Making Connections

Time to proficiency for Hispanic English learner students in Texas

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Key findings

This study determined the average time it took the 2005/06 cohort of grade 1 Hispanic English learner students in Texas public schools to attain English proficiency and to demonstrate at least satisfactory performance in reading and math on state assessments given in English or Spanish:

- About half of the students who were not English proficient by entry to grade 2 attained proficiency within 2.6 years (by approximately the middle of their expected grade 4 year), and about 88 percent were proficient by the end of grade 8.
- By the end of grade 3 most students in the cohort had met state standards in reading (about 84 percent) and math (about 80 percent) when tested in English or Spanish under the state's previous assessment system.
- Time to proficiency varied by a number of student characteristics. English learner students who started grade 1 with a beginning level of English proficiency, those who participated in a special education program, and those who started grade 1 at age 7 or older were less likely to attain English proficiency and meet math and reading state standards at any given grade.
- Students eligible for the federal school lunch program were less likely to attain English proficiency and meet state reading standards at any given grade.

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REL 2018–280

This report is available on the Regional Educational Laboratory website at http://ies.ed.gov/ncee/edlabs.

Summary

English learner students are challenged by the difficult task of learning English concurrently with learning content in areas such as reading and math (Kieffer, 2011; Short & Fitzsimmons, 2007). English learner students who have not attained proficiency in English or learned core course content by the middle and upper grades may not have the requisite skills to enroll in courses required for high school graduation (Callahan, 2005; Slama, 2012), placing them at greater risk of dropping out of school before graduation (Greenberg Motamedi, Singh, & Thompson, 2016; Suárez-Orozco & Suárez-Orozco, 2001; White & Kaufman, 1997). The lack of a high school diploma could subsequently limit the economic opportunities open to them (for example, Belfield & Levin, 2007). Texas, which serves 16 percent of the nation's English learner students (U.S. Department of Education, 2016), provides a unique context for examining the time it takes these students to achieve English proficiency and master core content.

Using data from the Texas Education Agency, a study team from Regional Educational Laboratory Southwest examined the average time it took the 2005/06 cohort of grade 1 Hispanic English learner students in Texas public schools to attain English proficiency and to demonstrate at least satisfactory academic performance in reading and math as measured by state standardized assessments. This longitudinal study also examined whether the time it took students to attain these key outcomes differed by enrollment in a public prekindergarten program, initial English language proficiency level, the type of English learner program (English as a Second Language or bilingual), whether a parent had opted the student out of English learner services, and student background characteristics (gender, eligibility for the federal school lunch program, immigrant status, and participation in a special education program). This study demonstrates the use of state historical data to expand knowledge of how English learner students fare in school while classified as English learner students and after reclassification as fluent English proficient. Study results can be used to inform expectations for progress toward English language proficiency for English learner students.

The following key findings were based on the analysis of eight years of longitudinal data on the 2005/06 cohort of grade 1 Hispanic English learner students in Texas public schools:
- About half of the students who were not English proficient by entry to grade 2 attained proficiency within 2.6 years (by approximately the middle of their expected grade 4 year), and about 88 percent were proficient by the end of grade 8.
- By the end of grade 3, most students in the cohort had met state standards in reading (about 84 percent) and math (about 80 percent) when tested in English or Spanish.
- Time to proficiency varied by a number of student characteristics. English learner students who started grade 1 with a beginning level of English proficiency, those who participated in a special education program, and those who started grade 1 at age 7 or older were less likely to attain English proficiency and meet state standards at any given grade.
- Students eligible for the federal school lunch program were less likely to attain English proficiency and meet state reading standards at any given grade.

The findings reveal subgroups of English learner students who took longer than their English learner peers to attain the outcomes studied and who were placed at risk of not attaining important education outcomes by the end of the middle grades.

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Why this study?

English learner students must accomplish the difficult task of learning English concurrently with learning content in areas like reading and math (Kieffer, 2011; Short & Fitzsimmons, 2007). English learner students who have not attained proficiency in English and have not demonstrated grade-level mastery of academic content by the middle and upper grades may have difficulty accessing academic courses needed to fulfill graduation requirements. These students are placed at risk of dropping out of school before graduation (Greenberg Motamedi et al., 2016; Suárez-Orozco & Suárez-Orozco, 2001; White & Kaufman, 1997), which could subsequently limit their ability to tap into the economic opportunities that a high school diploma affords (for example, Belfield & Levin, 2007).

Under the Every Student Succeeds Act of 2015, states are required to develop and apply a uniform procedure for setting long-term goals for increases in the percentage of English learner students making progress in achieving English proficiency (Section 1111(c)(4)(A)(ii)). States are also required to develop an indicator for progress in English learner students achieving English language proficiency as part of their the statewide accountability system (Section 1111(c)(4)(B)(iv)). Stakeholders nationwide are tasked with setting "reasonable but challenging" expectations for the time it should take English learner students to attain education outcomes that are critical to college and career readiness (Cook, Boals, Wilmes, & Santos, 2008, p. 11), such as English proficiency and meeting state content standards in reading and math.

This study uses historical data to inform realistic expectations for progress of English learner students toward and attainment of English proficiency

National English learner and accountability experts have recommended that state leaders use their existing data on English learner students to set goals for progress and attainment of English proficiency (Goldschmidt & Hakuta, 2017). This study uses historical data to inform realistic expectations for progress toward and attainment of English proficiency in Texas. Appropriate and empirically grounded expectations for language proficiency and academic achievement for English learner students are particularly pertinent in Texas, where schools serve 16 percent of the country's English learner students (U.S. Department of Education, 2016).

Texas stakeholders have made it a priority to gain a better understanding of the long-term achievement of English learner students. With this study, the Regional Educational Laboratory Southwest Texas English Learners Research Alliance sought to better understand the factors that influence how long it takes English learner students to attain English language proficiency and meet state standards in reading and math. The alliance is a group of policymakers and stakeholders dedicated to identifying the programs and services that best meet the needs of Texas English learner students.[1]

This study focuses on Hispanic English learner students, a potentially vulnerable population in schools and the largest student group served by Texas programs for English learner students. The challenges that Hispanic English learner students face are evident with the "large and enduring" (Umanksy & Reardon, 2014, p. 3) achievement and attainment gaps that have been documented in research studies of these students compared with other students. In Texas, Hispanic English learner students comprise nearly 90 percent of English learner students (Texas Education Agency, 2017a) and, according to previous research studies, lag behind their English learner peers from other racial and ethnic backgrounds in high school graduation and postsecondary attainment (Flores, Batalova, & Fix, 2012).

Estimates based on longitudinal data for a statewide student cohort can provide Texas stakeholders with empirical findings to inform reasonable accountability expectations for the time it takes Hispanic English learner students to attain English language proficiency. A summary of Texas accountability expectations for progress in attaining English proficiency and meeting state standards in reading and math at the time of the study is provided in box 1.

Box 1. Texas accountability expectations for progress by English learner students in attaining English proficiency and meeting state standards in reading and math

Texas policy requires districts to provide English learner students with English as a Second Language or bilingual education instructional programs (see appendix A). Texas policy requires parental approval for student placement in an English learner program and allows parents to opt out of a language instruction educational program.

Several criteria are used to decide when an English learner student is ready to exit an English as a Second Language or bilingual program and be reclassified as "fluent English proficient," meaning that the student may participate fully in a regular all-English instructional program (see table A2 in appendix A for Texas reclassification criteria).[1] English learner students were considered to have attained English proficiency when they scored at a required level on state-defined measures of reading, writing, speaking, and listening. At the time of the study, districts could select measures to satisfy each of these four domains from a state-approved list of assessments, which included the annual statewide Texas English Language Proficiency Assessment System (TELPAS) for writing (except in grades 4 and 7, when the statewide writing assessment is administered), speaking, and listening. To satisfy the reading requirement, English learner students must score at the 40th percentile on a state-approved norm-referenced standardized achievement assessment (grades 1, 2, 11, and 12) or at the passing level on the statewide reading content assessment, either the State of Texas Assessments of Academic Readiness (STAAR) or the Texas Assessment of Knowledge and Skills (TAKS). In addition, a teacher must evaluate an English learner student's readiness for reclassification based on an assessment, portfolio, or anecdotal notes (Texas Education Agency, n.d.).

At the time of the study, under the Elementary and Secondary Education Act (ESEA), Title III, Part A, Section 3122, the Texas Education Agency held school districts receiving Title III funds accountable for meeting Annual Measurable Achievement Objectives (AMAOs) for English learner students. The three AMAOs included the percentage of English learner students making progress in learning English, the percentage of English learner students attaining English proficiency, and the percentage of English learner students meeting the state's academic content and achievement standards. Under this accountability system, English proficiency attainment is demonstrated when the student receives a TELPAS composite rating of advanced high, the highest of four composite ratings (Texas Education Agency, 2013). Other ratings include beginning, intermediate, and advanced. English learner students can meet the definition of English proficiency attainment under Title III AMAO 2—advanced high on the TELPAS composite rating—but remain classified as English learner students because they do not meet one or more of the other reclassification criteria.

Expectations for English learner students meeting state content standards are outlined in the Texas English Language Learner Progress Measure (see table A4 in appendix A). This measure establishes progress toward passing the state standardized content-area performance assessment (State of Texas Assessments of Academic Readiness) for English learner students, differentiated by the number of years the student has attended school in the United States and on the student's initial level of English proficiency. It takes into account the time needed to acquire English language proficiency and to demonstrate grade-level academic skills in English. For example, among students who have been attending U.S. schools for one year, students who initially score at the beginning level on the TELPAS assessment are expected to pass state reading and math assessments within four years, whereas students who initially score at the advanced high level are expected to pass state assessments within one year (Texas Education Association, 2016b). Whether the student has an interrupted formal education or is a refugee or an asylee is also taken into account in establishing expectations for progress.

(continued)

What the study examined

This study determined the average time it took the 2005/06 cohort of grade 1 Hispanic English learner students in Texas public schools to attain English proficiency and to demonstrate at least satisfactory performance in reading and math on state assessments given in English or Spanish. It examined how English learner students fared academically while classified as English learner students and after reclassification as fluent English proficient. This report shows the percentage of the cohort that was reclassified as fluent English proficient each year.

The study explored the following research questions:

1. After initial classification as English learner students in grade 1, how much time did it take Hispanic students to:
   a. Attain English proficiency?[2]
   b. Demonstrate at least satisfactory performance in reading and math, measured in English or Spanish?

2. To what degree are initial English proficiency, students' education experiences,[3] student demographic characteristics, and district characteristics related to these outcomes?

Research question 2 explores the relationship between the probability of a student first attaining each of the three outcomes (English proficiency and at least satisfactory performance in reading and in math) and the characteristics that might predict the outcomes, using characteristics identified in previous research (a literature review is in appendix B, and table C4 in appendix C describes how these characteristics were coded for the study):

- Student demographic characteristics.
  - Gender (Flores et al., 2012).
  - Age at school entry (Conger, 2009; Verachtert, De Fraine, Onghena, & Ghesquière, 2010).
  - Eligibility for the federal school lunch program, a proxy for low-income status (Kieffer, 2011; Lindholm-Leary & Borsato, 2006).
  - Immigrant status (Padilla & Gonzalez, 2001).[4]
  - Special education status (Burr, Haas, & Ferriere, 2015; Park, 2014).
  - Native language proficiency (August & Shanahan, 2006).

This study determined the average time it took the 2005/06 cohort of grade 1 Hispanic English learner students in Texas public schools to attain English proficiency and to demonstrate at least satisfactory performance in reading and math on state assessments given in English or Spanish

- Students' initial English proficiency (Cook, Linquanti, Chinen, & Jung, 2012; Kieffer, 2011).
- Enrollment in prekindergarten (Barnett, 2008; Gormley, 2008; Halle, Hair, Wander, McNamara, & Chien, 2012; Rumberger & Tran, 2006).
- Type of English learner program: English as a Second Language or bilingual (Umansky & Reardon, 2014).
- Opting out of English learner program (Flores, Batalova, & Fix, 2012).
- District demographic characteristics (Arias & Faltis, 2012; Gándara et al., 2010; Hakuta, Butler, & Witt, 2000; Kieffer, 2011; Kim, Curby, & Winsler, 2014; Rios-Aguilar & Gándara, 2012; Rios-Aguilar, González-Canché, & Sabetghadam, 2012).
  - Percentage of students who are eligible for the federal school lunch program.
  - Percentage of students who are of a racial/ethnic minority group.
  - Percentage of students who are English learners.

A brief description of the data sources, the study sample, measures, and study methodology are in box 2; a detailed discussion is in appendix C.

Box 2. Analytic samples and research approach

Data

Drawing on eight years of longitudinal data (2005/06–2012/13) on the 2005/06 cohort of grade 1 Hispanic students in Texas who were identified as English learner students, the study team created three longitudinal analytic samples. Annual student-level data were provided by the Texas Education Agency, and district demographic data came from publicly available files in the Texas Academic Performance Reports data system.

Analytic samples

Research question 1a considered the time it took students to attain English language proficiency, as measured by a score at the advanced high level on the statewide English language proficiency assessment, the Texas English Language Proficiency Assessment System. The analytic sample for research question 1a comprised 71,140 Hispanic English learner students who were in grade 1 in Texas traditional public schools in 2005/06 and who entered grade 2 not yet proficient in English (see appendix C for details on the creation of the analytic samples).

Research question 1b considered the time it took students to demonstrate at least satisfactory performance in reading and math, as measured by a score at or above the satisfactory proficiency level on either the Texas Assessment of Knowledge and Skills (TAKS, 2007/08–2010/11) or the State of Texas Assessments of Academic Readiness (STAAR, 2011/12 and 2012/13). For the reading outcome the sample comprised 69,216 students; for the math outcome the sample comprised 69,014 students. The reading and math samples consisted of Hispanic English learner students who were in grade 1 in 2005/06 for whom assessment data were available when they were first administered the reading or math assessments in grade 3 (2007/08).

Research question 2 considered whether the time to or probability of first attaining each of the three outcomes differed by the following variables: public prekindergarten enrollment, initial English language proficiency, initial English learner program type, opting out of English learner programs at least once between grades 1 and 8 (see appendix A), and several student and district demographic characteristics. The same three analytic samples described above were used to answer research question 2.

(continued)

Box 2. Analytic samples and research approach *(continued)*

Method

The study employed a statistical method called discrete-time survival analysis to examine whether and when grade 1 Hispanic English learner students first attained each of the three outcomes (research questions 1a and 1b; see appendix C for methodology) and how the time to or probability of attaining the outcome for the first time is related to the variables of interest (research question 2).

The findings based on the survival analysis are reported as estimates of the time it took for half of the students in the analytic sample to first attain the outcome and as comparisons of the odds of obtaining an outcome, or odds ratios, for different student subgroups. An odds ratio of 1 indicates that the first group has the same probability of experiencing the outcome as the reference group. An odds ratio greater than 1 indicates that the first group had a higher probability of experiencing the outcome than the reference group, and a ratio of less than 1 indicates that it has a lower probability of experiencing the outcome. The analyses of the relationships between time to or probability of attaining the outcome and moderators (initial English proficiency, English learner program type, and student and district demographics) control for all other characteristics and focus on statistically significant differences (the full survival models used for each outcome are shown in table D5 in appendix D).

To provide context for the survival analysis findings, the study describes the longitudinal sample by presenting the yearly and cumulative proportions of the cohort who attained proficiency in English (see table D1 in appendix D), reading (see table D3), and math (see table D6). These descriptive findings report percentages based only on students whose outcomes could be tracked up to the given grade.

Findings from the survival analysis represent a more complete picture of the academic trajectories of English learner students in Texas because they take into account both students whose outcomes could be tracked up to the given grade and students whose outcomes are unknown beyond that grade. Students whose outcomes could not be tracked were considered "censored." Censored students include both those who did not experience the outcome of interest by the end of the study (for example, a student who did not attain English proficiency by grade 8) and those who left the study before experiencing the outcome (for example, a student who left the state before attaining English proficiency). Because the actual time to experiencing the outcome is unknown for censored individuals, ignoring censoring can result in biased estimates.

At the time the study was conducted, new performance standards were being phased in as Texas transitioned from the TAKS to the STAAR student assessment. The study team used an academic performance standard that was expected to become the final standard. However, as this report was being written, the Texas Commissioner of Education replaced the standard progression phase-in schedule with a revised set of performance labels (19 TAC §101.3041). If the study had used these revised performance labels, reading and math proficiency rates for 2011/12 and 2012/13 would have been higher than those shown in table D9 in appendix D.

What the study found

Approximately half the students who were not yet English proficient by entry to grade 2 attained English language proficiency within 2.6 years (by approximately the middle of their expected grade 4 year).[5] The time to English proficiency varied for subgroups of Hispanic English learner students; students who began grade 1 with a beginner level of English proficiency and those who participated in a special education program took the longest of any Hispanic English learner student subgroup to attain proficiency.

Effects that are statistically significant with odds ratios[6] greater than 1.5 or less than 0.67 are described in the main text. All effects are shown in the tables for English proficiency (table 1), reading (table 2), and math (table 3).

Table 1. Percentage of the Texas 2005/06 grade 1 Hispanic English learner cohort who attained English language proficiency, median years to English language proficiency, and odds ratios, by student characteristics, 2006/07–2012/13

Student characteristic	Whole sample		Grade 1 cohort reaching English language proficiency by 2012/13		Median years to English proficiency	Odds ratio[a]
	Percent	Number	Percent	Number		
Whole sample	100.0	71,140	76.5	54,393	2.6	
Gender						
Male	52.1	37,082	73.1	27,109	2.9	Reference category
Female	47.9	34,058	80.1	27,284	2.6	1.25
Age at grade 1						
Younger than age 7	87.4	62,190	79.3	49,330	2.6	Reference category
Age 7 or older	12.6	8,950	56.6	5,063	3.9	0.50
Eligible for the federal school lunch program						
No	5.8	4,093	80.8	3,309	2.2	Reference category
Yes	94.2	67,047	76.2	51,084	2.8	0.61
Immigrant						
No	87.5	62,236	76.6	47,648	2.8	Reference category
Yes	12.5	8,904	75.8	6,745	2.6	1.10
Participated in a special education program						
No	92.9	66,081	79.2	52,366	2.7	Reference category
Yes	7.1	5,059	40.1	2,027	5.6	0.32
Initial English language proficiency						
Beginning	52.9	37,667	70.2	26,425	3.5	Reference category
Intermediate or advanced	47.1	33,473	83.6	27,968	2.1	2.79
Enrolled in a public prekindergarten program						
No	39.3	27,947	70.1	19,600	2.8	Reference category
Yes	60.7	43,193	80.6	34,793	2.7	1.08
English learner instructional program						
Bilingual	79.5	56,527	77.1	43,609	2.7	Reference category
English as a Second Language	15.8	11,233	75.4	8,468	2.8	0.90
None[b]	4.8	3,380	68.5	2,316	3.0	0.80
Opted out of English learner program[c]						
No	95.5	67,925	76.8	52,162	2.7	Reference category
Yes	4.5	3,215	69.4	2,231	2.5	1.18

Note: The percentage (column 3) and number (column 4) of students reaching English language proficiency are sample proportions that do not take into account censoring. The median years to English proficiency (column 5) takes censoring and student characteristics, district characteristics, and English learner program characteristics into account.

a. An odds ratio greater than 1 indicates that students in the given category had a higher probability of experiencing the outcome relative to students in the reference category, and a ratio of less than 1 indicates that students in the given category had a lower probability of experiencing the outcome.

b. Texas Education Agency records indicate that 4.8 percent of students in the sample (*n* = 3,380) were not enrolled in an English learner program although they were still classified as English learner students. The parents of 95 percent of these students had opted them out of English learner services.

c. Texas Education Agency records indicate that 4.5 percent of students in the sample (*n* = 3,215) had been opted out of English learner services by their parents, although these students were still classified as English learner students. While Texas Education Agency policy and federal education legislation (the Every Student Succeeds Act) establish the right for parents to opt their children out of English learner services, districts must provide opted out students equal opportunity to have their language and academic needs met—for example, through specialized language acquisition training of mainstream teachers or monitoring of student academic progress (Office of Civil Rights, 2016).

Source: Authors' analysis based on Texas Education Agency data from 2006/07 to 2012/13.

Table 2. Percentage of the Texas 2005/06 grade 1 Hispanic English learner cohort who demonstrated at least satisfactory reading performance, and odds ratios, by student characteristics, 2007/08 and 2012/13

| Student characteristic | Whole sample | | Demonstrating at least satisfactory performance | | | | Odds ratio[a] |
| | | | In 2007/08 | | By 2012/13 | | |
	Percent	Number	Percent	Number	Percent	Number	
Whole sample	100.0	69,216	83.9	58,076	97.0	67,058	
Gender							
Male	50.3	34,801	81.5	28,377	96.3	33,502	Reference category
Female	49.7	34,415	86.3	29,699	97.5	33,556	1.23
Age at grade 1							
Younger than age 7	86.9	60,164	85.9	51,688	97.6	58,713	Reference category
Age 7 or older	13.1	9,052	70.6	6,388	92.2	8,345	0.55
Eligible for the federal school lunch program							
No	7.2	4,990	91.4	4,561	98.7	4,923	Reference category
Yes	92.8	64,226	83.3	53,515	96.7	62,135	0.60
Immigrant							
No	88.1	60,988	83.5	50,927	96.8	59,062	Reference category
Yes	11.9	8,228	86.9	7,149	97.2	7,996	1.39
Participated in a special education program							
No	94.8	65,649	85.0	55,811	97.1	63,742	Reference category
Yes	5.2	3,567	63.5	2,265	93.0	3,316	0.65
Initial English language proficiency							
Beginning	44.1	30,540	77.8	23,772	95.4	29,143	Reference category
Intermediate or advanced	55.9	38,676	88.7	34,304	98.0	37,915	1.97
Content test taken in Spanish							
One or fewer tests taken in Spanish	66.2	45,788	83.8	38,389	97.0	44,431	Reference category
More than one test taken in Spanish	33.8	23,428	84.0	19,687	96.6	22,627	1.04
Enrolled in a public prekindergarten program							
No	37.4	25,911	79.4	20,586	95.5	24,747	Reference category
Yes	62.6	43,305	86.6	37,490	97.7	42,311	1.07
English learner instructional program							
Bilingual	75.8	52,441	83.8	43,942	96.8	50,761	Reference category
English as a Second Language	18.1	12,536	84.0	10,530	97.0	12,159	0.87
None[b]	6.1	4,239	85.0	3,604	97.6	4,138	0.88
Opted out of an English learner program[c]							
No	94.1	65,151	83.8	54,606	96.8	63,089	Reference category
Yes	5.9	4,065	85.4	3,470	97.6	3,969	1.01

Note: The proportion demonstrating at least satisfactory reading performance in 2007/08 is presented instead of the median lifetime because more than 50 percent of the sample demonstrated at least satisfactory reading performance during the first test administration (2007/08).

a. An odds ratio greater than 1 indicates that students in the given category had a higher probability of experiencing the outcome relative to students in the reference category, and a ratio of less than 1 indicates that students in the given category had a lower probability of experiencing the outcome.

b. Texas Education Agency records indicate that 4.8 percent of students in the sample ($n = 3,380$) were not enrolled in an English learner program although they were still classified as English learner students. The parents of 95 percent of these students had opted them out of English learner services.

c. Texas Education Agency records indicate that 4.5 percent of students in the sample ($n = 3,215$) had been opted out of English learner services by their parents, although these students were still classified as English learner students. While Texas Education Agency policy and federal education legislation (the Every Student Succeeds Act) establish the right for parents to opt their children out of English learner services, districts must provide opted out students equal opportunity to have their language and academic needs met—for example, through specialized language acquisition training of mainstream teachers or monitoring of student academic progress (Office of Civil Rights, 2016).

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

Table 3. Percentage of the Texas 2005/06 grade 1 Hispanic English learner cohort who demonstrated at least satisfactory math performance, and odds ratios, by student characteristics, 2007/08 and 2012/13

| Student characteristic | Whole sample | | Demonstrating at least satisfactory performance | | | | Odds ratio[a] |
| | | | In 2007/08 | | By 2012/13 | | |
	Percent	Number	Percent	Number	Percent	Number	
Whole sample	100.0	69,014	79.7	54,986	96.0	66,292	
Gender							
Male	50.3	34,681	79.9	27,718	96.0	33,298	Reference category
Female	49.7	34,333	79.4	27,268	96.1	32,994	0.89
Age at grade 1							
Younger than age 7	86.9	60,007	81.9	49,174	96.9	58,157	Reference category
Age 7 or older	13.1	9,007	64.5	5,812	90.3	8,135	0.53
Eligible for the federal school lunch program							
No	7.2	4,974	86.2	4,290	98.0	4,873	Reference category
Yes	92.8	64,040	79.2	50,696	95.9	61,419	0.75
Immigrant							
No	88.1	60,824	79.5	48,325	96.1	58,450	Reference category
Yes	11.9	8,190	81.3	6,661	95.8	7,842	1.22
Participated in a special education program							
No	94.8	65,446	80.7	52,803	96.3	63,000	Reference category
Yes	5.2	3,568	61.2	2,183	92.3	3,292	0.69
Initial English language proficiency							
Beginning	44.1	30,435	72.8	22,142	94.4	28,741	Reference category
Intermediate or advanced	55.9	38,579	85.1	32,844	97.3	37,551	1.84
Content test taken in Spanish							
One or fewer tests taken in Spanish	70.6	48,740	81.1	39,515	96.5	47,018	Reference category
More than one test taken in Spanish	29.4	20,274	76.3	15,471	95.1	19,274	0.77
Enrolled in a public prekindergarten program							
No	37.4	25,816	74.8	19,304	94.3	24,347	Reference category
Yes	62.6	43,198	82.6	35,682	97.1	41,945	1.08
English learner instructional program							
Bilingual	75.8	52,291	79.8	41,741	96.0	50,204	Reference category
English as a Second Language	18.1	12,492	79.0	9,868	96.0	11,996	0.77
None	6.1	4,231	79.8	3,377	96.7	4,092	0.81
Opted out of an English learner program							
No	94.1	64,957	79.7	51,740	96.0	62,363	Reference category
Yes	5.9	4,057	80.0	3,246	96.8	3,929	0.94

Note: The proportion demonstrating at least satisfactory math performance in 2007/08 is presented instead of the median lifetime because more than 50 percent of the sample demonstrated at least satisfactory math performance during the first test administration (2007/08).

a. An odds ratio greater than 1 indicates that students in the given category had a higher probability of experiencing the outcome relative to students in the reference category, and a ratio of less than 1 indicates that students in the given category had a lower probability of experiencing the outcome.

b. Texas Education Agency records indicate that 4.8 percent of students in the sample ($n = 3,380$) were not enrolled in an English learner program although they were still classified as English learner students. The parents of 95 percent of these students had opted them out of English learner services.

c. Texas Education Agency records indicate that 4.5 percent of students in the sample ($n = 3,215$) had been opted out of English learner services by their parents, although these students were still classified as English learner students. While Texas Education Agency policy and federal education legislation (the Every Student Succeeds Act) establish the right for parents to opt their children out of English learner services, districts must provide opted out students equal opportunity to have their language and academic needs met—for example, through specialized language acquisition training of mainstream teachers or monitoring of student academic progress (Office of Civil Rights, 2016).

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

The median time to demonstrate English proficiency was less than three years, but nearly 12 percent of students did not demonstrate proficiency by grade 8

It took 2.6 years from entry to grade 2 (corresponding to middle of grade 4) for 50 percent of the 2005/06 grade 1 cohort to attain English language proficiency (figure 1). By grade 3 about 38 percent of students had attained proficiency, and by grade 5, about 71 percent had attained this outcome (see table D1 in appendix D).

By grade 8, the final year of cohort data collection, about 12 percent of Hispanic English learner students had not scored proficient on the TELPAS. Students who did not attain English proficiency by grade 8 were predominantly male (66 percent) and nonimmigrants (89 percent), as well as those who had scored at the beginner level on the TELPAS at entry to grade 1 (83 percent). In terms of education programming, 47 percent had attended public prekindergarten, and 26 percent had participated in a special education program at some point during grades 1–8.

Hispanic English learner students with lower levels of English proficiency at grade 1 entry and those who also participated in a special education program tended to take more time to achieve English proficiency

The odds that a student with initial intermediate or advanced levels of English proficiency in grade 1 attained English proficiency by grade 8 were nearly three times (2.79) the odds

By grade 3 about 38 percent of students in the 2005/06 grade 1 cohort had attained English language proficiency, and by grade 5, about 71 percent had

Figure 1. The estimated median time to English proficiency for the 2005/06 Texas grade 1 Hispanic English learner cohort was 2.6 years from entry to grade 2, 2005/06–2012/13

Probability of attaining proficiency

Expected grade level[a]
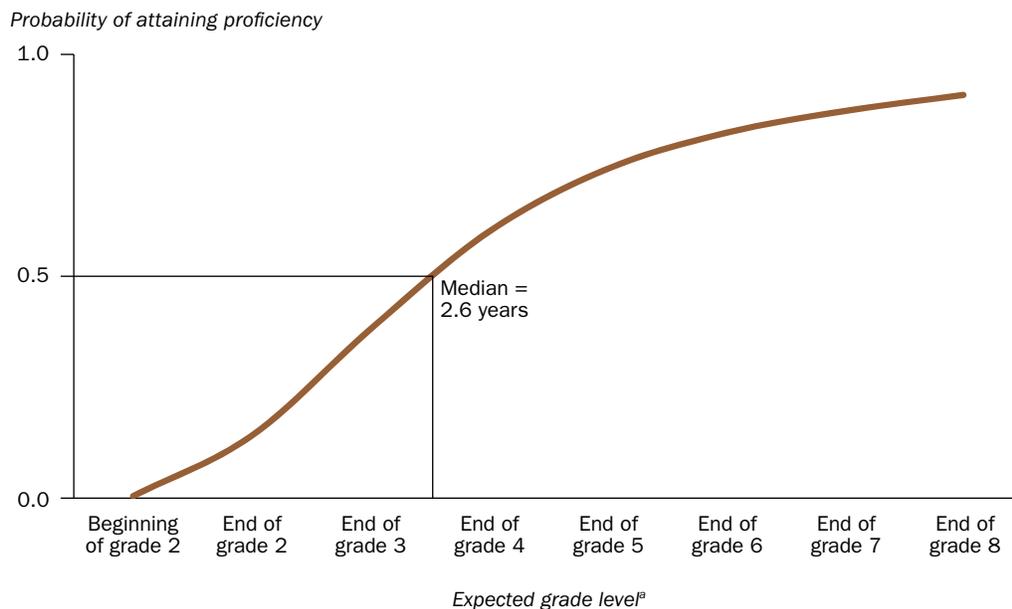
Note: *n* = 71,140. Median is the time at which half of the cohort had attained English proficiency and half had not. The figure displays the cumulative probability that a student first attained English proficiency by the given year. The cohort was followed from grade 1 through grade 8, but the grade 1 English language proficiency score was used as a measure of initial English proficiency, so longitudinal tracking for the English proficiency outcome started in grade 2.

a. The expected grade level for a student in the analytic sample who was not retained in any grade during the period of study, according to the number of years in school since entry to grade 2.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

that a cohort peer with beginning proficiency would do the same (the association between the outcomes and each of the examined predictors, expressed as odds ratios, are presented in table D5 in appendix D). In terms of median time, students with initial intermediate or advanced English language proficiency attained advanced high English proficiency 1.4 years sooner than their peers with a beginning level of proficiency (figure 2). It took 2.1 years after beginning grade 2 for half of the students with an initial intermediate or advanced level of English proficiency to attain English proficiency (so, at the beginning of grade 4). It took 3.5 years after beginning grade 2 (so halfway through grade 5) for half of the students with an initial beginning level of English proficiency to attain English proficiency.

Based on sample statistics on the students in the cohort whose data could be tracked, about 84 percent of students with initial intermediate or advanced proficiency attained English language proficiency by grade 8 compared with about 70 percent of students with initial beginning proficiency (see table 1).

The odds that a Hispanic English learner student who also participated in a special education program at any point during the study period would attain English proficiency by

It took 2.1 years after beginning grade 2 for half of the students with an initial intermediate or advanced level of English proficiency to attain English proficiency (so, at the beginning of grade 4) and 3.5 years after beginning grade 2 (so halfway through grade 5) for half of the students with an initial beginning level of English proficiency

Figure 2. The estimated median time to English proficiency was shorter for Texas Hispanic English learner students with intermediate or advanced levels of English proficiency at entry to grade 1 than for students with basic proficiency, 2006/07–2012/13

Probability of attaining proficiency
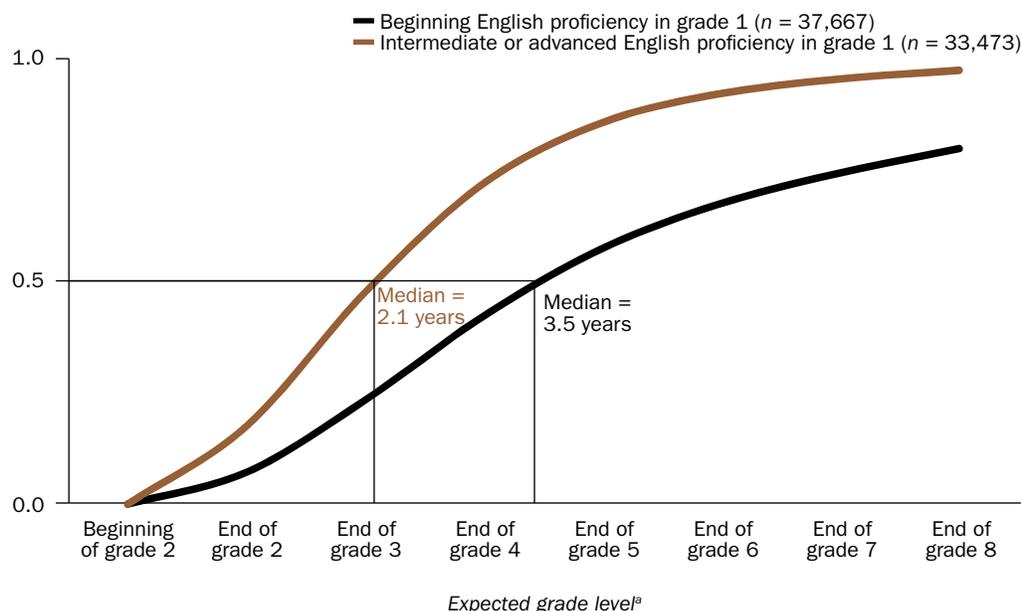
Note: Median is the time at which half of the subgroup had attained English proficiency and half had not. The figure displays the cumulative probability that a student first attained English proficiency by the given year. The cohort was followed from grade 1 through grade 8, but the grade 1 English language proficiency score was used as a measure of initial English proficiency, so longitudinal tracking for the English proficiency outcome started in grade 2.

a. The expected grade level for a student in the analytic sample who was not retained in grade during the period of study, according to the number of years in school since entry to grade 2.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

grade 8 were nearly one-third the odds that peers who did not participate in a special education program would do the same (see table D5 in appendix D). Hispanic English learner students who also participated in a special education program had the longest median time to English proficiency of any subgroup examined, with a median of 5.6 years. This rate was 2.9 years longer than the median time for their peers who did not participate in a special education program (figure 3). It took 2.7 years after beginning grade 2 for half of the students who did not participate in special education programs to attain English proficiency (so, toward the end of grade 4). It took 5.6 years after beginning grade 2 (so, in the middle of grade 7) for half of the students who participated in special education programs to attain English proficiency. Based on sample statistics, among the students in the cohort whose data could be tracked, by grade 8, 79 percent of English learner students who did not participate in special education at any point during the study had attained English proficiency. Among English learner students who did participate in a special education program, fewer than half had scored at the proficient level by grade 8 (40 percent; see table 1).

It took 2.7 years after beginning grade 2 for half of the students who did not participate in special education programs to attain English proficiency (so, toward the end of grade 4) and 5.6 years after beginning grade 2 (so, in the middle of grade 7) for half of the students who participated in special education programs to attain English proficiency

Figure 3. The estimated median time to English proficiency was shorter for Texas Hispanic English learner students who did not participate in a special education program than for those who did, 2006/07–2012/13

Probability of attaining proficiency

Did not participate in a special education program (*n* = 66,081)
Participated in a special education program (*n* = 5,059)

Median = 2.7 years

Median = 5.6 years

Expected grade level[a]

Note: Median is the time at which half of the supgroup had attained English proficiency and half had not. The figure displays the cumulative probability that a student first attained English proficiency by the given year. The cohort was followed from grade 1 through grade 8, but the grade 1 English language proficiency score was used as a measure of initial English proficiency, so longitudinal tracking for the English proficiency outcome started in grade 2.

a. The expected grade level for a student in the analytic sample who was not retained in grade during the period of study, according to the number of years in school since grade 2 entry.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

Hispanic English learner students entering grade 1 in 2005/06 who were overage and those eligible for the federal school lunch program tended to take more time to achieve English proficiency

Controlling for other factors, the study found that the probability of attaining English language proficiency at any given grade varied with the student background characteristics included in the analysis (table 1 and see table D5 in appendix D for the complete set of results for all factors examined):

- The odds that a student who began grade 1 at the age of 7 or older would attain English proficiency were half the odds that a student younger than 7 at grade 1 entry would do the same.
- The odds that a student eligible for the federal school lunch program would attain English proficiency (odds ratio = 0.61) were lower than the odds that a student not eligible for the federal school lunch program would do the same.

The majority of the grade 1 Hispanic English learner student cohort demonstrated at least satisfactory performance in reading and math in grade 3 on tests in English or Spanish

Most students in the study sample demonstrated at least satisfactory performance in grade 3 reading (84 percent; see table D3 in appendix D) and math (80 percent; see table D6), which was the first year the state assessments were adm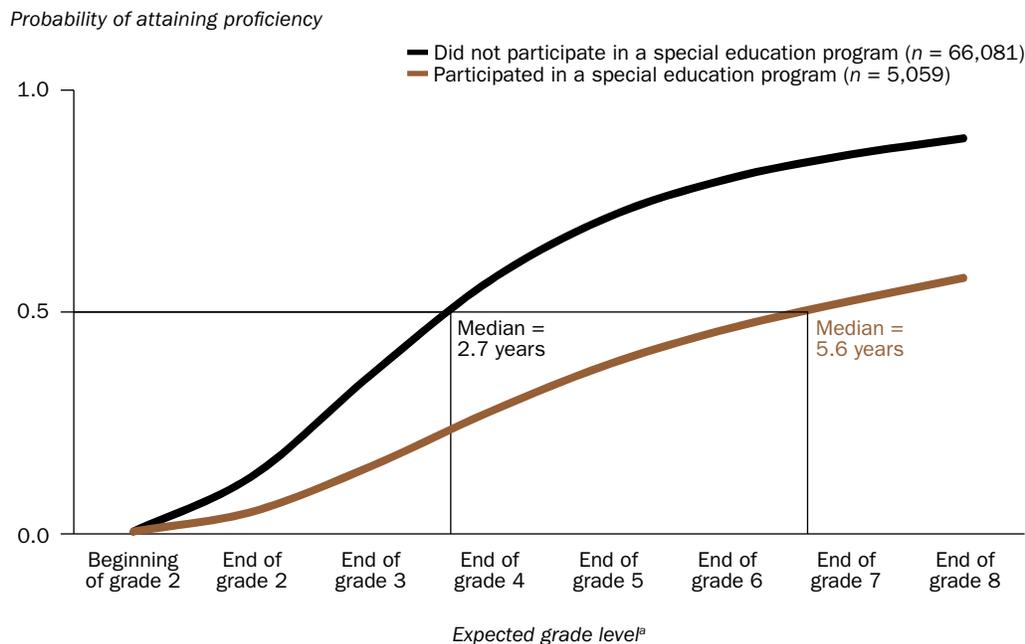inistered to these students.[7] Most of the remaining students in the cohort demonstrated satisfactory performance prior to entering the middle grades. By grade 5, 96 percent of the cohort attained at least satisfactory performance in reading, and 95 percent had attained at least satisfactory performance in math.

Students in the cohort were assigned to take the state content assessments in English or Spanish. At grade 3 about 33 percent of cohort students took the Spanish version of the reading assessment and about 29 percent took the Spanish version of the math assessment, potentially explaining the large proportion of students who met state standards in reading and math in grade 3 but had not attained proficiency on the state English language proficiency assessment (see table C3 in appendix C).

During students' expected grade 3 year (the 2007/08 school year), of the students who had not attained English proficiency, about 72 percent demonstrated satisfactory performance in reading and 67 percent in math. Among students who had attained English proficiency, 98 percent had satisfactory scores in reading and 95 percent in math (see table D10 in appendix D).

Among students who remained classified as English learner students in grade 8, few met state standards in reading and math. Of those grade 8 students almost 12 percent demonstrated at least satisfactory performance in grade 8 reading (compared with 43 percent of reclassified English learner students) and almost 14 percent in grade 8 math (compared with 25 percent of their reclassified cohort peers; see table D9 in appendix D).[8]

Controlling for other factors, the analyses found that the probability that a Hispanic English learner student would demonstrate at least satisfactory performance on reading and math assessments by grade 8 varied with the student background characteristics measured (see tables 2 and 3, and table D5 in appendix D):

- The odds that students with initial levels of intermediate or advanced English proficiency in grade 1 would demonstrate at least satisfactory reading and math

During students' expected grade 3 year (the 2007/08 school year), of the students who had not attained English proficiency, about 72 percent demonstrated satisfactory performance in reading and 67 percent in math. Among students who had attained English proficiency, 98 percent had satisfactory scores in reading and 95 percent in math

performance (odds ratio = 1.97 for reading and 1.84 for math) were nearly two times the odds that students with beginning English proficiency in grade 1 would do the same.

- The odds that students who began grade 1 at age 7 or older would demonstrate at least satisfactory reading and math performance (odds ratio = 0.55 for reading and 0.53 for math) were about half the odds that their peers who began grade 1 before age 7 would demonstrate this level of reading and math performance.
- The odds that a Hispanic English learner who was eligible for the federal school lunch program would demonstrate at least satisfactory performance in reading (odds ratio = 0.60 for reading) were lower than the odds that their peers who were not eligible for this program would attain this level.
- The odds that students who participated in a special education program would demonstrate at least satisfactory reading performance (odds ratio = 0.65 for reading) were lower than the odds that their peers who did not participate in a special education program would attain this level of reading.

Implications of the study findings

The study findings have implications for establishing empirically based estimates of the time it takes Hispanic English learner students in Texas to attain English proficiency, taking into account individual and contextual characteristics. This study adds to a growing body of longitudinal research that identifies subgroups of English learner students who enter U.S. schools in the early elementary grades but who need more support in attaining English proficiency and content mastery before entering high school.

Most Hispanic English learner students demonstrated progress in the elementary grades, but a subset of students struggled to make progress through the middle grades

The findings suggest the importance of understanding middle school and high school outcomes as well as progress toward those outcomes for English learner students as a starting point to reducing the number of students with long-term English learner classification

Most Texas Hispanic students designated as English learner students in grade 1 fared relatively well in the elementary grades on the outcomes examined. Half of the students in the cohort attained English proficiency by grade 4, more than 80 percent of all students in the cohort demonstrated at least satisfactory performance on the first administration of the state reading assessment in grade 3, and nearly 80 percent attained this level in math, all under the previous state assessment system. Reclassified English learner students outperformed state averages for the proportion of students demonstrating satisfactory performance in reading and math in the elementary grades on the Texas Assessment of Knowledge and Skills, although they underperformed state averages in middle grades under the new State of Texas Assessments of Academic Readiness.[9]

The findings also suggest the importance of understanding middle school and high school outcomes as well as progress toward those outcomes for English learner students as a starting point to reducing the number of students with long-term English learner classification. Long-term English learner students are students who have spent most of their academic trajectories in U.S. schools but have not reached key education milestones. A subset of students in the study cohort struggled to make progress on educational outcomes through the middle grades. By grade 8 approximately 12 percent of the original cohort (8,469 students) did not attain English proficiency. Prior research has found that it takes four to seven years on average for English learner students to develop academic proficiency but that some students never attain this milestone even after many years in U.S. schools (Hakuta et al.,

2000; Menken & Kleyn, 2009; Slama, 2012). Students who do not attain English proficiency until the middle grades or later may not have the necessary skills to enroll and succeed in courses required for high school graduation (Callahan, 2005; Slama, 2012, has a review), putting them at risk of dropping out of school before graduation (Suárez-Orozco & Suárez-Orozco, 2001).

This study identifies several Hispanic English learner student subgroups that are placed most at risk for not making progress toward academic achievement goals: students who entered grade 1 with a beginning level of English proficiency, students who participated in a special education program, and students who entered grade 1 overage.

Initial English proficiency was a strong predictor of the probability that students would attain each of the three education outcomes examined (English language proficiency and reading and math performance). These findings are consistent with other studies documenting the relationship between English learner students' initial English proficiency and the time it takes students to demonstrate English proficiency (for example, Cook et al., 2012) and relatedly, the time it takes English learner students to be reclassified (Kieffer & Parker, 2016). This body of evidence generally suggests that English learner students with the lowest levels of initial English proficiency at school entry may benefit from additional targeted supports. However, there is limited evidence on the relative benefits of different types of English learner instructional programs for beginner English learner students compared with more advanced English learner students (Valentino & Reardon, 2015). Future research could examine interventions or instructional programs that promote beginner English learner students' language development and progress toward academic achievement outcomes.

Hispanic English learner students who participated in a special education program at some point between grade 1 and grade 8 had a median time to English proficiency almost three years longer than other students and were less likely to attain each of the outcomes examined. These findings support a small body of empirical evidence that English learner students with disabilities have difficulty meeting criteria for exit from English learner status (for example, Haas, Huang, Tran, & Yu, 2016a, 2016b; Haas, Tran, Huang, & Yu, 2015; Kieffer & Parker, 2016; Slama, Haynes, Sacks, Lee, & August, 2015). It has proved challenging for educators to differentiate between English learner students who are struggling with reading or oral language due to normative English language development from those who may be struggling because of the presence of a true disability (Burr et al., 2015). Future studies may develop and validate additional measures and methods that are suitable for English learner students to differentiate language development from disability.

Students who were age 7 or older at entry to grade 1 had a longer median time to English proficiency (by approximately 1.3 years) and were about half as likely to attain the outcomes examined by grade 8 than their peers. Few studies have examined the academic effect among English learner students of being overage at entry to grade 1. The role of kindergarten entry age on English learner students' academic achievement and social-emotional outcomes was examined by Gottfried, Le, and Datar (2016); however, overage kindergarteners historically have represented those with lower scores on school readiness assessments (see Gottfried et al., 2016). Students who are older at grade 1 entry may reflect parent choices about school entry, school assessment of readiness, or grade retention. More work is needed to understand the reasons why these students were overage at entry to grade 1 and what might explain why they were at higher risk.

Among other variables related to students' instructional programs, enrollment in public prekindergarten (compared with not being enrolled) and enrollment in a bilingual program (compared with enrollment in an English as a Second Language program) were associated with a slightly better chance of attaining English proficiency and of passing reading and math assessments. However, the effects were not large enough to be practically meaningful.

Study findings support the concept of differentiated expectations for timelines for reaching English learner student outcomes

Finally, the findings in this study support the notion of differentiated expectations in performance based on initial English language proficiency. In particular, the estimates of time to English proficiency may provide useful context for validating expectations for academic achievement detailed in the English Language Learner Progress Measure. This measure is based on a model that takes into account the unique characteristics of English learner students, including their initial English proficiency and time in U.S. schools. For example, among students who have been attending U.S. schools for one year and who are not considered to have extenuating circumstances,[10] students who score at the beginning level on the English proficiency assessment are expected to pass state reading and math assessments within four years compared with the expectation of one year for students performing at the advanced high level (table A4 in appendix A; Texas Education Agency, 2016b).

The Texas English Language Learner Progress Measure does not differentiate expectations based on grade at school entry. Because these study findings cannot be generalized beyond this cohort of Hispanic English learner students who entered Texas schools in grade 1, future studies could capitalize on more years of State of Texas Assessments of Academic Readiness data to examine the time it takes English learner students to attain reading and math standards, accounting for initial English proficiency and grade at school entry, as well as other student characteristics.

Limitations of the study

A longitudinal analysis with a statewide sample allowed for a high-level analysis of progress toward reaching educational outcomes among Hispanic English learner students. Given the retrospective data and methods used, the observed relationships between student and contextual characteristics and outcome attainment are correlational and do not represent causation. Because only one cohort was examined, the findings do not necessarily generalize to broader populations of English learner students.

The available measures collected by the Texas Education Agency during the study period did not provide detailed information about the English language instructional programs students experienced, as the information was limited to general program labels. Substantial unobserved variation across the state in program implementation was likely. Quality of instruction has been shown to matter most in improving academic outcomes for English learner students (for example, see Calderón, Slavin, & Sánchez, 2011, for a review).

The transition from the Texas Assessment of Knowledge and Skills to the State of Texas Assessments of Academic Readiness during the period examined limited this study's ability to make inferences on academic performance outcomes in the middle grades and directly inform the Texas Education Agency's English Language Learner Progress Measure about

The findings support the notion of differentiated expectations in performance based on initial English language proficiency. In particular, the estimates of time to English proficiency may provide useful context for validating expectations for academic achievement detailed in the English Language Learner Progress Measure

expectations for time to meeting content standards. The proportion of students demonstrating at least satisfactory performance statewide dropped substantially with the introduction of the State of Texas Assessments of Academic Readiness, making it difficult to compare trends before and after this occurred.

Appendix A. Texas English learner policies and programs

This appendix describes Texas policies to classify and reclassify English learner students, its English learner programs, and the most common English learner program trajectories for the study cohort. In addition, the appendix includes an overview of expectations for progress toward English proficiency and meeting state content standards, as defined by the Texas Education Agency (TEA).

Texas policies to classify and reclassify English learner students

Texas Administrative Code §89.1201 describes state policies and rules for identifying, educating, and reclassifying English learner students. The code states, "It is the policy of the state that every student in the state who has a home language other than English and who is identified as an English language learner shall be provided a full opportunity to participate in a bilingual education or English as a Second Language (ESL) program, as required in the Texas Education Code, Chapter 29, Subchapter B" (Texas Education Agency, 2012, para. 1).

When a student is registered to attend a Texas public school, the parent or legal guardian completes a home language survey. If the language spoken at home is other than English, the student must be given a state-approved oral language proficiency assessment in English. If the student is in grades 2–12, a norm-referenced standardized English reading and writing achievement assessment must also be given.[11] Students who score "below English proficient" are classified as English learner students and are offered English as a Second Language (ESL) or bilingual education.[12] Parents can choose to have their student placed in ESL or bilingual education or they can opt out of services (that is, have their student placed in a regular, all-English instruction classroom). All English learner students are tested once a year in reading, writing, speaking, and listening using the Texas English Language Proficiency Assessment System (TELPAS; table A1), usually in the spring semester, and they may take additional assessments of English language proficiency and English language arts.[13]

TEA provides a list of state-approved assessments in the three assessment areas: oral language (listening and speaking), English reading, and English writing. The TELPAS assessment is not designed to measure mastery of learning objectives with a pass or fail score. Rather, TELPAS results provide a measure of progress, indicating annually where each English learner student is on a continuum of four proficiency levels: beginning, intermediate, advanced, and advanced high. A score of advanced high satisfies the oral language and writing criteria for exit. TEA requires a norm-referenced standardized measure of reading to satisfy the reading criteria for exit. Districts use TELPAS to monitor whether their English learner students are making steady annual growth in learning to listen, speak, read, and write in English. More details about each level are presented in table A1.

According to 19 Texas Administrative Code §89.1225(i), the earliest an English learner student can be reclassified is at the end of grade 1. Districts make reclassification decisions annually at the end of the school year based on a determination that the student is able to participate equally in a regular all-English instruction program. State rules require the English learner student to meet proficiency benchmarks in three assessment areas (oral language and reading and writing in English) and have a teacher evaluation, which may take the form of an assessment, portfolio, or anecdotal notes (Texas Education Agency, n.d.). The grade levels, measures, and required benchmarks for reclassifying English learner students are shown in table A2.

Table A1. English language proficiency level descriptions for Texas public schools

Proficiency level	Description	Abilities in the four domains in English
1 = Beginning	Students who receive this rating are in the early stages of learning English. These students typically have a small vocabulary of very common words and little ability to use English in academic settings. These students often communicate using English they have memorized.	• Listening—Students struggle to understand simple conversations and to identify/distinguish individual words and phrases in English. • Speaking—Students use mainly single words and short phrases and lack the knowledge of English grammar necessary to connect ideas and speak in sentences. • Reading—Ability to derive meaning from English text is minimal. Students rely heavily on previous knowledge of the topic and pictures to gain meaning from English text. • Writing—Students lack the vocabulary and grasp of the English language structures and grammar necessary to address grade-appropriate writing tasks in a meaningful way.
2 = Intermediate	Students who receive this rating are able to use common, basic English in routine academic activities. Socially, these students are able to communicate simply about familiar topics and are generally able to understand casual conversations but may not comprehend all the details.	• Listening—Students usually understand simple or routine directions as well as short, simple conversations on familiar topics. • Speaking—Students know enough English to speak in a simple manner using basic vocabulary. They are able to participate in short conversations and speak in sentences, although they may hesitate frequently. • Reading—Students are able to understand short connected texts on familiar topics but tend to interpret English literally and have difficulty following story lines that have a twist or nonstandard format. Because their English vocabulary consists mainly of high-frequency words, they rely heavily on prior knowledge for comprehension and need pictures and visual cues. • Writing—Students have a limited ability to use English to build writing skills and a limited ability to address grade-appropriate writing tasks in English.
3 = Advanced	Students who receive this rating have an emerging academic English vocabulary, which they are able to use in classroom instruction when given support. In social situations, these students can understand most of what they hear but have some difficulty with unfamiliar grammar and vocabulary.	• Listening—Students can usually understand longer conversations and class discussions but occasionally depend on visuals and cues. • Speaking—Students are able to participate comfortably in most conversations and academic discussions, with occasional pauses to restate, repeat, or search for words to clarify meaning. They can narrate, describe, and explain in some detail and have an ability to speak in English using a variety of sentence patterns and basic grammar structures. • Reading—Students are able to understand more complex texts because they have acquired a variety of grade-appropriate English vocabulary and are familiar with the structure of the English language. • Writing—Students have enough knowledge of English to address grade-appropriate writing tasks with support. They can express themselves using a variety of verb tenses and sentence patterns, and they can communicate their ideas in some detail.
4 = Advanced high	Students who receive this rating are able to use academic English in classroom activities with little English-language support from others, even when learning about unfamiliar material. Students at this level have a large enough vocabulary in English to communicate clearly and fluently in most situations.	• Listening—Students can understand long conversations and class discussions, with little dependence on visuals and verbal cues to support understanding. In both social and instructional interactions, they are able to understand main points and details at a level nearly comparable to native English-speaking peers. • Speaking—Students are able to use abstract and content-based vocabulary and can participate in extended discussions on a variety of social and grade-appropriate academic topics with only rare disruptions or hesitations. • Reading—Students may have occasional difficulty with low-frequency vocabulary but demonstrate, at a level nearly comparable with native English-speaking peers, comprehension of both explicit and implicit information in grade-appropriate texts. • Writing—Students have acquired the vocabulary and command of English language structures to address grade-appropriate writing tasks. They are nearly comparable with native English-speaking peers in their ability to express themselves clearly and precisely.

Source: Texas Education Agency, 2016a.

Table A2. Criteria for reclassification of English language learner students in Texas public schools, by grade level

Criteria	Grade level										
	1	2	3	4	5	6	7	8	9	10	11
Oral language (listening and speaking): Scored fluent on state-approved assessment or advanced high on TELPAS	X	X	X	X	X	X	X	X	X	X	X
Reading achievement: Norm-referenced standardized test	X	X	na	na	na	na	na	na	na	na	X
Reading achievement: Met standard on TAKS or Level II on STAAR	a	a	X	X	X	X	X	X	X	X	a
Writing achievement: Norm-referenced standardized test or advanced high on TELPAS	X	X	X	na	X	X	na	X	na	na	X
Writing achievement: Met standard on TAKS or Level II on STAAR	a	a	a	X	a	a	X	a	X	X	a
Subjective teacher evaluation (assessments, grades, anecdotal notes, portfolios, etc.)	X	X	X	X	X	X	X	X	X	X	X

na indicates that the criterion is not applicable in the given grade.

STAAR is State of Texas Assessments of Academic Readiness. TAKS is Texas Assessment of Knowledge and Skills. TELPAS is Texas English Language Proficiency Assessment System.

Note: Proficiency levels vary depending on the assessment.

a. The test was not administered in the given grade.

Source: Adapted by authors from Texas Education Agency information available at https://tea.texas.gov/bilingual/esl/education/.

The Language Proficiency Assessment Committee (LPAC) at the English learner student's school reviews the assessment data and teacher evaluation results to make the final determination of whether the student is ready to be reclassified as fluent English proficient. LPACs are required to examine all components to decide whether an English learner student would be able to participate in a general education, all-English instructional program.

English learner programs in Texas

Texas public schools have two types of programs for English learner students: ESL and bilingual education. Within the two types of programs are six models, including two types of ESL models and four types of bilingual models. ESL models include ESL–content based and ESL–pull out. Bilingual models include transitional bilingual—early exit; transitional bilingual—late exit; dual-language immersion—one way; and dual-language immersion—two way.[14]

English as a Second Language—content based. This model serves English learner students by providing a full-time teacher certified to provide supplementary instruction for all content-area instruction. The program integrates ESL instruction with subject matter instruction that focuses on learning a second language and using that language as a medium to learn academic subjects. At the high school level, the English learner student receives sheltered instruction in all content areas.

English as a Second Language—pull out. This model serves English learner students by providing a part-time teacher certified to provide English language arts instruction exclusively as the student remains in a mainstream instructional arrangement in other content areas. At the high school level, the English learner student receives sheltered instruction in all content areas.

Transitional bilingual—early exit. This model serves English learner students in both English and Spanish, or another language, and transfers the students to English-only instruction between two and five years after school entry.[15] This model provides instruction in literacy and academic content areas through the student's first language, along with instruction in English oral and academic language development. Nonacademic subjects such as art, music, and physical education may also be taught in English.

Transitional bilingual—late exit. This model serves English learner students and transfers students to English-only instruction. English learner students receive instruction in the student's first language along with meaningful academic content taught through the student's second language, English. Students in this program are transferred to an English-only instructional environment between six and seven years after school entry. The goal is to promote high levels of academic achievement and full academic language proficiency in the student's first language and English.

Dual-language immersion—one way. This biliteracy program model serves only English learner students. Instruction is provided in both English and Spanish, or another language, and the model transfers a student to English-only instruction. Instruction is provided to English learner students in an instructional setting where language learning is integrated with content instruction. Academic subjects are taught to all students in English and another language.

Dual-language immersion—two way. This biliteracy program model requires classrooms to integrate students proficient in English with English learner students. This model provides instruction in both English and Spanish, or another language, and transfers a student identified as limited English proficient to English-only instruction. Instruction is provided to both native English speakers and native speakers of another language in an instructional setting where language learning is integrated with content instruction. Academic subjects are taught to all students in English and another language.

The TEA provides general guidelines about the state-approved program models described. Depending on the number and ages of English learner students in a school, districts are required to provide one or two of the ESL models or one or more of the four bilingual education models. Schools and districts decide which program models they will implement and how they will implement them (that is, the instructional practices used with English learner students and the amount of time of instruction in English versus the home language). In Texas, parents of students identified as English learner students have the option of declining or opting out of English learner services.

As background to interpreting the statistical model, it is useful to review how students in the grade 1 cohort moved through English learner instructional programs until they were reclassified as English proficient, until their parents opted them out of English learner programs, or until they reached grade 8 (whichever came earlier). The 10 most common patterns of English learner program participation are shown in table A3. This table is organized by the type of English learner program in which the student was enrolled in 2005/06 in grade 1. During the 2005/06 and 2006/07 school years, TEA collected data on the two basic program tracks: ESL and bilingual. Beginning in 2008/09, TEA expanded these program codes to the specific program models for ESL programs (content based and pull out) and bilingual programs (for example, early exit, late exit, one way, and two way). Within the context of

Table A3. Ten most common English learner program participation trajectories for the grade 1 Hispanic English learner cohort, 2005/06–2012/13

English learner program pattern	Frequency (number of students demonstrating the pattern)	Percent
English as a Second Language program in 2005/06		
Two years unspecified	3,570	8.2
One year unspecified	2,723	6.2
Bilingual program in 2005/06		
Two years unspecified	14,781	33.8
One year unspecified	7,197	16.5
Two years unspecified, then one year early exit	4,462	10.2
Two years unspecified, then two years early exit	2,953	6.8
One year unspecified, then one year late exit	2,842	6.5
Two years unspecified, then two years late exit	2,515	5.7
Two years unspecified, then one year one way	1,372	3.1
Two years unspecified, then two years one way	1,327	3.0
Total	43,742	100

Note: Each row shows a pattern in which students in the 2005/06 grade 1 cohort of Hispanic English learner students moved through English learner instructional programs up to the year they were reclassified as English proficient, until their parents opted them out of English learner programs or until they reached grade 8 (whichever came earliest). A total of 43,742 students experienced one of the 10 most common English learner program participation trajectories. The rest of the cohort demonstrated other patterns of English learner instructional programming not shown in the table.

Source: Authors' analysis based on Texas Public Education Information Management System and Texas English Language Proficiency Assessment System data from 2005/06 to 2012/13.

how data on English learner programs were specified over time, the most common patterns consisted of two years in a bilingual (unspecified) program (34 percent of the sample); one year in a bilingual (unspecified) program (17 percent of the sample); two years in a bilingual program (unspecified), followed by one year bilingual (early exit; 10 percent of the sample); and two years of ESL (unspecified; 8 percent of the sample).

After eight years (the end of the study period), 74 percent of the cohort had been reclassified as proficient or exited from English learner programs (see table D8 in appendix D).

Texas English Language Learner Progress Measure

In 2014 TEA developed the Texas English Language Learner Progress Measure. This progress measure provides information to schools and parents about whether English learner students have made academic progress toward passing the state standardized content-area performance assessment (State of Texas Assessments of Academic Readiness). Expected progress toward passing the state standardized content performance assessment is based on the English learner students' initial level of English language proficiency and the amount of time they have attended school in the United States. The expected progress toward passing State of Texas Assessments of Academic Readiness, based on the number of years an English learner student has attended school in the United States, and his or her initial level of English language proficiency is mapped out in table A4.

Table A4. Texas Education Agency expectations for student progress toward grade-level academic skills in English, based on number of years in U.S. schools and initial level of English proficiency

Number of years in U.S. schools[a]	Initial proficiency level on Texas English Language Proficiency Assessment System	Expected number of years to meet grade-level academic skills[b]
1	Beginning	4
	Intermediate	3
	Advanced	2
	Advanced high	1
2	Intermediate or below	4
	Advanced	3
	Advanced high	2
3	Advanced or below	4
	Advanced high	3
4	Any proficiency level	4

a. Refers to the number of years of school that the student had attended in the United States when the student was placed in a plan for expected progress toward grade-level academic skills in English.

b. As measured by a score indicating satisfactory performance on the State of Texas Assessments of Academic Readiness. An additional year (up to a maximum of five years) can be added to the expected number of years for students with interrupted formal education and for students classified as asylees and refugees.

Source: Texas Education Agency, 2016b.

Appendix B. Background literature

This appendix provides an overview of the research base on the time it takes English learner students to attain proficiency and meet grade level academic standards and provides an overview of the contextual and individual covariates related to attaining these outcomes.

Time it takes for English learners to develop English language proficiency and meet grade-level state academic standards

Most English language proficiency assessments, including the Texas English Language Proficiency Assessment System (TELPAS), measure English learner students' abilities to speak, listen, read, and write in English. It takes most English learner students less time to reach proficiency in the domains of speaking and listening than in the domains of reading and writing. Recent longitudinal work examining English learner students' time to English proficiency as measured by an English language proficiency assessment estimated that 90 percent of kindergarten English learner students reached proficiency in speaking and listening in English by the end of grade 2, whereas it took until grade 5 or 6 for the same percentage of the cohort to demonstrate proficiency in reading and writing (Umansky & Reardon, 2014). Although some researchers focused on English proficiency, others examined when English learner students were reclassified[16] as fluent English proficient as reported in state or district records (Conger, 2009; Slama, 2014; Thompson, 2015; Umansky & Reardon, 2014). In the states on which these studies' findings were based, reclassification criteria typically include a student's score on an English proficiency assessment, score on a reading or English language arts assessment, and teacher and school staff input and observations of whether the student had the requisite skills to succeed in a mainstream classroom.

Estimates of how long it takes English learner students to meet grade-level English language arts and math standards are not always reported in the common metric of time (that is, the number of years it takes English learner students to demonstrate content mastery). Some studies reported the percentages of English learner students who met state English language arts or math content standards at each grade level (Cook et al., 2012; Flores et al., 2012; Slama, 2014), whereas others (Hong, Gagbem, & West, 2014; Valentino & Reardon, 2015) reported the time to reaching English language arts and math content standards.

The Every Student Succeeds Act defines English learner students, in part, as those who have difficulties in speaking, reading, writing, or understanding the English language that may be sufficient to deny these individuals the ability to meet challenging state academic standards (Elementary and Secondary Education Act, 1965, Section 8101(20). This definition is grounded in research that has shown that English learner status may affect a student's ability to benefit from content instruction in English and to demonstrate knowledge and skills on academic assessments in English (Cook et al., 2012). Accordingly, it may be expected that while a student is classified as an English learner student, his or her performance on content assessments may lag behind that of students who have never been classified as English learners and former English learner students on the same measures. Slama (2014) found that compared with both students who had never been classified as English learners and former English learner students, English learner students had lower levels of achievement in English language arts in grades 3–7. For example, in grade 5, 64 percent of students who had never been classified as English learners scored at or above proficient

on the English language arts assessment, whereas 48 percent of reclassified English learner students and 2 percent of English learner students scored at or above proficient in the same assessment.

With respect to English learner students meeting math proficiency standards, researchers have reported estimates in terms of years as well as the percentage of students meeting standards. Hong et al. (2014) found that it took four years for the English learner students in their nationally representative sample to reach math content standards. Flores et al. (2012) found that 60 percent of Hispanic students who were ever identified as English learner students (ever–English learner students) by grade 3 met the Texas proficiency standard in math compared with 78 percent of Hispanic non-English learner students in grade 3. In grade 8, 70 percent of Hispanic ever–English learner students met the Texas proficiency standard in math compared with 73 percent of Hispanic non–English learner students in grade 8.

However, the magnitude of the gap between current and former English learner students' performance on content assessment depends on the study or measure examined. Recent studies have shown that the percentage of grade 3 current English learner students meeting English language arts or reading content standards varied widely—from 7 percent (Cook et al., 2012) to 1 percent (Slama, 2014; compared with 60 percent of reclassified English learner students), to 65 percent (Flores et al., 2012; compared with 81 percent of students who had never been classified as English learners). A similar pattern was documented for math (Flores et al., 2012; Slama, 2014). In the study by Slama (2014), 2 percent of grade 3 current English learner students met the state's math performance standards, compared with 63 percent of reclassified English learner students.

Education context and time to proficiency

For states to establish a realistic timeline of how long it takes English learner students to reach English language proficiency standards, policymakers must take into account the individual and contextual characteristics that influence the time required for English learner students to develop English proficiency and meet content standards. Research studies conducted during the past 10 years have shown that many individual and contextual characteristics, including students' initial level of English language proficiency (Cook et al., 2012; Kieffer, 2011), enrollment in a prekindergarten program (Halle et al., 2012), type of English learner program (for example, English as a Second Language, late-exit bilingual education; Umansky & Reardon, 2014), and school composition (Hakuta et al., 2000; Kieffer, 2011; Kim et al., 2014) predict English learner students' academic outcomes and English proficiency.

Initial English proficiency. Initial English proficiency level was shown to be a strong predictor of the time it takes English learner students to become English proficient. For example, Cook et al. (2012) found that 44 percent of English learner students who began school performing at level 1 on a language proficiency assessment scored proficient in four years compared with 86 percent of students who began school performing at level 3 of the language proficiency assessment.

Prekindergarten enrollment. Decades of research have demonstrated that participation in prekindergarten is a strong predictor of later academic achievement, especially for minority

students from low-income households (Barnett, 2008), although Hispanic English learner students are less likely to enroll in prekindergarten than are their peers (Capps et al., 2005, as cited in in Halle et al., 2012). Recent research (Halle et al., 2012) has focused on the role prekindergarten plays in influencing English learner student outcomes, including English language proficiency and meeting content performance standards. Halle et al. (2012) found that English learner students' English proficiency in grade 1 was predicted by the type of early care they had received; English learner students who were not proficient by the spring of grade 1 were more likely to have participated in home-based care rather than center-based early education.

English learner instructional program. The type of English learner instructional programming has been shown to play an important role in the time it takes English learner students to reach key education milestones (Umansky & Reardon, 2014). Relying on 12 years of longitudinal data from one large district in California, researchers (Umansky & Reardon, 2014) examined time to reclassification, English proficiency, and content mastery for English learner students enrolled in four different English learner programs: English immersion, transitional bilingual, maintenance bilingual, and dual immersion. The authors found that Hispanic English learner students enrolled in dual-immersion programs had lower reclassification rates in elementary school than students enrolled in other program types but higher overall English and content-area proficiency in the middle and high school grades.

Other characteristics related to proficiency outcomes examined in this study

Additional individual-level characteristics have been found in most cases to have a strong influence on English learner students' English proficiency and content performance.

Special education. Researchers included a variable that indicates whether the student participated in a special education program. As with non–English learner students, English learner students' time to English and content-area proficiency may be affected by a disability or health condition that requires special education services (Park, 2014). Halle et al. (2012) found the English learner students' disability status was related to English proficiency; English learner students with a disability were less likely to be English proficient by spring of grade 1 than English learner students without a disability. In a longitudinal study of time to reclassification for English learner students in New York City, Kieffer and Parker (2016) reported that English learner students with specific learning disabilities took four years longer to become reclassified than did students without such disabilities. Students with speech or language impairments took two years longer to become reclassified than did students without such impairments.

Poverty status. Socioeconomic status is a powerful predictor of English learner students' English proficiency and academic achievement (Kieffer, 2011; Lindholm-Leary & Borsato, 2006). Kieffer (2011) followed reading achievement for nine years (from kindergarten to grade 8) for a nationally representative, longitudinal sample composed of three groups of students: language minority students initially fluent in English, language minority students with initially limited English proficiency, and native English speakers. Students who entered kindergarten with limited English proficiency had reading achievement that lagged below national averages across the study period. However, by middle school English learner students with initially limited English proficiency caught up to their native

English-speaking peers from similar socioeconomic backgrounds. Kieffer (2011) suggested that the neighborhood and schooling effects of poverty play an important role in explaining how the reading achievement of English learner students and native English speakers growing up in poverty become more similar over time. According to Kim et al. (2014), family income is a significant predictor of English learner students' English proficiency in kindergarten. In Kim et al.'s (2014) study, children who qualified for the federal school lunch program started school with lower English proficiency than English learner students who did not.

Opting out of English learner programming. In addition to examining time to proficiency by program (English as a Second Language or bilingual [transitional and dual immersion]), this study includes the group of students initially identified as English learner students and whose parents opted out of English learner services at one point between grades 1 and 8. In Texas, parents of students identified as English learner students have the option of declining or opting out of English learner services. Flores and colleagues (2012) found that Hispanic students in Texas whose parents opted not to enroll them in English learner programs were significantly less likely to go to college than their White classmates.

Foreign-born or immigrant status. Immigrant status is a strong predictor of the time it takes English learner students to attain English proficiency and a strong predictor of academic outcomes for English learner students. Slama (2012) examined growth in English proficiency for a statewide cohort of grade 9 English learner students and found that although U.S.-born English learner students started high school with significantly higher levels of English proficiency, their foreign-born English learner student peers grew at a faster pace such by the end of high school, they had caught up to their U.S.-born peers. Padilla and Gonzalez (2001) found that high school immigrant students from Mexico reported higher grades than U.S.-born peers of Mexican heritage. In addition to the effect of generation status, prior school history, English learner programming, and mainstream programming played a role in understanding the observed generation differences. Recent research shows Hispanic immigrants perform better than their U.S.-born Hispanic peers in reading and math standardized assessments in grade 5 through grade 8 (Özek & Figlio, 2016).

Gender. Some research has suggested that the differences in English learner students' time to English and content area proficiency are linked to gender (Flores et al., 2012; Greenberg Motamedi et al., 2016; Halle et al., 2012). A study by Greenberg Motamedi et al. (2016) found that female English learner students were more likely than male English learner students to be reclassified in their first eight years of school.

Age. Studies on the effect of age on English learner outcomes have focused on the pace at which English learner students develop language proficiency at different ages and grades (Conger, 2009; Cook et al., 2008, 2012; Hakuta et al., 2000) as well as the role of school entry age on later academic outcomes (Gottfried et al., 2016). A study by Cook et al. (2008) found that students in lower grades develop language at a faster pace than their English learner student peers in upper grades. A later study by Cook et al. (2012) found different rates of growth by grade: at each initial English language proficiency level, English learner students in lower grades develop language proficiency at faster rates than their peers at higher grades.

Appendix C. Data and methodology

This appendix describes the data sources, data processing, and methodology used for this study. It includes separate sections on methods for the descriptive analysis and the survival analysis.

Data sources

The data for this study were obtained through a data-sharing agreement with the Texas Education Agency (table C1). The study team prepared a longitudinal dataset by linking student files across multiple data sources and over time for all students in Texas schools who were identified as an English learner student in grade 1 in the 2005/06 school year. The study team relied on a unique student identifier to link the relevant files. All student identifiers were scrambled by the Texas Education Agency to protect the identity of students.

Data processing

Creation of the analytic samples. The Texas grade 1 Hispanic English learner cohort of 2005/06 identified as English learner students consisted of 85,487 students. From this sample, subsamples were created for each outcome variable (English language proficiency, reading proficiency, and math proficiency) based on the availability of assessment data. English proficiency data were available from grades 1 to 8. Because the English proficiency level in grade 1 was used to calculate baseline (or initial) English proficiency, the English proficiency analytic sample includes only students who, at the beginning of grade 2, had not yet attained proficiency in grade 1. Hence, for research questions 1 and 2 English proficiency is calculated as "years since grade 2 entry." Students enrolled in nontraditional public schools (that is, charter schools, alternative schools) were excluded from the analysis. The final subsamples resulted in 71,140 students in the English language proficiency sample, 69,216 students in the reading proficiency subsample, and 69,014 students in the math sample. A subsample consisting of 84,135 students was also created for reclassification to provide context for the reader on the yearly proportion of students who were exited from English learner programs (see table D8 in appendix D). A flow chart illustrating the

Table C1. Data sources and relevant variables for the study dataset

Data source	Variable	Years
Public Education Information Management System	Student demographics, attendance, English learner program, grade, and school enrollment data, as well as a rich set of student-level covariates	2005/06–2011/12
Texas Assessment of Knowledge and Skills content-area assessment data	Indication of whether students met the math and reading proficiency standards in each respective year	2005/06–2010/11
State of Texas Assessments of Academic Readiness content-area assessment data	Indication of whether students met the math and reading performance standards in each respective year	2011/12–2012/13
Texas English Language Proficiency Assessment System English proficiency data	Indication of whether students met the English language proficiency standards in each respective year	2005/06–2012/13
Texas Education Agency's Academic Excellence Indicator System	School- and district-level aggregate data	2005/06–2011/12
Texas Academic Performance Reports	School- and district-level aggregate data	2012/13

Source: Authors' compilation based on Texas Education Agency data.

creation of the English language proficiency sample is shown in figure C1. A flowchart illustrating the respective reading and math samples is shown in figure C2.

Sample characteristics for students in the English language proficiency analytic sample are shown in table C2. The proportion of grade 1 Hispanic English learner students assessed using the Spanish version of the TAKS and STAAR is shown in table C3.

Data analysis

To examine how the time to English language proficiency and time to demonstrating satisfactory academic performance are associated with the factors of interest, the study team conducted a discrete-time survival analysis using English language proficiency, reading performance, and math performance as outcome variables; and time and factors of interest as predictors. Two notable features of the survival analysis differentiate it from descriptive longitudinal summaries of student outcomes:

- It models the relationship between time to reaching these outcomes and other student background characteristics (for example, gender, socioeconomic status, district demographic characteristics) and policy-relevant indicators (for example, English learner program type, enrollment in public prekindergarten).
- It accounts for students who are censored from the study.

Research question 1 used statistical models to examine the relationship between time and the attainment of each of three educational outcomes (English language proficiency, satisfactory

Figure C1. Creation of the English language proficiency analytic sample based on the 2005/06 grade 1 Hispanic English learner cohort
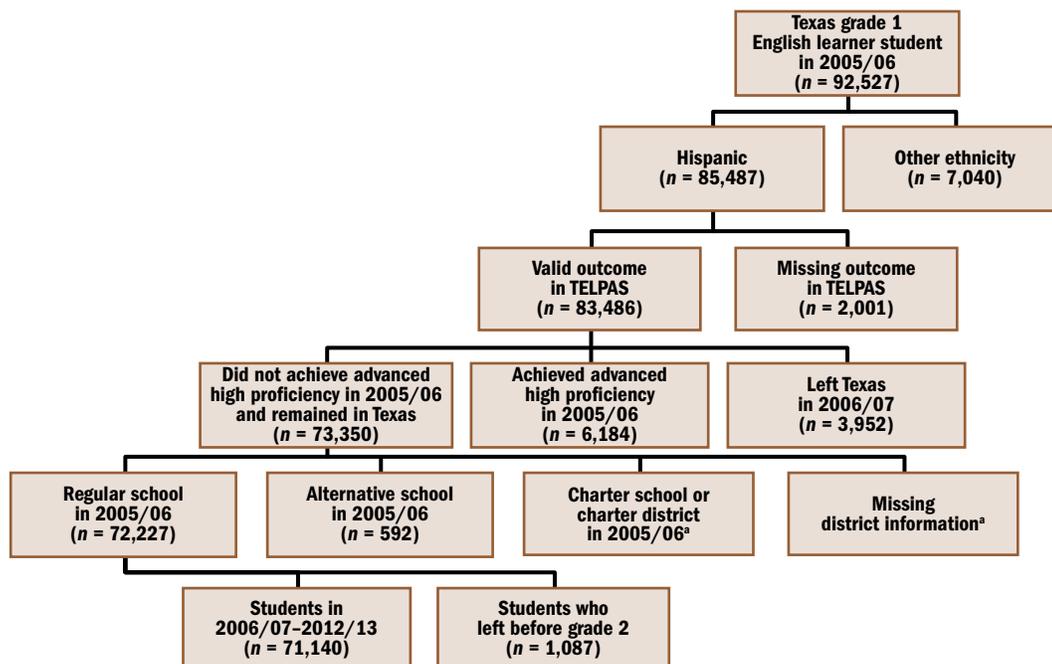
TELPAS is Texas English Language Proficiency Assessment System.

a. *n* values are not reported to protect subgroups with fewer than 25 students.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

Figure C2. Creation of the reading and math analytic samples based on the 2005/06 grade 1 Hispanic English learner cohort
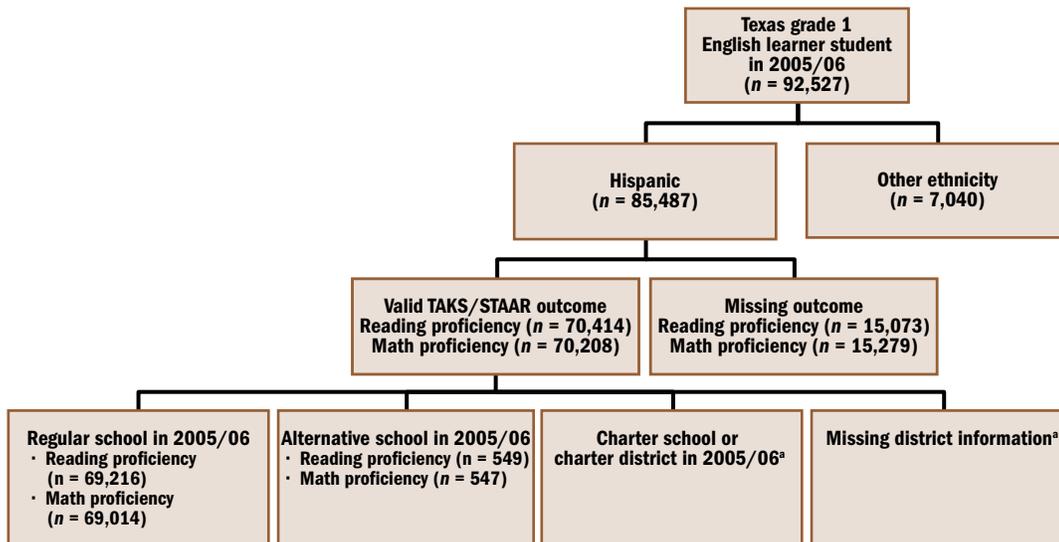
TAKS is Texas Assessment of Knowledge and Skills. STAAR is State of Texas Assessments of Academic Readiness.

a. *n* values are not reported to protect subgroups with fewer than 25 students.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

academic performance in reading, and satisfactory academic performance in math) while statistically controlling for background characteristics. Based on the same statistical models used for research question 1, research question 2 considers the extent to which the time it took to attain each of these three educational outcomes varied by educational experience, student background characteristics, and district demographic characteristics.

The outcomes are dichotomous variables taking a value of 1 when the outcome occurs and a value of 0 when the outcome does not occur. For example, at any given year, an English learner student's outcome would have a value of 1 if the student attains English proficiency (as measured by scoring at the advanced high level on the Texas English Language Proficiency Assessment System), and 0 if the student scores below this level (at the beginning, intermediate, or advanced levels). Students who never attained English proficiency during the period of study and students who moved out of the state before attaining English proficiency during the period of study were considered as censored.

The study defined the "beginning of time" as the student's grade 1 year and "end of time" as the year the student attained English proficiency or was censored. This resulted in a maximum of seven years for English proficiency and six years for the reading and math outcomes (time periods). Each year, some students attained English proficiency, and some did not. For each given year, one can calculate the hazard rate, or the proportion of students who began the year as not yet English proficient (the risk set) and who attained English proficiency during that year.

Inclusion of covariates in the analysis helps control for individual characteristics that likely are associated with the outcomes. A description of the outcomes, moderators, and covariates is provided in table C4.

Table C2. Select baseline characteristics of the Texas 2005/06 grade 1 Hispanic English learner cohort

Student characteristic	Number	Percent
Gender		
Male	37,082	52.1
Female	34,058	47.9
Eligible for the federal school lunch program		
No	4,093	5.8
Yes	67,047	94.2
Immigrant		
No	62,236	87.5
Yes	8,904	12.5
Participated in a special education program		
No	66,081	92.9
Yes	5,059	7.1
Home language		
English	911	1.3
Spanish	70,150	98.6
Other	79	0.1
Enrolled in a public prekindergarten program		
No	27,947	39.3
Yes	43,193	60.7
English learner instructional program		
Bilingual, unspecified[a]	56,527	79.5
English as a Second Language, unspecified[b]	11,233	15.8
None[c]	3,380	4.8
Opted out of English learner program[d]		
No	67,925	95.5
Yes	3,215	4.5

Note: Although Texas education code requires English proficiency testing of students whose home language is a language other than English, some districts allow parents to list more than one home language so students may have English and another language as their home languages. Also, it is possible that parents may select English as their student's home language, but once in school, school staff determine that the student is an English learner student. That student would then be identified as an English learner student.

a. Data on four types of bilingual programs were specified beginning only in year 4 of the study: transitional bilingual–early exit, transitional bilingual–late exit, dual language immersion–two way, and dual language immersion–one way.

b. Data on two types of English as a Second Language (ESL) programs were specified beginning only in year 4 of the study: ESL–content based and ESL–pull out.

c. Texas Education Agency records indicate that 4.8 percent of students in the sample ($n = 3,380$) were not enrolled in an English learner program although they were still classified as English learner students. The parents of 95 percent of these students had opted them out of English learner services.

d. Texas Education Agency records indicate that 4.5 percent of students in the sample ($n = 3,215$) had been opted out of English learner services by their parents, although these students were still classified as English learner students. While Texas Education Agency policy and federal education legislation (the Every Student Succeeds Act) establish the right for parents to opt their children out of English learner services, districts must provide opted out students equal opportunity to have their language and academic needs met—for example, through specialized language acquisition training of mainstream teachers or monitoring of student academic progress (Office of Civil Rights, 2016).

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

Table C3. Proportion of the Texas 2005/06 grade 1 Hispanic English learner cohort assessed on the Texas Assessment of Knowledge and Skills or the State of Texas Assessments of Academic Readiness, by language of assessment, 2008–13

Subject and year	English		Spanish		Total
	Number	Percent	Number	Percent	
Reading					
2008	38,530	66.3	23,133	33.4	69,216
2009	4,323	75.6	2,392	22.2	10,763
2010	2,265	93.3	418	8.5	4,943
2011	740	97.8	33	1.3	2,462
2012	34	100.0	a	a	1,672
2013	45	100.0	0	0.0	1,589
Math					
2008	39,685	72.2	19,964	28.9	69,014
2009	5,449	81.2	2,679	19.7	13,581
2010	3,294	96.8	426	6.3	6,740
2011	1,087	99.7	a	a	3,248
2012	48	100.0	0	0.0	2,100
2013	58	100.0	0	0.0	1,993

Note: The data in this table are based on the survival analysis models. In survival analysis, students remain in the sample until they first attain the outcome (in this case, demonstrating satisfactory performance on the respective reading and math assessments). The total number of test takers who have not yet demonstrated satisfactory performance decreases each year (column 5).

a. *n* values are not reported to protect subgroups with fewer than 25 students.

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

Table C4. Outcomes, moderators, and covariates in the study

Outcome	Operationalization	Coding
English language proficiency assessment performance	Performance level on TELPAS; advanced high level is considered proficient	1 = advanced high; 0 = beginning, intermediate, or advanced
Content performance in reading[a]	Performance level on TAKS (2007/08 to 2010/11) or STAAR (2011/12 and 2012/13); Level II is considered proficient and Level III is considered advanced proficient	Level II analysis 0 = Level I; 1 = Level II or Level III Level III analysis 0 = Level I or Level II; 1 = Level III
Content performance in math[a]	Scaled score and corresponding performance level at the final standard at the time of the study on TAKS (2007/08 to 2010/11) or STAAR (2011/12 and 2012/13); Level II is considered proficient, and Level III is considered advanced proficient	Level II analysis 0 = Level I; 1 = Level II or Level III Level III analysis 0 = Level I or Level II; 1 = Level III
Moderator		
Time (school years)	Time is the main predictor of interest in survival analysis; measured in discrete intervals (school years)	0 = beginning of the school year in which all students in the analytic sample have not yet experienced the outcome of interest; 1 = first school year; 2 = second school year, and so on. For the English proficiency outcome, time = 0 at grade 2 entry. For the reading and math outcomes, time = 0 at grade 3 entry.

(continued)

Table C4. Outcomes, moderators, and covariates in the study *(continued)*

Outcome	Operationalization	Coding
Participation in one of two ESL program models: content based or pull out	Series of indicators for enrollment in one of two ESL program model types	ESL—content based: 0 = no, 1 = yes; ESL—pull out: 0 = no, 1 = yes
Participation in one of four bilingual education program models: transitional—early exit, transitional—late exit, dual language—two way, and dual language—one way	Series of indicators for enrollment in one of the four bilingual education program models	Transitional—early exit: 0 = no, 1 = yes; Transitional—late exit: 0 = no, 1 = yes; Dual language—two way: 0 = no, 1 = yes; Dual language—one way: 0 = no, 1 = yes
English learner student did not participate in bilingual education or ESL because parent opted out of program services	Indicates whether English learner students' parents provided permission for their student to participate in bilingual education or ESL, or opted out of program services	0 = parents did not opt out of an English learner program at any point during grades 1 and 8 1 = parents opted student out of an English learner program at least once between grades 1 and 8
Prekindergarten enrollment	Dichotomous variable indicating whether a student was enrolled in Texas state prekindergarten programs in 2003/04 or 2004/05	1 = enrolled in public prekindergarten program during either of these years; 0 = did not enroll in public prekindergarten during either of these years
Covariate		
Racial/ethnic, English learner, and poverty composition of the district	Proportion of racial/ethnic minority students, English learner students, and students eligible for the federal school lunch program at the district level	For each district indicator, coded as: 0–25 percent of district enrollment; 26–50 percent; 51–75 percent; 76–100 percent
Initial English language proficiency	Scaled score and corresponding performance levels on TELPAS at first administration in grade 1 (spring 2006); students scoring at advanced high level at baseline were excluded from the English language proficiency sample	1 = intermediate, advanced, or advanced high; 0 = beginning,
Born in a foreign country/ immigrant	Dichotomous variable indicating whether the student is an identified immigrant under the definition in Title III of the No Child Left Behind Act of 2001; study relies on the baseline value for immigrant status	1 = student is defined as foreign born/an immigrant; 0 = student not defined as foreign born/an immigrant
Spanish language content-area assessment availability	Dichotomous variable indicating whether a student was assessed during one or more test administrations in Spanish on the TAKS or STAAR	1 = student was assessed in Spanish during one or more test administrations; 0 = student was not assessed in Spanish
Participation in special education program	Indicator for whether the student participated in a special education program at any time point during the period of analysis.	1 = participated in a special education program; 0 = did not participate in a special education program

ESL is English as a Second Language. STAAR is State of Texas Assessments of Academic Readiness. TAKS is Texas Assessment of Knowledge and Skills. TELPAS is Texas English Language Proficiency Assessment System.

a. Reading and math assessments were administered only in grades 3–8. English learner students in this cohort would have been administered the TAKS beginning in their grade 3 year through the 2010/11 school year. From 2012 to 2014, TAKS was replaced by the STAAR assessment. The change in statewide standardized tests from TAKS to STAAR means that the last two waves (2011/12 and 2012/13) of achievement data in this study come from a different assessment. This change could affect the estimated times to reaching content-area proficiency. However, because the change occurred for all of the students in the study sample, the change in assessment will be comparable across students.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

The study used a two-level (students nested within districts) logistic regression model to show the relationship between each of the three study outcomes (English language proficiency and at least satisfactory reading and math performance) and time, enrollment in public prekindergarten, initial English language proficiency, and English learner program type, controlling for student background characteristics and district demographic characteristics. Researchers tested different polynomial specifications of time to determine the best fitting model. Balancing model fit with parsimony, the researchers chose the cubic model for English proficiency and the linear model for the math and reading outcomes. The following equation was used to model the time to attaining each of the three outcomes in this study (except for a linear specification of time for the reading and math outcomes). Logit $h(t_{ij})$ is the conditional probability that the student will obtain advanced high on the state English language proficiency assessment or demonstrate at least satisfactory performance on the statewide reading and math assessments in the time period. α_2 represents the association between time and the outcome.[17]

$$
\begin{aligned}
\text{logit } h(t_{ij}) = \alpha_0 &+ \alpha_1 \text{Time}_i + \alpha_2 \text{Time Square}_i + \alpha_3 \text{Time Cubic}_i \\
&+ \alpha_4 \text{Initial English Proficiency}_i + \alpha_5 \text{Initial EL Program}_i \\
&+ \alpha_6 \text{Opted Out}_i + \alpha_7 \text{Pre-kindergarten enrollment}_i \\
&+ \alpha_8 \text{Minority at 25 percent at the district level}_i \\
&+ \alpha_9 \text{Minority: between 26 and 50 percent at the district level}_i \\
&+ \alpha_{10} \text{Minority: between 51 and 75 percent at the district level}_i \\
&+ \alpha_{11} \text{Minority: above 76 percent at the district level}_i \\
&+ \alpha_{12} \text{FSLP at 25 percent at the district level}_i \\
&+ \alpha_{13} \text{Minority: between 26 and 50 percent at the district level}_i \\
&+ \alpha_{14} \text{FSLP: between 51 and 75 percent at the district level}_i \\
&+ \alpha_{15} \text{FSLP: above 76 percent at the district level}_i \\
&+ \alpha_{16} \text{LEP: at 25 percent at the district level}_i \\
&+ \alpha_{17} \text{LEP: between 26 and 50 percent at the district level}_i \\
&+ \alpha_{18} \text{LEP: between 51 percent and 75 percent at the district level}_i \\
&+ \alpha_{19} \text{LEP: above 76 percent at the district level}_i + \alpha_{20} \text{Female}_i + \alpha_{21} \text{FSLP}_i \\
&+ \alpha_{22} \text{Immigrant}_i + \alpha_{23} \text{Intermediate or above English Proficiency}_i \\
&+ \alpha_{24} \text{SpecialEducation}_i
\end{aligned}
$$

where $h(t_{ij})$, the discrete-time hazard, is the conditional probability that student i experiences the outcome (English language proficiency, satisfactory reading or math performance) in time period j, given the student did not experience it in any earlier time periods. EL is English learner, FSLP is eligibility for the federal school lunch program, and LEP is limited English proficient.

The study team used the estimates from the regression model to predict the hazard probabilities for each year. Hazard probabilities are the proportion of students who attained each of the respective outcomes each year for the whole sample and by subgroups (for example, students enrolled in public prekindergarten versus those not enrolled). Based on these values, the study team calculated the "median lifetime," that is, the period at which half of the sample attained the outcome of interest. The findings based on the survival analysis are reported as median lifetimes and as comparisons of the odds ratios, the odds that an outcome will occur for one group divided by the odds for the reference group. The predicted probabilities were used to interpolate the median lifetime using the following formula (Singer & Willett, 2003):

$$
\text{Estimated median lifetime} = m + \left[\frac{\hat{S}(t_m) - .5}{\hat{S}(t_m) - \hat{S}(t_m + 1)} \right] \times [(m + 1) - m]
$$

Appendix D. Supplemental findings

This appendix contains two main sections. The first section includes additional and more detailed results from the analysis, organized by outcome. The second section presents contextual data related to reclassification.

Supplemental findings for English proficiency, reading, and math attainment

Student characteristics and English proficiency. The cumulative percentage of students attaining English proficiency increased each year, with 88 percent of the cohort attaining proficiency by grade 8 (table D1).

Table D1. Yearly attainment of English proficiency for the Texas 2005/06 grade 1 Hispanic English learner cohort, 2005/06–2012/13

School year (expected grade)	Total sample	English proficient at end of year (annual)		English proficiency by end of year (cumulative, percent)	
		Number	Percent	Not proficient	Proficient
2005/06 (grade 1)[a]	85,487	na	na	na	na
2006/07 (grade 2)	71,140	8,434	11.9	88.1	11.9
2007/08 (grade 3)	60,114	17,932	29.8	61.9	38.1
2008/09 (grade 4)	39,246	10,165	25.9	45.8	54.2
2009/10 (grade 5)	26,151	9,348	35.7	29.4	70.6
2010/11 (grade 6)	15,258	4,656	30.5	20.5	79.5
2011/12 (grade 7)	9,567	2,218	23.2	15.7	84.3
2012/13 (grade 8)	6,759	1,640	24.3	11.9	88.1

na is not applicable.

Note: $n = 85,487$ Hispanic English learner students at baseline in grade 1. Of those students, 71,140 students had not yet attained the advanced high level on the Texas English Language Proficiency Assessment System at grade 2 entry. The cumulative percentages of students not proficient (column 4) and proficient (column 5) account for students who were censored. Censored students either did not attain the outcome by the end of the study period or did not have available data in some years during the study period (that is, they left the state or were missing test scores).

a. Students who had attained English proficiency prior to grade 2 were not included in the English proficiency study sample.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

District characteristics and English proficiency. The median time to proficiency and the percentage of students who attained English proficiency by grade 8 (2012/13 school year) varied by district characteristics (table D2).[18] For example, the median time to attain English proficiency was a half-year longer in districts with 76 percent or more of students eligible for the federal school lunch program than in districts with 25 percent or fewer students eligible.

Table D2. Percentage of the Texas 2005/06 grade 1 Hispanic English learner cohort who attained English language proficiency and their median years to English language proficiency, by district characteristics, 2006/07–2012/13

District characteristic	Total sample		Reaching English language proficiency by 2012/13		Median years to English proficiency
	Percent	Number	Percent	Number	
Whole sample	100.0	71,140	76.5	54,393	2.6
Percent of students eligible for federal school lunch program					
25 or below	3.8	2,692	82.9	2,232	2.4
26–50	14.4	10,236	82.0	8,398	2.5
51–75	36.6	26,048	76.0	19,798	2.7
76 or above	45.2	32,164	74.5	23,965	2.9
Percent of racial/ethnic minority students					
25 or below	1.9	1,337	80.0	1,069	2.6
26–50	9.6	6,847	81.3	5,567	2.7
51–75	23.1	16,406	78.9	12,951	2.7
76 or above	65.4	46,550	74.8	34,806	2.7
Percent of students with limited English proficiency					
25 or below	0.4	288	72.9	210	2.7
26–50	0.6	412	73.1	301	2.7
51–75	0.5	348	73.0	254	2.8
76 or above	98.5	70,092	76.5	53,628	2.7

Note: The percentage (column 3) and number (column 4) of students reaching English language proficiency are sample proportions that do not take into account censoring. The median years to English proficiency (column 5) considers censoring and student, district, and English learner program characteristics. For this analysis, students were associated with the district in which they had attended school the most days.

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

Student characteristics and reading attainment. The cumulative percentage of students demonstrating at least satisfactory performance in reading at least once increased each year. Notably, 84 percent of cohort students who could be tracked demonstrated at least satisfactory performance in reading when first assessed on statewide content assessments in grade 3 (2007/08 school year), and nearly all students (98 percent) had attained this level at least once by grade 8 (table D3). The percentage of students demonstrating at least satisfactory reading performance in grade 3 (2007/08 school year) and cumulatively by grade 8 (2012/13 school year) varied by student subgroups.

Table D3. Attainment of at least satisfactory reading performance for the Texas 2005/06 grade 1 Hispanic English learner cohort, by expected grade, 2005/06–2012/13

School year (expected grade)	Total sample	At least satisfactory at end of year (annual)		Not at least satisfactory by end of year (cumulative)	At least satisfactory by end of year (cumulative)
		Number	Percentage	Percentage	Percentage
2005/06 (grade 1)	a	a	a	a	a
2006/07 (grade 2)	a	a	a	a	a
2007/08 (grade 3)	69,216	58,076	83.9	16.1	83.9
2008/09 (grade 4)	10,763	5,718	53.1	7.5	92.5
2009/10 (grade 5)	4,943	2,428	49.1	3.8	96.2
2010/11 (grade 6)	2,462	757	30.7	2.7	97.3
2011/12 (grade 7)	1,672	34	2.0	2.6	97.4
2012/13 (grade 8)	1,589	45	2.8	2.5	97.5

Note: $n = 69,216$ at grade 3. The cumulative percentages of students not at least satisfactory (column 4) and at least satisfactory (column 5) account for students who were censored. Censored students either did not attain the outcome by the end of the study period or did not have available data in some years during the study period (that is, they left the state or were missing test scores). Students were assessed on the Texas Assessment of Knowledge and Skills in grades 1–6 and the State of Texas Assessments of Academic Readiness in grades 7 and 8.

a. The test was not administered at this grade level.

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

District characteristics and reading attainment. Attending a school in a higher poverty district (where more than 50 percent of students were eligible for the federal school lunch program) was associated with a lower probability of demonstrating satisfactory performance in reading (tables D4 and D5).

Table D4. Attainment of at least satisfactory reading performance for the Texas grade 1 Hispanic English learner cohort, by district characteristics, 2007/08 and 2012/13

District characteristic	Total sample		At least satisfactory in 2007/08		At least satisfactory by 2012/13	
	Percent	Number	Percent	Number	Percent	Number
Total sample	100.0	69,216	83.9	58,076	97.0	67,058
Percent of students eligible for the federal school lunch program						
25 or below	4.0	2,799	85.6	2,396	98.3	2,751
26–50	14.8	10,213	85.0	8,684	97.6	9,967
51–75	37.6	26,025	83.3	21,678	96.5	25,119
76 or above	43.6	30,179	83.9	25,318	96.8	29,221
Percent of racial/ethnic minority students						
25 or below	2.0	1,353	84.6	1,144	97.2	1,315
26–50	10.1	6,974	83.7	5,837	97.6	6,805
51–75	23.7	16,417	83.8	13,751	96.8	15,893
76 or above	64.3	44,472	84.0	37,344	96.8	43,045
Percent of students with limited English proficiency						
25 or below	0.5	328	79.6	261	94.2	309
26–50	0.7	456	83.1	379	97.4	444
51–75	0.6	401	84.0	337	97.8	392
76 or above	98.3	68,031	83.9	57,099	96.9	65,913

Note: The proportion demonstrating at least satisfactory reading performance in 2007/08 is presented instead of the median lifetime because more than 50 percent of the sample demonstrated at least satisfactory reading performance during the first test administration (2007/08).

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

Table D5. Results of fitting discrete-time hazard models using logistic regression to the time to English proficiency and demonstrating at least satisfactory performance in reading and math for the Texas grade 1 Hispanic English learner cohort: final model, odds ratios, 2005/06–2012/13

Characteristic	Attainment of English language proficiency		Attainment of at least satisfactory reading performance		Attainment of at least satisfactory math performance	
	Odds ratio	Standard error	Odds ratio	Standard error	Odds ratio	Standard error
Intercept	0.03***	0.00	12.44***	2.04	10.14***	1.64
Time indicators						
Time	8.76***	0.35	0.42***	0.00	0.48***	0.00
Time * Time	0.64***	0.01	na	na	na	na
Time * Time * Time	1.03***	0.00	na	na	na	na
English learner program						
English as a Second Language versus bilingual	0.90***	0.02	0.87***	0.03	0.77***	0.02

(continued)

Table D5. Results of fitting discrete-time hazard models using logistic regression to the time to English proficiency and demonstrating at least satisfactory performance in reading and math for the Texas grade 1 Hispanic English learner cohort: final model, odds ratios, 2005/06–2012/13 (continued)

Characteristic	Attainment of English language proficiency		Attainment of at least satisfactory reading performance		Attainment of at least satisfactory math performance	
	Odds ratio	Standard error	Odds ratio	Standard error	Odds ratio	Standard error
None[a] versus bilingual	0.80	0.10	0.88	0.14	0.81	0.12
Opted out of English learner program[b] versus not opted out	1.18	0.15	1.01	0.17	0.94	0.15
Student characteristic						
Enrolled in public prekindergarten	1.08***	0.01	1.07**	0.02	1.08***	0.02
Female	1.25***	0.01	1.23***	0.02	0.89***	0.01
Eligible for the federal school lunch program	0.61***	0.01	0.60***	0.03	0.75***	0.03
Immigrant	1.10***	0.02	1.39***	0.04	1.22***	0.03
Initial English proficiency: intermediate or advanced versus beginning	2.79***	0.03	1.97***	0.04	1.84***	0.03
Participated in a special education program	0.32***	0.01	0.65***	0.02	0.69***	0.02
Age 7 or older in grade 1	0.50***	0.01	0.55***	0.01	0.53***	0.01
More than one test taken in Spanish	na		1.04	0.02	0.77***	0.02
District characteristic						
Percent of racial/ethnic minority students						
25–<50 versus 0–25	0.93	0.06	0.95	0.09	0.95	0.11
50–<75 versus 0–25	0.93	0.07	1.01	0.11	0.81	0.10
75–100 versus 0–25	0.92	0.08	1.08	0.14	0.77	0.12
Percent of students eligible for the federal school lunch program						
25–<50 versus 0–25	0.91	0.07	0.86	0.09	1.02	0.16
50–<75 versus 0–25	0.81**	0.06	0.72**	0.08	1.04	0.17
75–100 versus 0–25	0.69***	0.07	0.65**	0.09	0.95	0.12
Percent of English learner students						
25–<50 versus 0–25	1.04	0.13	1.41*	0.23	0.95	0.11
50–<75 versus 0–25	0.93	0.12	1.46*	0.26	0.81	0.10
75–100 versus 0–25	0.99	0.10	1.32*	0.17	0.77	0.12
Variance between districts						
Variance	0.08		0.14		0.21	
Sample sizes						
Number of observations	228,235		90,645		96,676	
Number of students	71,140		69,216		69,014	
Number of districts	747		769		769	

* Significant at $p < .05$; ** Significant at $p < .01$; *** Significant at $p < .001$.

na is not applicable because the predictor was not used in the regression analysis.

Note: English language proficiency attainment was measured by a score of advanced high level on the Texas English Language Proficiency Assessment System.

a. Texas Education Agency records indicate that 4.8 percent of students in the sample (n = 3,380) were not enrolled in an English learner program although they were still classified as English learner students. The parents of 95 percent of these students had opted them out of English learner services.

b. Because of the overlap between opt-out and no program indicators (for the English learner program variable), sensitivity analyses were conducted based on removing the opt-out variable from the analysis. Compared with the main analysis, the analysis with the opt-out indicator removed estimated a lower probability of attaining any of the outcomes (English language proficiency, satisfactory reading or math performance) for students with no program identified at the beginning of the cohort relative to their peers enrolled in a bilingual program (English language proficiency odds ratio = 0.94; satisfactory reading performance odds ratio = 0.88; satisfactory math performance odds ratio = 0.76). In the analysis reported here, there were no significant differences between the odds of attaining any of the outcomes by opt-out status. The sensitivity analysis did not meaningfully change the magnitude, direction, or significance of estimates for other variables in the model.

Source: Authors' analysis based on Texas Education Agency data from 2006/07 to 2012/13.

Student characteristics and math attainment. The cumulative percentage of students who demonstrated at least satisfactory math performance increased each year (table D6). Similar to the findings reported previously and in the main report for reading attainment, nearly 80 percent of cohort students who could be tracked attained this level when first assessed in grade 3 (2007/08 school year), and most students (96.8 percent) attained this level at least once by grade 8 (2012/13 school year; see table D6). The percentage of students attaining this level in grade 3 and cumulatively by grade 8 varied by student subgroup.

Table D6. Attainment of at least satisfactory math performance for the Texas 2005/06 grade 1 Hispanic English learner cohort, by expected grade, 2005/06–2012/13

School year (expected grade)	Total sample	At least satisfactory at end of year (annual)		Not at least satisfactory by end of year (cumulative)	At least satisfactory by end of year (cumulative)
		Number	Percent	Percent	Percent
2005/06 (grade 1)	a	a	a	—	—
2006/07 (grade 2)	a	a	a	a	a
2007/08 (grade 3)	69,014	54,986	79.7	20.3	79.7
2008/09 (grade 4)	13,581	6,708	49.4	10.3	89.7
2009/10 (grade 5)	6,740	3,402	50.5	5.1	94.9
2010/11 (grade 6)	3,248	1,090	33.6	3.4	96.6
2011/12 (grade 7)	2,100	48	2.3	3.3	96.7
2012/13 (grade 8)	1,993	58	2.9	3.2	96.8

— is not available.

Note: *n* = 69,014 at grade 3. The cumulative percentages of students not satisfactory (column 4) and satisfactory (column 5) account for students who were censored. Censored students either did not attain the outcome by the end of the study period or did not have available data in some years during the study period (that is, they left the state or were missing test scores). Cohort students were assessed on the Texas Assessment of Knowledge and Skills in grades 3–6 and the State of Texas Assessments of Academic Readiness in grades 7 and 8.

a. The test was not administered at this grade level.

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

District characteristics and math attainment. None of the district indicators was statistically significantly related to the odds of attaining the satisfactory performance in math (table D7; see also table D5).

Table D7. Attainment of at least satisfactory math performance for Texas 2005/06 grade 1 Hispanic English learner cohort, by district characteristics, 2007/08 and 2012/13

District characteristic	All students		At least satisfactory in 2007/08		At least satisfactory by 2012/13	
	Percent	Number	Percent	Number	Percent	Number
Total sample	100.0	69,014	79.7	54,986	96.0	66,292
Percent of students eligible for the federal school lunch program						
25 or below	4.0	2,788	78.3	2,184	97.1	2,708
26–50	14.8	10,210	80.9	8,260	96.9	9,893
51–75	37.6	25,936	78.6	20,375	95.4	24,736
76 or above	43.6	30,080	80.3	24,167	96.3	28,955
Percent of racial/ethnic minority students						
25 or below	2.0	1,354	77.5	1,049	96.4	1,305
26–50	10.1	6,959	77.7	5,404	96.5	6,716
51–75	23.7	16,367	79.0	12,934	95.5	15,634
76 or above	64.2	44,334	80.3	35,599	96.2	42,637
Percent of students with limited English proficiency						
25 or below	0.5	329	76.9	253	95.1	313
26–50	0.7	454	75.6	343	97.4	442
51–75	0.6	402	77.6	312	96.8	389
76 or above	98.3	67,829	79.7	54,078	96.0	65,148

Note: The proportion demonstrating at least satisfactory math performance in 2007/08 is presented instead of the median lifetime because more than 50 percent of the sample demonstrated at least satisfactory math performance during the first test administration (2007/08).

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

Contextual findings related to reclassification

Reclassification and English proficiency attainment are inextricably linked. U.S. Department of Education guidance (Office of Civil Rights, 2015) made clear that a "valid and reliable" (p. 33) assessment of English proficiency in all four language domains (reading, writing, speaking, and listening) is required to determine that English learner students have achieved English proficiency and can be exited from English learner status. Other studies have found that scoring proficient on the statewide English language proficiency assessment was the biggest barrier to English learner students' reclassification (for example, Wolf et al., 2008), particularly in the elementary grades (Umansky & Reardon, 2014).

Reclassification, or being exited from English learner status, was not treated as an outcome of interest in the study because the study team chose to focus on a more consistent measure of English proficiency (the Texas English Language Proficiency Assessment System) for analyzing a statewide sample. The percentages of students reclassified each year are included to provide context for the study findings.

Yearly reclassification. By the end of grade 8, 74 percent of the original cohort had been reclassified (table D8). Reclassification peaked in grade 5; almost 29 percent of the students who entered grade 5 classified as English learner students were reclassified that year, and a cumulative total of nearly 44 percent of the sample were reclassified (table D8). The annual percentages of students in the cohort who were reclassified (see table D8) tended to lag behind student attainment of advanced high English proficiency in the elementary grades. For example, by the end of grade 4, cumulatively, only 21 percent had been reclassified, although at least half of the students in the cohort had attained English proficiency by that time (see table D1).

Table D8. Yearly reclassification as fluent English proficient for the Texas 2005/06 grade 1 Hispanic English learner cohort, 2005/06–2012/13

School year (expected grade)	Total sample	Reclassified at end of year (annual)		Not reclassified at the end of year (cumulative)	Reclassified at end of year (cumulative)
		Number	Percent	Percent	Percent
2005/06 (grade 1)	84,135	0	0.0	100.0	0.0
2006/07 (grade 2)	81,379	2,327	2.9	97.1	2.9
2007/08 (grade 3)	77,245	3,403	4.4	92.9	7.1
2008/09 (grade 4)	72,393	11,137	15.4	78.6	21.4
2009/10 (grade 5)	60,281	17,284	28.7	56.0	44.0
2010/11 (grade 6)	42,237	9,896	23.4	42.9	57.1
2011/12 (grade 7)	31,902	7,078	22.2	33.4	66.6
2012/13 (grade 8)	24,448	5,429	22.2	26.0	74.0

Note: *n* = 84,135 at baseline. The cumulative percentages of students not reclassified (column 4) and reclassified (column 5) account for students who were censored. Censored students either did not attain the outcome by the end of the study period or did not have available data in some years during the study period (that is, they left the state or were missing test scores).

Source: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

Reading and math performance, by reclassification and English proficient status. To benchmark yearly Hispanic English learner student reading and math performance against that of their peers statewide, this report shows performance trends for all students state-wide (columns 2–5 in table D9), for all students in the respective reading and math analytic samples who had been reclassified (columns 6–9), and for students in the respective analytic samples who remained classified as English learner students during the year indicated (columns 10–13).

Greater percentages of reclassified English learner students in the elementary grades attained reading and math proficiency than all students statewide, based on the TAKS (see table D9). At grade 3 about 95 percent of the cohort's reclassified students demonstrated at least satisfactory performance in reading (compared with 88 percent of students state-wide), and about 92 percent performed at this level in math (compared with 83 percent of students statewide). In grade 8, based on the STAAR, lower percentages of reclassified English learner students demonstrated proficiency (43 percent in reading and 25 percent in math) than all students statewide (47 percent in reading and 35 percent in math).

The yearly proportion of the grade 1 cohort who demonstrated satisfactory performance in reading and math, by English proficiency attainment is provided in table D10.

Table D9. Yearly attainment of at least satisfactory performance in reading and math for the 2005/06 grade 1 Hispanic English learner cohort, by English learner status, 2007/08–2012/13

Grade (year)	All students statewide				Former English learners (reclassified students)				Current English learner students			
	Reading		Math		Reading		Math		Reading		Math	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Grade 3—TAKS (2007/08)	272,010	88.0	261,044	83.0	5,141	94.8	5,128	92.2	63,868	83.1	63,674	78.7
Grade 4—TAKS (2008/09)	267,228	84.0	278,352	86.0	15,682	91.8	15,685	93.6	51,655	75.9	51,580	80.6
Grade 5—TAKS (2009/10)	281,957	85.0	288,913	86.0	31,733	96.6	31,719	97.0	34,636	77.3	34,573	84.3
Grade 6—TAKS (2010/11)	285,166	84.0	281,642	83.0	39,257	90.6	39,236	88.9	25,866	61.9	25,815	71.1
Grade 7—STAAR (2011/12)	134,603	39.0	106,712	33.0	44,567	33.8	44,539	32.6	19,625	7.0	19,584	10.2
Grade 8—STAAR (2012/13)	163,372	47.0	99,613	35.0	47,895	42.5	47,844	25.2	14,664	11.6	14,620	13.7

STAAR is State of Texas Assessments of Academic Readiness. TAKS is Texas Assessment of Knowledge and Skills.

Note: Students showed at least satisfactory performance on TAKS and met the final standard on STAAR. Texas switched from TAKS to STAAR starting in the 2011/12 school year. STAAR performance standards reported reflect the final recommended standard at the time of the study. However, at the time this report was written, the Texas Commissioner of Education replaced the standard progression phase-in schedule with a revised set of performance labels (19 TAC §101.3041). If the study had used these revised performance labels, reading and math proficiency rates for 2011/12 and 2012/13 would have been higher than those than shown in this table.

Among the 2005/06 grade 1 cohort of Hispanic English learner students, 69,219 students had grade 3 TAKS assessment scores in reading, and 69,014 students had grade 3 TAKS scores in math. The yearly sample sizes given in this table for reading (columns 5 and 9) and math (columns 7 and 11) include all students from this cohort until they leave the state and exclude students with missing English learner student status.

Source: Columns 1–4: Texas Education Agency TAKS data from March 2008, April 2009, April 2010, and April 2011; STAAR data from April 2012 and April 2013. Statewide performance trends are available at https://txreports.emetric.net and in archived records maintained by the Texas Education Agency. Columns 5–12: Authors' analysis based on Texas Education Agency data from 2005/06 to 2012/13.

Table D10. Attainment of at least satisfactory performance in reading and math for the Texas 2005/06 grade 1 Hispanic English learner cohort, by English proficiency, 2008–13

Subject and school year (expected grade)	Total sample	English proficient students		Non English proficient students	
		Number	Percent	Number	Percent
Reading					
2008 (Grade 3)	63,828	25,970	98.2	27,023	72.3
2009 (Grade 4)	10,046	1,345	79.5	3,979	47.6
2010 (Grade 5)	4,581	904	67.9	1,312	40.4
2011 (Grade 6)	2,272	306	45.4	387	24.2
2012 (Grade 7)	1,515	a	a	a	a
2013 (Grade 8)	1,254	a	a	a	a
Math					
2008 (Grade 3)	63,685	25,041	94.9	25,075	67.3
2009 (Grade 4)	12,407	1,806	67.9	4,258	43.7
2010 (Grade 5)	5,715	1,122	60.3	1,664	43.2
2011 (Grade 6)	2,666	405	43.6	513	29.5
2012 (Grade 7)	1,584	a	a	a	a
2013 (Grade 8)	1,282	a	a	a	a

Note: The data are based on the survival analysis models. In survival analysis, students remain in the sample until they first attain the outcome (in this case, demonstrating satisfactory performance on the respective reading and math assessments). The total number of test takers who have not yet demonstrated satisfactory performance decreases each year (column 1). Students were assessed on the Texas Assessment of Knowledge and Skills in grades 3–6 and the State of Texas Assessments of Academic Readiness in grades 7 and 8.

a. *n* values are not reported to protect subgroups with fewer than 25 students.

Source: Authors' analysis based on Texas Education Agency data from 2007/08 to 2012/13.

Results of fitting discrete-time hazard models

The complete results of fitting discrete-time hazard models for the time to attaining English language proficiency and demonstrating at least satisfactory performance on the respective reading and math assessments for the unconditional model are shown in table D11.

Table D11. Results of fitting discrete-time hazard models using logistic regression to the time to English proficiency and demonstrating at least satisfactory performance in reading and math for the grade 1 Hispanic English learner cohort: unconditional model, odds ratios, 2005/06–2012/13

Variable	Attainment of English language proficiency	Standard error	Attainment of at least satisfactory reading performance	Standard error	Attainment of at least satisfactory math performance	Standard error
Intercept	0.03***	0.00	12.44***	2.04	7.73***	0.21
Time indicators						
Time	7.69***	0.30	0.44***	0.00	0.44***	0.00
Time * Time	0.64***	0.01	na	na	na	na
Time * Time * Time	1.03***	0.00	na	na	na	na
Variance between districts						
Variance	0.08		0.14		0.16	
Sample sizes						
Number of observations	228,235		90,645		96,676	
Number of students	71,140		69,216		69,014	
Number of districts	747		769		769	

* Significant at $p < .05$; ** Significant at $p < .01$; *** Significant at $p < .001$.

na is not applicable because the predictor was not used in the regression analysis.

Source: Authors' analysis based on Texas Education Agency data from 2006/07 to 2012/13.

Notes

1. As of publication, the Texas English Learners Research Alliance comprised members from the following Texas organizations: the Texas Education Agency, 2 regional service centers, 47 school districts and public or charter schools, 5 institutions of higher education, and 3 additional stakeholder/business organizations.

2. The annual statewide Texas English Language Proficiency Assessment System (TELPAS) was administered to English learner students for the first time in kindergarten. Because kindergarten ratings are not reported for school accountability purposes, the study used the TELPAS proficiency rating in grade 1 as the measure of initial English proficiency and tracked attainment of English proficiency (that is, scoring advanced high on TELPAS) beginning in grade 2 for students who had not obtained scores of advanced high by entry to grade 2.

3. In this study, available variables measuring students' education experience include type of English learner program (English as a Second Language or bilingual), whether parents opted the student out of an English learner program, and whether the student was enrolled in a public prekindergarten program.

4. At the time the data were collected, the term "immigrant children and youth" was officially defined as "individuals who are aged 3 through 21; were not born in any state (meaning each of the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico) and have not been attending one or more schools in any one or more states for more than 3 full academic years" (see No Child Left Behind Act of 2001, 2002, Title III, Part C, § 3301(6)).

5. Grade levels referenced in the findings represent the expected grade during a particular academic year for students who stayed on track.

6. There are some rules of thumb to describe the strength of an association using odds ratios. Rosenthal (2012) suggested that odds ratios greater than 1.5 or less than 0.67 be considered a small strength of a relationship.

7. The median lifetime in survival analysis was not estimated because more than 50 percent of the sample attained the outcome during the first time point available.

8. The annual percentage of the cohort who attained at least satisfactory reading and math performance is shown in table D9 in appendix D, and their cumulative performance is shown in tables D3 (reading) and D6 (math). The complete results of fitting discrete hazard models for time to attaining advanced academic performance in reading and math are provided as reference for the unconditional model in table D11 and the final model in table D5.

9. The change in the statewide reading and math assessments from the Texas Assessment of Knowledge and Skills to the State of Texas Assessments of Academic Readiness occurred when most students in this cohort were in grade 7. Furthermore, the skills needed for satisfactory performance in the middle grades may differ substantially from what is required in the elementary grades.

10. Extenuating circumstances include the student being deemed an unschooled asylee, a refugee, or a student with interrupted formal education (Texas Education Agency, 2016a).

11. English learner students are first eligible for exit from English learner programs at the end of grade 1 (19 Texas Administrative Code §89.1225(i)).

12. Program offerings depend on the district. Many districts do not have bilingual education for secondary grades.

13. For the complete list of state-approved assessments, see https://tea.texas.gov/index2. aspx?id=4098.

14. For more details, see Texas Education Agency, 2012, Chapter 89, Adaptations for Special Populations, Subchapter BB.

15. Texas Education Code §29.051 -29.064 - Bilingual Education and ESL Programs.

16. English proficiency and reclassification status are not the same, often because states require multiple criteria to reclassify students. For many English learner students the time it takes to be reclassified may be longer than the time it takes to demonstrate proficiency on the state English language proficiency assessment.

17. The study included interaction effects between the moderators and the time variable to check for the assumption of proportionality of hazard for each predictor. None of the interaction effects was statistically significant; all final models therefore are main effects models (see table D5).

18. For this analysis, students were associated with the district in which they had attended school the most days.

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