 50 percent of these students to be reclassified (table 1).[4] Median time to reclassification varied by English proficiency at entry to kindergarten, gender, and home language as follows:

Median time to reclassification varied by English proficiency at entry to kindergarten, gender, and home language

- Students with advanced English proficiency at entry to kindergarten were reclassified in less time (3.0 years) than students entering with basic or intermediate English proficiency (4.4 years).
- Female English learner students were reclassified in less time (3.6 years) than male English learner students (4.1 years).
- Chinese (Cantonese and Mandarin) speakers were reclassified in the shortest time (2.8 years), followed by Vietnamese (2.9 years) and Russian or Ukrainian speakers (combined, 3.2 years). Spanish speakers (3.7 years) and Somali speakers (3.9 years) and speakers of other languages (5.1 years) took the longest to be reclassified.

Table 1. Proportion reclassified and median years to reclassification for English learner students who entered a Road Map Project district in kindergarten, 2005/06–2012/13

Student subgroup	Total sample		Proportion reclassified by 2012/13		Median years to reclassification
	Percent	Number	Percent	Number	
Total sample	100	16,957	72	12,180	3.8
English proficiency at entry to kindergarten					
Advanced proficiency	37	6,283	80	5,039	3.0
Basic[a] or intermediate proficiency	63	10,674	67	7,141	4.4
Gender					
Female	48	8,128	73	5,959	3.6
Male	52	8,829	71	6,221	4.1
Home language					
Chinese (Cantonese and Mandarin)	3	482	71	344	2.8
Vietnamese	11	1,820	75	1,367	2.9
Russian or Ukrainian	9	1,442	79	1,144	3.2
Spanish	48	8,068	68	5,493	3.7
Somali	7	1,215	62	752	3.9
Other languages	23	3,930	78	3,080	5.1

a. Includes beginning and advanced beginning.

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

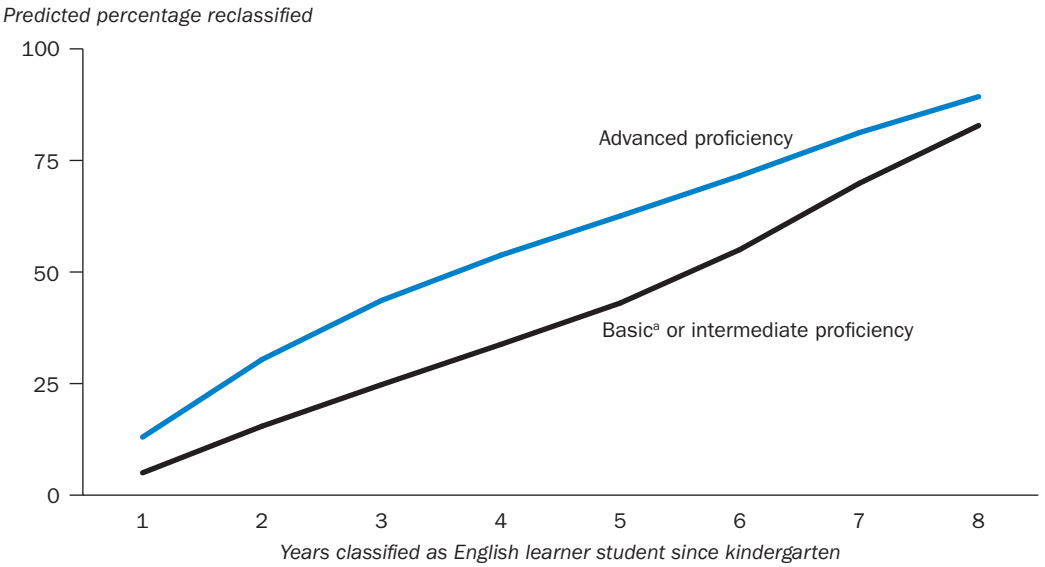
Likelihood of reclassification varied by English proficiency at entry to kindergarten, gender, and home language

English learner students with advanced English proficiency at entry to kindergarten were more likely to be reclassified than those with basic or intermediate English proficiency. With all other variables held constant,[5] English learner students entering kindergarten with advanced English proficiency were significantly more likely to be reclassified in their first eight years of school than students entering with either basic or intermediate English language proficiency (see table A6 in appendix A).[6] The association between students' time to reclassification and their level of English proficiency at entry to kindergarten can be summarized as follows:

- By the end of the second year of school 30 percent of English learner students entering kindergarten with advanced English proficiency are reclassified compared with 15 percent of English learner students entering with basic or intermediate English proficiency (figure 1).
- By the end of the fourth year of school 54 percent of English learner students entering kindergarten with advanced English proficiency are reclassified compared with 34 percent of English learner students entering with basic or intermediate English proficiency.
- By the end of the sixth year of school 72 percent of English learner students entering kindergarten with advanced English proficiency are reclassified compared with 55 percent of English learner students entering with basic or intermediate English proficiency.

By the end of the second year of school 30 percent of English learner students entering kindergarten with advanced English proficiency are reclassified compared with 15 percent of English learner students entering with basic or intermediate English proficiency

Figure 1. English learner students entering kindergarten with advanced English proficiency are reclassified sooner than those entering with basic or intermediate English proficiency, 2005/06–2012/13



Note: Analysis controlled for gender, home language, student cohort, and between-school variance.

a. Includes beginning and advanced beginning.

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

- By the end of the eighth year of school 89 percent of English learner students entering kindergarten with advanced English proficiency are reclassified compared with 83 percent of English learner students entering with basic or intermediate English proficiency.

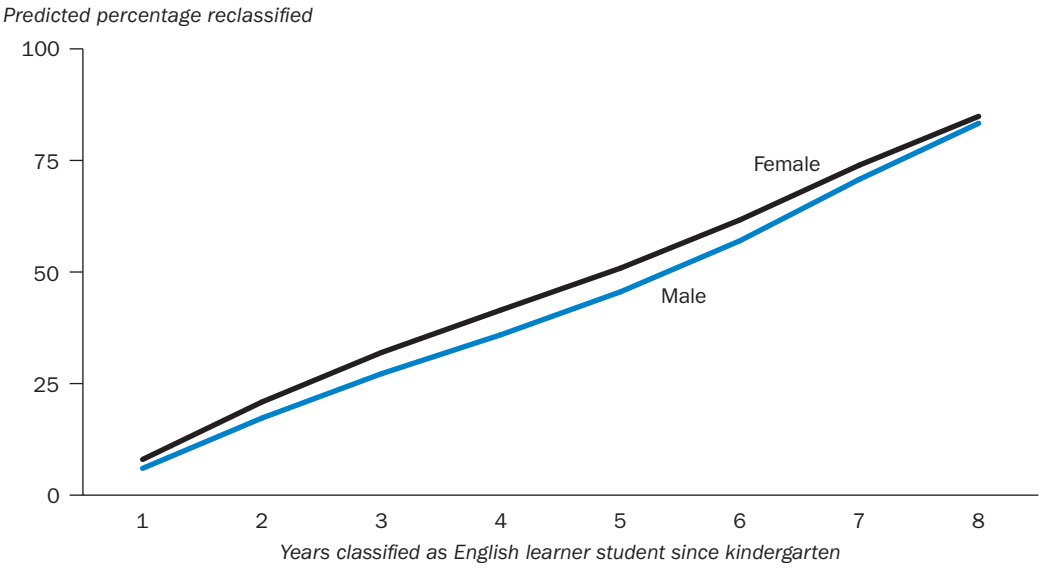
Female English learner students entering kindergarten were more likely to be reclassified than male English learner students. Gender had a small but statistically significant association with time to reclassification (see table A6 in appendix A). This association was strongest in the early elementary school years (see table A7 in appendix A).[7] Female English learner students were slightly more likely to be reclassified than male English learner students. The association between gender and time to reclassification can be summarized as follows:

- By the end of the second year of school 21 percent of female English learner students are reclassified compared with 17 percent of male English learner students (figure 2).
- By the end of the fourth year of school 41 percent of female English learner students are reclassified compared with 36 percent of male English learner students.
- By the end of the sixth year of school 62 percent of female English learner students are reclassified compared with 57 percent of male English learner students.
- By the end of the eighth year of school 85 percent of female English learner students are reclassified compared with 83 percent of male English learner students.

By the end of the second year of school 21 percent of female English learner students are reclassified compared with 17 percent of male English learner students

Speakers of Chinese, Vietnamese, or Russian or Ukrainian were more likely to be reclassified than speakers of Somali or Spanish. There were significant differences in time to reclassification among speakers of different home languages. Chinese (Cantonese

Figure 2. Female English learner students are slightly more likely to be reclassified than male English learner students, 2005/06–2012/13



Note: Analysis controlled for English proficiency at entry to kindergarten, home language, student cohort, and between-school variance.

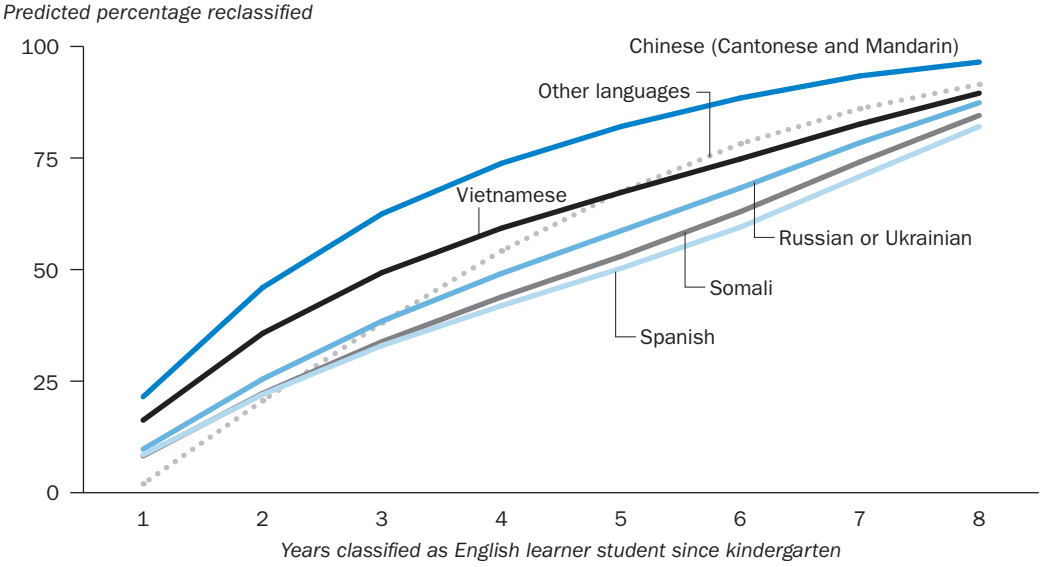
Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

and Mandarin combined),[8] Vietnamese, and Russian or Ukrainian speakers[9] were more likely to be reclassified in their first eight years of school than Somali and Spanish speakers (see table A6 in appendix A).[10] There were no significant differences between Somali- and Spanish-speaking English learner students in their likelihood of reclassification (see table A6 in appendix A). Speakers of other languages were the least likely of any language group to be reclassified in their first two years of school. However, speakers of other languages who remained classified as English learner students after their second year were more likely to be reclassified. As a result, the reclassification rate for speakers of other languages catches up to that of Spanish speakers in year 2 and surpasses that of Vietnamese speakers in year 5 (figure 3). The relationship between students' home language and their time to reclassification can be summarized as follows:

- By the end of the second year of school 46 percent of Chinese-speaking English learner students are reclassified, and 21 percent of other language–speaking English learner students are reclassified.
- By the end of the fourth year of school 74 percent of Chinese-speaking English learner students are reclassified, and 42 percent of Spanish-speaking English learner students are reclassified.
- By the end of the sixth year of school 88 percent of Chinese-speaking English learner students are reclassified, and 59 percent of Spanish-speaking English learner students are reclassified.
- By the end of the eighth year of school 97 percent of Chinese-speaking English learner students are reclassified, and 82 percent of Spanish-speaking English learner students are reclassified.

By the end of the second year of school 46 percent of Chinese-speaking English learner students are reclassified, and 21 percent of other language–speaking English learner students are reclassified

Figure 3. Speakers of Chinese, Vietnamese, or Russian or Ukrainian are reclassified sooner than speakers of Somali or Spanish, 2005/06–2012/13



Note: Analysis controlled for English proficiency at entry to kindergarten, gender, student cohort, and between-school variance.

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

Implications of the study findings

This study contributes to the growing research on how quickly English learners gain proficiency in English. Many of the findings corroborate the findings of other studies. For example, the results for median time to reclassification are consistent with published findings on average years to reclassification for English learners in Washington state (Malagon, McCold, & Nelson, 2013). The results also agree with findings that students who entered kindergarten with high initial English proficiency were reclassified faster than those with low initial proficiency (Shneyderman & Froman, 2012; Thompson, 2015) and that female English learner students were reclassified faster than male English learner students (Conger, 2009; Grissom, 2004; Thompson, 2015).

Previous studies have found that Spanish speakers take longer to be reclassified than speakers of other languages (Conger et al., 2012; Slama, 2014; Thompson, 2015). This study found that Spanish speakers take longer to be reclassified than speakers of Chinese, Vietnamese, or Russian or Ukrainian, but that Spanish speakers take the same amount of time as Somali speakers to be reclassified. Spanish speakers were more likely to be reclassified than speakers of other languages for their first two years of school. However, the likelihood that speakers of other languages would be reclassified increased over time and surpassed that of Spanish speakers by their third year.

The study findings suggest that expectations for the amount of time it takes English learner students to gain English proficiency should take student-level factors, notably English language proficiency at entry to kindergarten, into account

This study also adds to a larger body of work that uses a specific data analysis method (survival analysis) to understand time to reclassification in a variety of locations and across a range of contexts (for example, Conger, 2009; Slama, 2014; Thompson, 2015; Umansky & Reardon, 2014). Together, these studies provide a more detailed picture of the development of English proficiency, illuminating aspects of the timing and factors related to reclassification that are stable across contexts and those that are specific to particular contexts.

In addition to contributing to the research base, the study findings can help the Road Map Project set realistic expectations for the amount of time it takes English learner students to gain English proficiency in their districts. The study findings suggest that these expectations should take student-level factors, notably English language proficiency at entry to kindergarten, into account. The Road Map Project can also use these results as a baseline to measure change in English learner student outcomes over the life of the collective impact effort.

The findings may also be of interest to state education agencies as they create new targets and standards for English language proficiency. State agencies may wish to consider taking English proficiency at entry to kindergarten into account when determining appropriate targets for federal accountability measures, for example, by setting longer expected times to reclassification and providing additional support to students entering school with basic or intermediate levels of English language proficiency. Many states are also implementing new standards for college and career readiness and overhauling their assessment and accountability systems, both of which involve setting additional targets for English learner students. A better understanding of the factors related to variation in time to proficiency may allow states to establish targets that take particular factors, such as initial English proficiency, into account.

Limitations of the study

This study has four limitations. First, it does not take into account differences in instructional programs and practices for English learner students in Road Map Project districts and schools. Therefore, the amount of time it takes students to be reclassified should not be interpreted as the result of the efficacy of any district or school program or policy.

Second, the amount of time it takes students to be reclassified could be the result of factors that were not available to be analyzed, including aspects of student demographics such as socioeconomic status, native language literacy levels, schooling outside of Washington, and parent education levels. For example, differences across language groups may reflect unanalyzed factors such as socioeconomic status or parent education.

This study does not take into account differences in instructional programs and practices for English learner students

Third, there were instances of missing, incomplete, or incorrect data, particularly from the early years of the dataset. Specifically, data on English proficiency levels often appeared to be incorrect, and program exit dates were missing in approximately 20 percent of the analytic sample. However, assessment scores and dates appeared to be consistently accurate, and these were used to calculate English proficiency levels and reclassification dates based on published cutscores. The sample did not have any missing data for the outcome or predictor variables.

Fourth, the districts participating in the study were not selected randomly from the population of Washington districts. Consequently, the results may not be generalizable beyond the districts in the study.

Appendix A. Data and methodology

This appendix describes the dataset and the study population and explains how the data were analyzed.

Description of data

The data for this study were obtained through a data-sharing agreement with the Washington Office of Superintendent of Public Instruction. The study used data from two K–12 datasets: the Comprehensive Education Data and Research System and the Transitional Bilingual Instructional Program database. The Comprehensive Education Data and Research System collects student-level data on enrollment, demographic characteristics, special program status, and district/school information for all students enrolled in Washington public schools from the 2009/10 school year onward. The Transitional Bilingual Instructional Program dataset contains information specific to English learner students, including results from the Washington Language Proficiency Test II, the Washington English Language Proficiency Assessment, and the Home Language Survey. The Transitional Bilingual Instructional Program dataset was collected over eight years (2005/06–2012/13). The Office of Superintendent of Public Instruction linked these student-level datasets using unique student identifiers.

Participating districts

The study analyzed data for the seven Road Map Project districts (Auburn, Federal Way, Highline, Kent, Renton, Seattle, and Tukwila), located in South King County, Washington. In 2012/13, the final year of this study, the seven districts enrolled 151,195 students, representing 14 percent of all K–12 students in Washington and 22 percent of the state's English learner students (table A1).

In the 2012/13 school year the participating districts enrolled students from 167 different home language groups. Nearly half of the English learner students were Spanish speakers

Table A1. Characteristics of participating Road Map Project districts, 2012/13 school year

District name	Total enrollment	Percent of students		
		Home language other than English	Classified as English learner student	Eligible for free or reduced-price lunch
Auburn School District	14,789	30	13	56
Federal Way School District	22,107	31	14	57
Highline School District	18,293	40	22	70
Kent School District	27,529	36	17	53
Renton School District	14,898	39	15	55
Seattle Public Schools	50,623	24	8	42
Tukwila School District	2,956	68	39	78
Road Map Project districts	151,195	32	14	53
Washington state	1,047,061	21	9	46

Source: Office of Superintendent of Public Instruction K–12 Data and Reports website (Office of Superintendent of Public Instruction, ELL enrollment download files).

(47 percent), followed by Somali (9 percent) and Vietnamese (8 percent) speakers (Office of Superintendent of Public Instruction, ELL enrollment download files).

Study sample

The study sample contained 16,957 English learner students and former English learner students in seven cohorts who entered kindergarten in a Road Map Project school district from 2005/06 to 2011/12 (tables A2 and A3). Data for all seven cohorts were combined to address each of the research questions.

The study incorporated multiple cohorts to increase the sample size and provide robust and reliable results. Survival analysis, the data analysis method used in this study, can account for differences in the number of years the cohorts were observed. For example, cohort 7 was observed for only two years while cohort 1 was observed for eight years (see table A3). To account for other potential differences in probability of reclassification across cohorts, the model included cohort fixed effects.

The study focused on the five non-English language groups most prevalent in the Road Map Project districts: Spanish, Vietnamese, Russian or Ukrainian, Somali, and Chinese

Table A2. Grade level of English learner students in each cohort by school year, 2005/06–2012/13

	School year							
Cohort	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
1	K	1	2	3	4	5	6	7
2		K	1	2	3	4	5	6
3			K	1	2	3	4	5
4				K	1	2	3	4
5					K	1	2	3
6						K	1	2
7							K	1

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

Table A3. Number of English learner students in each cohort in Road Map Project participating districts, 2005/06–2012/13

Cohort	Kindergarten year	Maximum years	Number of students	Percent reclassified by 2012/13
1	2005/06	8	1,685	88
2	2006/07	7	2,151	83
3	2007/08	6	2,352	80
4	2008/09	5	2,609	76
5	2009/10	4	2,622	70
6	2010/11	3	2,669	62
7	2011/12	2	2,869	54
Total			16,957	72

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

Table A4. Students in the sample by non-English language group, 2005/06–2012/13

Home language	Number	Percent
Spanish	8,068	48
Vietnamese	1,820	11
Russian or Ukrainian	1,442	9
Somali	1,215	7
Chinese (Cantonese and Mandarin)	482	3
Other languages	3,930	23
Total	16,957	100

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

(Cantonese and Mandarin). All other language groups were combined into an "other languages" category (table A4).

Washington's English language proficiency assessments

In Washington state, all districts are required to use the same reclassification assessment and the same criteria, thus providing a consistent interpretation of English language proficiency. Washington used the Washington Language Proficiency Test II from 2005/06 to 2011/12 and the Washington English Language Proficiency Assessment from 2012/13 to 2014/15. The English Language Proficiency Assessment for the 21st Century has been used since 2015/16.

In Washington, English learner students are reclassified when they achieve the transitional level on a Washington English language proficiency assessment. Results of the English language proficiency assessment are reported for four levels of achievement, benchmarked by grade to three different cutscores.

- Basic (beginning and advanced beginning, level 1).
- Intermediate (level 2).
- Advanced (level 3).
- Transitional (level 4).

Students who score at the basic through advanced levels are classified as English learner students and are eligible for English learner student services. English learner students who score at or above the transitional cutscore are no longer eligible for English learner student services and are reclassified as former English learner students. Students who score transitional at school entry are never classified as English learner students.

Washington state uses the definitions of English language proficiency development performance that were developed by TESOL (Gottlieb, Carnuccio, Ernst-Slavit, & Katz, 2006; table A5).

Grade-specific proficiency performance definitions and cutscores are published by CTB/McGraw-Hill (2014) for the Office of Superintendent of Public Instruction. Washington state does not collect information about students' proficiency in their home language.

Table A5. Washington English language proficiency development performance definitions

Proficiency level	Proficiency descriptor	English learner students will process, understand, produce, and use
1	Beginning	• Pictures, graphs, or nonverbal representations of language words, including high-frequency words, phrases, or formulaic chunks of language • Language to communicate with others around basic concrete needs
	Advanced beginning	• Language to draw on simple and routine experiences to communicate with others • General language related to content areas • Phrases or short sentences in oral or written communication, making errors that often impede the meaning of the communication
2	Intermediate	• Language to communicate with different audiences on familiar matters • General and some specific language of the content areas • Expanded sentences in oral or written communication, making errors that may impede the communication while retaining much of its meaning
3	Advanced	• Language in both concrete and abstract situations, applying language to new experiences • Specialized and some technical language of the content areas • A variety of sentence lengths of varying linguistic complexity in oral and written communication, making minimal errors that do not impede the overall meaning of the communication
4	Transitional	• A wide range of longer oral and written texts and recognize implicit meaning • Specialized or technical language of content areas at grade level • A variety of sentence lengths of varying linguistic complexity in extended oral or written discourse approaching comparability to that of English-proficient peers

Source: Reproduced from CTB/McGraw Hill (2014).

Protection of personally identifiable information

Regional Educational Laboratory Northwest complied with applicable federal and state laws and regulations protecting the privacy of study participants, including the requirements of the Family Educational Rights and Privacy Act. All data, including personally identifiable information, were protected, stored, disposed of, and otherwise kept confidential, as required by data use agreement with the Office of Superintendent of Public Instruction and all applicable state and federal law, including the Family Educational Rights and Privacy Act.

Data analyses

To examine the relationship between the study variables and time to reclassification, the study team conducted a discrete-time survival analysis using reclassification as an outcome variable and English proficiency at entry to kindergarten, gender, home language, and cohort and school fixed effects as predictor variables.

Outcome variable

Event. The outcome is a dichotomous variable taking a value of 1 when an English learner student is reclassified as a former English learner student and 0 while a student remains classified as an English learner student. Students who were never reclassified were right-censored due to either the student moving out of a Road Map Project district (as the

student's data could not be tracked) or a lack of follow-up data (as the study stopped following students after 2012/13). The study defined the "beginning of time" as the student's year of entry into the English learner student program in a Road Map Project district kindergarten and "end of time" as the year a student was reclassified or censored. This resulted in a maximum of eight years (time periods) for the first cohort and a maximum of two years for the last cohort. Each year, some students were reclassified and some were not. For each given year one can calculate the hazard rate, or the proportion of students who began the year as English learner students (the risk set) and who were reclassified during that year.

Predictor variables

Time measured in years. Time was measured in years using the start year and end year. All students entered during their cohorts' kindergarten year. Kindergarten students took an English language proficiency assessment twice, once at the beginning of the year to determine whether they qualified for English learner services and once at the end to determine whether they had gained the English proficiency necessary to be reclassified. Students who were reclassified at the end of kindergarten have a time to reclassification of one year.[11]

Home language. The sample contained five major non-English home language groups—Spanish, Somali, Vietnamese, Russian or Ukrainian, and Chinese—and a category for all other languages. The study used five dummy-coded variables to represent the language categories, with Spanish as the reference group (Spanish-speaking English learner students made up almost half the sample).

Male. Gender is a dichotomous, time-invariant variable that was coded 1 if male and 0 if female.

Advanced. Advanced was dichotomously coded, based on the students' first English language proficiency assessment scores in kindergarten: 1 if the student was at level 3 (advanced, one level below transitional) or 0 if the student was at level 1 (beginning or advanced beginning) or level 2 (intermediate).

School codes. The school code records the school a student attended for the longest period of time as an English learner student.

Cohort codes. The cohort code records the year the student enrolled in kindergarten (2005/06–2011/12). There were six dummy variables, with the earliest cohort (2005/06) representing the reference group.

Model specification

The study used a logistic regression model to examine the relationship between time to reclassification and initial English proficiency, gender, and home language. This model included cohort fixed effects to account for differences in time to reclassification across cohorts and included school fixed effects to account for clustering of students within schools. It used robust standard errors to account for repeated observations within students. The equation below was used to model time to reclassification in this study. In this

equation logit $h(t_{ij})$ is the conditional probability that the student will be reclassified in the time period, and α_{1-8} are dummy variables representing the eight time periods.[12]

$$\begin{aligned}\text{logit } h(t_{ij}) = {} & \alpha_{1-8} + \alpha_9\text{Advanced}_i + \alpha_{10}\text{Male}_i + \alpha_{11}\text{Chinese}_i + \alpha_{12}\text{Vietnamese}_i \\ & + \alpha_{13}\text{Russian-Ukrainian}_i + \alpha_{14}\text{Somali}_i + \alpha_{15}\text{Other}_i + \alpha_{16}\text{Advanced}_i \\ & \times (\text{time}_j) + \alpha_{17}\text{Male}_i \times (\text{time}_j) + \alpha_{18}\text{Chinese}_i \times (\text{time}_j) + \alpha_{19}\text{Vietnamese}_i \\ & \times (\text{time}_j) + \alpha_{20}\text{Russian-Ukrainian}_i \times (\text{time}_j) + \alpha_{21}\text{Somali}_i \times (\text{time}_j) \\ & + \alpha_{22}\text{Other}_i \times (\text{time}_j) + \alpha_{23-28}(\text{dummy cohort variables representing six} \\ & \text{cohorts}) + \alpha_{29-173}(\text{dummy variables representing 145 schools})\end{aligned}$$

Hazard (h) is the quantity used to evaluate the risk of event occurrence (reclassification) in each discrete time period in the model. Therefore, $h(t_{ij})$, the discrete-time hazard, is the conditional probability that a student experiences the event (reclassification) in time period j, given the student did not experience it in any earlier time periods. Logit hazard reclassification, logit $h(t_{ij})$, transforms hazard values that are bounded between 0 and 1. This improves the distributional behaviors, prevents inadmissible values, and enables extreme values to be more comparable (Singer & Willett, 2003). Logit $h(t_{ij})$ was modeled as a piecewise linear function, meaning that each time period had separate linear functions that can be joined together. Advanced, male, Chinese, Russian or Ukrainian, Vietnamese, Somali, and other languages are coded 1 if the student had those characteristics and 0 if otherwise. The positive sign of the coefficient for the covariate shows that the likelihood for reclassification is higher for a value of 1 on the covariate than a value of 0. Likewise, if the sign is negative then the risk of reclassification is lower for a value of 1 than for a value of 0 on the covariate. The study included all interactions between time and the variables—advanced, male, Chinese, Russian or Ukrainian, Vietnamese, Somali, and other languages—in the model. For ease of interpretation, odds ratios are provided (table A6).

The study used the estimates from the model to predict the cumulative proportion of students who were reclassified in each time period. For example, to obtain the survival function for students with advanced proficiency within the first three years, the study first used the estimates from the predictive model to predict the hazard probabilities for each of the first three years: $h(t_1)$, $h(t_2)$, and $h(t_3)$. The estimated survival probability after three years is equal to

$$S = [1 - h(t_1)]\,[1 - h(t_2)]\,[1 - h(t_3)]$$

where $1 - h(t_1)$ is the probability of survival in the first year; $1 - h(t_2)$ is the probability of survival in the second year, conditional on having survived the first year; and $1 - h(t_3)$ is the probability of survival in the third year, conditional on having survived to the second year.

For time 1, $h(t_1) = 0.14$, for time 2, $h(t_2) = 0.21$, and for time 3, $h(t_3) = 0.20$. Inputting the values in the survival function, the survival probability was estimated for the first three years to be 54 percent. Finally, to obtain the cumulative probability that students were reclassified within the first three years, the study took the complement of the probability of survival after three years from 1. Thus, the cumulative probability of reclassification after three years is 46 percent.

Table A6. Results of fitting discrete-time hazard models to the time to reclassification for the cohorts, 2005/06–2012/13

Variable	Odds ratio
Advanced	2.85** (0.12)
Male	0.72** (0.03)
Chinese	2.90** (0.42)
Vietnamese	2.02** (0.15)
Russian or Ukrainian	1.39** (0.06)
Somali	0.88 (0.08)
Other	0.22** (0.01)
Interaction with time period	
Advanced × (time)	0.87** (0.01)
Male × (time)	1.07** (0.01)
Chinese × (time)	0.78** (0.04)
Russian or Ukrainian × (time)	1.09** (0.03)
Vietnamese × (time)	0.90** (0.02)
Somali × (time)	1.03 (0.03)
Other × (time)	1.34** (0.02)

** significant at $p < 0.01$.

Note: For a clearer presentation of the variables, only the dichotomous predictors and interaction effects were included in this table. Numbers in parentheses are standard errors.

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

An odds ratio describes the odds that an event will occur for one group relative to a reference group. An odds ratio of 1 shows that a group of students has the same odds of being reclassified as the reference group, while an odds ratio of more than 1 shows higher odds, and an odds ratio of less than 1 shows a lower likelihood of being reclassified. This study calculated the odds ratios for each year of the study period (table A7). For example, an English learner student entering kindergarten with advanced English proficiency has an odds ratio of 2.48 after the first year compared with an English learner student entering kindergarten with basic or intermediate English proficiency. This student is almost three times more likely to be reclassified after the first year than peers who enter with basic or intermediate English proficiency.

Table A7. Odds ratios for selected student characteristics by time period, 2005/06–2012/13

Subgroup	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Comparison group
English learner students entering kindergarten with advanced English proficiency	2.48	2.16	1.88	1.63	1.42	1.24	1.08	0.94	English learner students entering kindergarten with basic or intermediate English proficiency
Male English learner students	0.77	0.82	0.88	0.94	1.01	1.08	1.16	1.24	Female English learner students
Chinese speakers	2.26	1.76	1.38	1.07	0.84	0.65	0.51	0.40	Spanish speakers
Vietnamese speakers	1.82	1.64	1.47	1.33	1.19	1.07	0.97	0.87	
Russian or Ukrainian speakers	1.51	1.65	1.80	1.96	2.14	2.33	2.54	2.77	
Somali speakers	0.91	0.93	0.96	0.99	1.02	1.05	1.08	1.11	
Speakers of other languages	0.29	0.39	0.53	0.71	0.95	1.27	1.71	2.29	

Source: Authors' analysis based on Office of Superintendent of Public Instruction data from 2005/06 to 2012/13.

Notes

1. Washington used the Washington Language Proficiency Test II from 2005/06 to 2011/12 and the Washington English Language Proficiency Assessment from 2012/13 to 2014/15. The English Language Proficiency Assessment for the 21st Century has been used since 2015/16.
2. In 2013/14 and 2014/15 the Washington State Legislature provided additional funding to support former English learner students who had been reclassified within the past two years. However, this funding was not available during the period examined in this study.
3. Previous studies have found English proficiency at entry to kindergarten, gender, home language, program models, U.S.-born versus foreign-born status, and special education program participation to be related to English learner student performance and time to reclassification (Carhill, Suárez-Orozco, & Páez, 2008; Conger, 2009; Conger, Hatch, McKinney, Atwell, & Lamb, 2012; Cook, Boals, Wilmes, & Santos, 2008; Hakuta et al., 2000; Slama, 2014; Shneyderman & Froman, 2012; Thompson, 2015; Umansky & Reardon, 2014).
4. These findings differ from Greenberg Motamedi's (2015) descriptive study on time to reclassification in Road Map Project districts, which found that, on average, it took 3.2 years for students entering Road Map Project districts in kindergarten to be reclassified and that 85 percent were reclassified by 2012/13. There are two possible reasons for these different findings. First, Greenberg Motamedi (2015) provided estimates only for students who were reclassified within the study period, while the current study provides estimates for all English learner students, regardless of whether they had been reclassified within the study period. Second, Greenberg Motamedi (2015) did not simultaneously account for the effects of student demographics or school context on time to reclassification. The current study examines the effect of English proficiency at entry to kindergarten, gender, and home language on time to reclassification, while controlling for other differences between students (such as differences between cohorts or schools).
5. This analysis controlled for gender, home language, student cohort, and school fixed effects. The model adjusted the standard errors for repeated observations of students and clustering of students within schools.
6. The study found no statistically significant difference in time to reclassification between students entering with basic English proficiency and those entering with intermediate English proficiency, so they were combined into one group in the analyses.
7. This analysis controlled for initial English proficiency, home language, student cohort, and school fixed effects. The model adjusted the standard errors for repeated observations of students and clustering of students within schools.
8. The study found no statistically significant difference in time to reclassification between Cantonese- and Mandarin-speaking English learner students, so they were combined into one group in the analyses.
9. The study found no statistically significant difference in time to reclassification between Russian- and Ukrainian-speaking English learner students, so they were combined into one group in the analyses.
10. This analysis controlled for English proficiency at entry to kindergarten, gender, and student cohort and school fixed effects. The model adjusted the standard errors for repeated observations of students and clustering of students within schools.
11. There were no grade repeaters in the final analytic sample.

12. The study included interaction effects between the predictors and the time variable to check for the assumption of proportionality of hazard for each predictor. All effects in the model were statistically significant except for the Somali predictor, and its interaction with time was also not statistically significant (see table A6).

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