# English proficiency and the pandemic: How Texas English learner students fared during the COVID-19 pandemic

Appendix A. Methodology

Appendix B. Supporting tables

Appendix C. Supplemental analyses

See https://ies.ed.gov/ncee/rel/Products/Publication/100897 for the full report.

## Appendix A. Methodology

This appendix describes the data sources, analytic samples, and analysis methods in more detail.

### *Data sources*

The study used data on English learner students, reclassified English learner students, and Texas schools and districts from 2017/18 to 2020/21, provided by the Texas Education Agency through the Texas Education Research Center at the University of Texas Austin. The data elements are described in table A1.

**Table A1. Data elements by research question**

| Data type | Years | Key variables | Research question |
|---|---|---|---|
| Student demographic characteristics | 2017/18-2020/21 | Gender, race/ethnicity, National School Lunch Program eligibility, special education status, gifted/talented status, parent or guardian denial of English learner student services, primary language spoken at home, years in U.S. schools, grade level, school, and district | 1-4 |
| Student academic characteristics | 2017/18-2020/21 | STAAR scores, TELPAS domain and composite scores | 1-4 |
| English learner program participation | 2017/18-2020/21 | Participation in English learner program models | 4 |
| School characteristics | 2017/18-2020/21 | Percentages of students with limited English proficiency, eligible for the National School Lunch Program, and receiving special education services; enrollment count; teachers' average years of teaching experience | 1-4 |
| District characteristics | 2017/18-2020/21 | District locale; enrollment count; percentage of students with limited English proficiency | 1-4 |

STAAR is State of Texas Assessments of Academic Readiness. TELPAS is Texas English Language Proficiency Assessment System.
Source: Authors' compilation.

### *Sample*

For all research questions, the study sample was limited to English learner students or reclassified English learner students in grades 3–12 in a given year. The population of English learner students was defined as students present in the Public Education Information Management System enrollment file who were classified as limited English proficient.[1,2] Students were identified as reclassified if their limited English proficient code changed from "1" (identified as an English learner student) in the prior year to "F" (first year of reclassification) in the given year. The population of English learner students in each study year ranged from 617,720 students in 2017/18 to 747,178 students in 2020/21 (table A2). Major urban areas and the Rio Grande Valley had higher percentages of English learner students by district than other areas of the state (figure A1). The population of reclassified English learner students in each study year ranged from 76,190 students in 2017/18 to 30,840 students in 2020/21 (tables A3 and A4).

**Table A2. Number of English learner students and tested English learner students in Texas in grades 3–12, 2017/18–2020/21**

| Population | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|
| All English learner students (number) | 617,720 | 665,076 | 722,193 | 747,178 |
| Tested English learner students (number) | 593,318 | 637,436 | 601,498 | 669,636 |
| Percentage of English learner students who were tested | 96.0 | 95.8 | 83.3 | 89.6 |

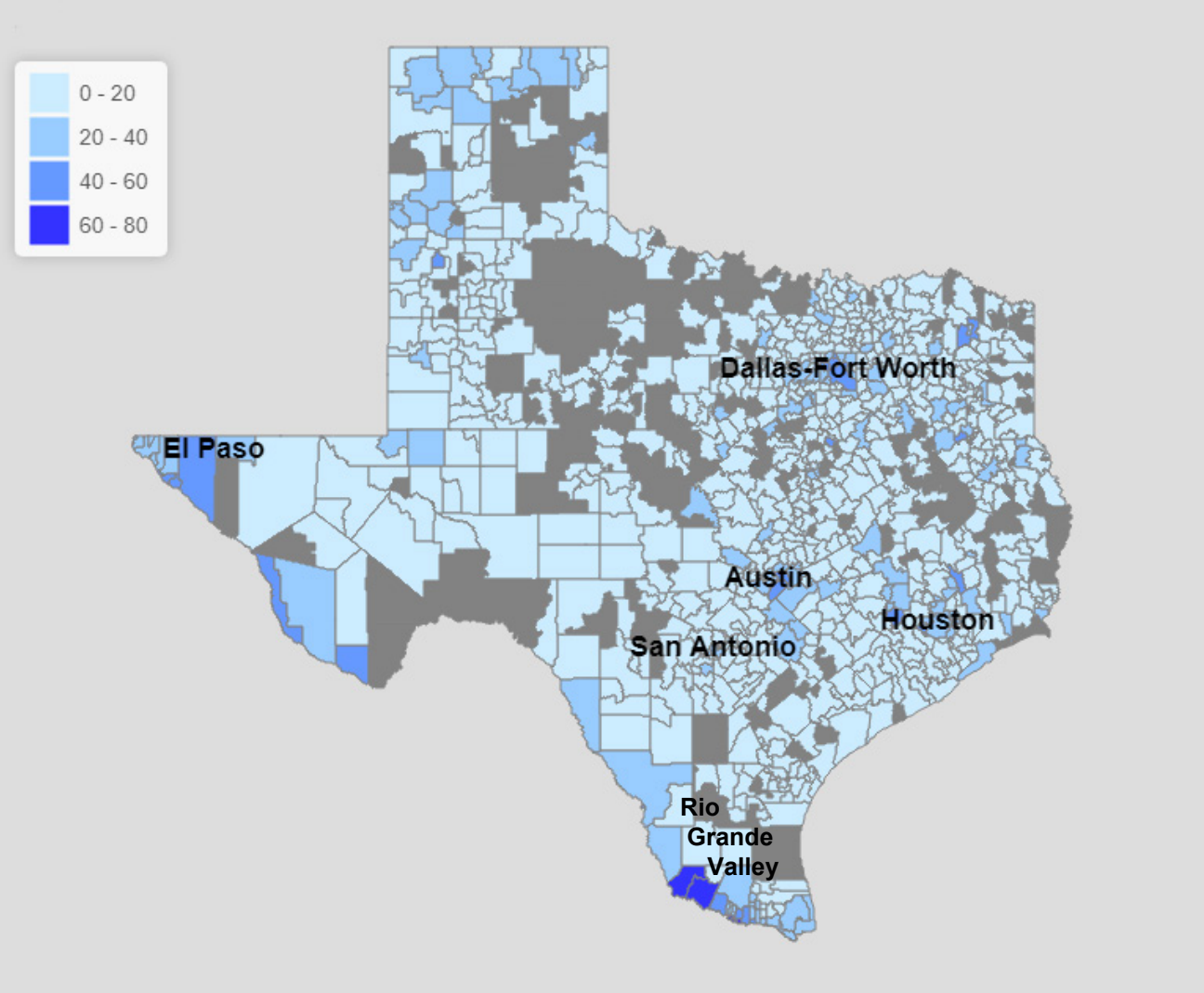
Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

[1] Some English learner students did not receive services because their parents or guardians denied their participation in English learner student services.

[2] The population of English learner students in Texas public schools included students enrolled in traditional schools, charter schools, and alternative schools (for example, disciplinary alternative education programs) at the fall enrollment snapshot.

**Figure A1. Major urban areas and the Rio Grande Valley had some of the largest proportions of Texas English learner students by district, 2020/21**

*Proportion of English learner students*




Note: The sample included 1,107,425 English learner students in all grades in districts with 10 or more English learner students. Map areas shaded in gray indicate districts with fewer than 10 English learner students, where data are masked.
Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

For research question 1, the study team examined the population of grades 3–12 English learner students from 2017/18 to 2020/21. The study did not include English learner students in years before 2017/18 because of changes in the Texas English Language Proficiency Assessment System (TELPAS) that occurred after 2016/17 (Texas Education Agency, 2020a). TELPAS scores measured in 2017/18 and beyond are not directly comparable to the prior version of the TELPAS (Texas Education Agency, 2020b). Beginning in 2017/18, the content for the TELPAS reading domain was redesigned, and item-based standardized assessments were implemented in the listening and speaking domains for the first time (Texas Education Agency, 2018). The Texas Education Agency created scale scores for the composite and for each domain except writing beginning in 2017/18, whereas scale scores were available

only for the reading domain before 2017/18. In addition, in 2017/18, the subtest weights for calculating the TELPAS composite score from the four subtest scores were revised.

To determine whether the composition of Texas English learner students who took the TELPAS was representative of all English learner students, the study team defined TELPAS test takers as all students present in the fall enrollment file with a valid TELPAS score in at least one domain (listening, speaking, reading, or writing) in the spring testing file. The study team excluded students who had a TELPAS score in the spring testing file but were not present in the fall enrollment file from the analytic sample. In addition, the study team excluded 44,194 students with invalid student identification numbers in the spring testing file because they could not be matched to their fall enrollment record. The final sample of TELPAS test takers ranged from 593,318 students in 2017/18 to 669,636 students in 2020/21 (see table A2).

For research question 2, the study team examined the population of English learner students reclassified in 2017/18 through 2020/21. Reclassification decisions are made in the spring of each school year using an English language proficiency assessment, the state standardized reading assessment, and a subjective teacher evaluation. During the four-year study period, reclassification guidelines changed (see table A3). In 2016/17 and 2017/18, to be reclassified in the following year, students needed to score fluent on one of several allowable English oral language proficiency tests (including the TELPAS), meet the passing standard on the reading portion of the State of Texas Assessments of Academic Readiness (STAAR), and receive a subjective teacher evaluation endorsing reclassification (Texas Education Agency, 2016, 2017). In 2018/19, the same requirements held, except for a new requirement that teachers use a rubric to evaluate students (Texas Education Agency, 2019). Initially, in 2019/20, the only English language proficiency assessment allowed was the TELPAS, and students needed to score advanced high on each domain. However, the Texas Education Agency subsequently decided to permit the use of one alternative assessment, LAS Links. Also in 2019/20, the Texas Education Agency waived the STAAR requirement because students did not take the STAAR during the spring 2020 because of the pandemic (Texas Education Agency, 2020c). In 2020/21, the Texas Education Agency reverted to allowing only the TELPAS, requiring students to meet the passing standard on the reading portion of the STAAR, and requiring students to receive a teacher evaluation endorsing reclassification based on a rubric completed by teachers (Texas Education Agency, 2021).[3]

[3] Reclassification decisions occurring in 2020/21 and recorded in the 2021/22 October statewide data submission were not available to the study team at the time the analyses were conducted.

**Table A3. Reclassification criteria for Texas English learner students from 2016/17 to 2020/21**

| Criterion | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|---|
| English language proficiency (scoring fluent on proficiency test) | Districts could choose from a list of approved assessments | Same as 2016/17 | Same as 2016/17 | Districts could choose TELPAS or LAS Links assessment | Districts must use TELPAS |
| State standardized reading assessment proficiency | Proficiency on one of the following: Grades 3–8 STAAR Reading (English), Grade 9 STAAR English I end-of-course exam, Grade 10 STAAR English II end-of-course exam, Grade 11–12 Iowa Form F | Same as 2016/17 | Same as 2016/17 | State testing canceled (spring 2020); requirement waived | Same as 2016/17 |
| Subjective teacher evaluation | Teachers can use assessments, anecdotal notes, portfolios, and so on | Same as 2016/17 | Teachers must use standardized English Learner Reclassification Rubric | Same as 2018/19 | Same as 2018/19 |

LAS Links is an English language proficiency assessment. STAAR is State of Texas Assessments of Academic Readiness. TELPAS is Texas English Language Proficiency Assessment System.
Source: Authors' compilation from Texas Education Agency (2016, 2017, 2019, 2020c, 2021).

Although the reclassification decision is made in the spring of the school year following that year's criteria, the change in a student's status is not reflected in the state's data system until the following school year. As such, reclassification numbers in this study reflect decisions made in the prior year. For example, 2017/18 reclassification numbers reflect decisions made in schools in 2016/17 based on 2016/17 reclassification criteria. The large drop in students reclassified in 2018/19 relative to 2017/18 reflects this lag; 2018/19 reclassification decisions were made in 2017/18, which was the first year of the state's revised TELPAS (see table A4).

**Table A4. Number of English learner students by enrollment and reclassification statuses in grades 3–12 in Texas, 2017/18–2020/21**

| Population | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|
| All English learner students | 617,720 | 665,076 | 722,193 | 747,178 |
| English learner students in prior year who continued enrollment in current year | 645,675 | 658,339 | 697,326 | 741,995 |
| Reclassified English learner students | 76,190 | 42,473 | 35,666 | 30,840 |
| Reclassification rate | 11.8 | 6.5 | 5.1 | 4.2 |

Note: Reclassification rate is the number of reclassified students in a given year divided by the number of English learner students in the prior year who continued their enrollment in Texas public schools to the given year.
Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

For research question 3, the study team examined the population of English learner students in 2018/19 and 2020/21. Prior-year TELPAS scores were used in analytic models to account for baseline English language proficiency, but pandemic-related disruptions to schooling affected the availability of TELPAS data in 2019/20, thus affecting the 2020/21 analysis. Students could be missing all TELPAS data, or they could be missing one or more domain scores. The TELPAS writing domain was particularly affected by pandemic-related disruptions; more than 50 percent of English learner students were missing writing scores in 2020/21 (table A5).[4] Because the TELPAS composite score was calculated as the average of all four TELPAS domain scores, missing data on the TELPAS composite score also were high in 2020/21. The study team used listwise deletion to handle missing data. The number and percentage of English learner students with nonmissing data for all included variables is in table A6. The study team conducted sensitivity analyses using multiple imputation, described in the methodology section of this appendix, to ascertain whether the findings presented in the main body of the report were influenced by the missing data.

[4] Depending on the year, missing TELPAS data may not preclude a student from being reclassified; for example, in 2019/20, reclassification criteria allowed the use of the LAS Links test instead of TELPAS because LAS Links could be administered remotely.

**Table A5. Percentage of Texas English learner students with missing prior-year data for the Texas English Language Proficiency Assessment System, by domain and grade level, 2018/19 and 2020/21**

| Year and grade level | Listening | Speaking | Reading | Writing | Composite |
|---|---|---|---|---|---|
| **2018/19** | | | | | |
| Grade 3 | 5.7 | 5.8 | 6.0 | 6.2 | 6.0 |
| Grade 4 | 5.7 | 5.7 | 5.9 | 6.2 | 6.0 |
| Grade 5 | 6.1 | 6.1 | 6.4 | 6.7 | 6.5 |
| Grade 6 | 6.9 | 6.9 | 7.2 | 7.4 | 7.3 |
| Grade 7 | 8.5 | 8.6 | 8.7 | 9.1 | 9.1 |
| Grade 8 | 8.4 | 8.5 | 8.6 | 9.0 | 9.0 |
| Grade 9 | 16.0 | 16.0 | 16.0 | 16.5 | 16.8 |
| Grade 10 | 12.0 | 12.0 | 12.1 | 12.4 | 13.0 |
| Grade 11 | 9.8 | 9.9 | 10.0 | 10.3 | 10.9 |
| Grade 12 | 8.8 | 8.8 | 9.0 | 9.0 | 9.7 |
| **2020/21** | | | | | |
| Grade 3 | 31.8 | 31.8 | 24.5 | 53.5 | 61.2 |
| Grade 4 | 30.3 | 30.3 | 23.5 | 54.2 | 61.2 |
| Grade 5 | 27.3 | 27.3 | 21.5 | 52.6 | 58.4 |
| Grade 6 | 27.0 | 27.0 | 22.1 | 52.2 | 58.0 |
| Grade 7 | 33.6 | 33.6 | 26.9 | 56.8 | 64.8 |
| Grade 8 | 32.7 | 32.7 | 25.0 | 56.7 | 64.4 |
| Grade 9 | 35.6 | 35.6 | 28.7 | 57.8 | 65.5 |
| Grade 10 | 30.0 | 30.0 | 26.9 | 60.5 | 65.2 |
| Grade 11 | 29.6 | 29.6 | 25.7 | 59.7 | 64.5 |
| Grade 12 | 31.4 | 31.4 | 26.6 | 59.0 | 64.0 |

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

**Table A6. Number and percentage of Texas English learner students with nonmissing data for all included variables, by Texas English Language Proficiency Assessment System domain and grade level, 2018/19 and 2020/21**

| Year and grade level | Listening | | Speaking | | Reading | | Writing | | Composite | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage |
| **2018/19** | | | | | | | | | | |
| Grade 3 | 94,422 | 91 | 94,422 | 91 | 94,999 | 92 | 94,183 | 91 | 94,049 | 91 |
| Grade 4 | 92,372 | 92 | 92,372 | 92 | 92,447 | 92 | 92,046 | 92 | 91,967 | 92 |
| Grade 5 | 83,403 | 92 | 83,403 | 92 | 83,413 | 92 | 83,082 | 91 | 82,983 | 91 |
| Grade 6 | 71,408 | 90 | 71,408 | 90 | 71,461 | 90 | 71,105 | 90 | 70,933 | 90 |
| Grade 7 | 60,351 | 89 | 60,351 | 89 | 60,442 | 89 | 60,020 | 88 | 59,821 | 88 |
| Grade 8 | 54,243 | 89 | 54,243 | 89 | 54,317 | 89 | 53,903 | 88 | 53,706 | 88 |
| Grade 9 | 43,395 | 73 | 43,395 | 73 | 43,452 | 73 | 42,955 | 72 | 42,707 | 72 |
| Grade 10 | 33,290 | 77 | 33,290 | 77 | 33,295 | 77 | 32,827 | 76 | 32,577 | 75 |
| Grade 11 | 25,286 | 77 | 25,286 | 77 | 25,302 | 77 | 24,984 | 76 | 24,718 | 75 |
| Grade 12 | 20,101 | 76 | 20,101 | 76 | 20,089 | 76 | 19,897 | 75 | 19,708 | 75 |
| Total | 578,271 | 87 | 578,271 | 87 | 578,717 | 87 | 575,002 | 86 | 573,169 | 86 |
| **2020/21** | | | | | | | | | | |
| Grade 3 | 58,577 | 59 | 58,577 | 59 | 64,790 | 66 | 43,715 | 44 | 32,676 | 33 |
| Grade 4 | 58,798 | 60 | 58,798 | 60 | 64,477 | 66 | 42,510 | 44 | 32,215 | 33 |
| Grade 5 | 59,703 | 63 | 59,703 | 63 | 64,637 | 68 | 42,733 | 45 | 33,612 | 35 |
| Grade 6 | 53,618 | 59 | 53,618 | 59 | 57,429 | 63 | 37,659 | 42 | 28,603 | 32 |
| Grade 7 | 42,156 | 52 | 42,156 | 52 | 46,318 | 57 | 29,843 | 37 | 21,092 | 26 |
| Grade 8 | 38,635 | 52 | 38,635 | 52 | 43,204 | 58 | 27,449 | 37 | 19,174 | 26 |
| Grade 9 | 30,664 | 44 | 30,664 | 44 | 34,012 | 49 | 21,765 | 31 | 14,876 | 21 |
| Grade 10 | 28,381 | 46 | 28,381 | 46 | 29,714 | 48 | 17,679 | 29 | 12,441 | 20 |
| Grade 11 | 19,994 | 44 | 19,994 | 44 | 21,215 | 46 | 12,770 | 28 | 8,941 | 20 |
| Grade 12 | 13,944 | 42 | 13,944 | 42 | 15,017 | 45 | 9,395 | 28 | 6,438 | 19 |
| *Total* | *404,470* | *54* | *404,470* | *54* | *440,813* | *59* | *285,518* | *38* | *210,068* | *28* |

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

For research question 4, the analytic sample sizes differed by school level and TELPAS domain, depending on the TELPAS domain completion rates for both 2019/20 and 2020/21. The number of English learner students included in the analyses related to program model ranged from 121,429 to 272,800 (table A7).

**Table A7. Number of Texas English learner students in the analytic sample for research question 4, by grade level and Texas English Language Proficiency Assessment System domain, 2020/21**

| Grade level | Listening | Speaking | Reading | Writing | Composite |
|---|---|---|---|---|---|
| **Elementary school** | | | | | |
| Grade 3 | 86,109 | 86,109 | 86,176 | 93,123 | 84,472 |
| Grade 4 | 84,317 | 84,317 | 84,408 | 91,239 | 82,571 |
| Grade 5 | 82,020 | 82,020 | 82,142 | 88,438 | 80,108 |
| *Total* | *252,446* | *252,446* | *252,726* | *272,800* | *247,151* |
| **Middle school** | | | | | |
| Grade 6 | 73,763 | 73,763 | 73,856 | 77,067 | 68,202 |
| Grade 7 | 63,524 | 63,524 | 63,717 | 66,755 | 58,166 |
| Grade 8 | 57,826 | 57,826 | 57,834 | 61,436 | 52,903 |
| *Total* | *195,113* | *195,113* | *195,407* | *205,258* | *179,271* |
| **High school** | | | | | |
| Grade 9 | 49,301 | 49,301 | 49,405 | 50,520 | 42,761 |
| Grade 10 | 41,243 | 41,243 | 41,321 | 43,244 | 35,487 |
| Grade 11 | 29,281 | 29,281 | 29,325 | 31,118 | 25,119 |
| Grade 12 | 21,008 | 21,008 | 21,066 | 22,788 | 18,062 |
| *Total* | *140,833* | *140,833* | *141,117* | *147,670* | *121,429* |
| *Total for all grade levels* | *588,392* | *588,392* | *589,250* | *625,728* | *547,851* |

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

## *Methodology*

*Research question 1: To what extent is the composition of Texas English learner students who took the TELPAS representative of the enrolled English learner student population in the years spanning the onset of the COVID-19 pandemic (between 2017/18 and 2020/21)?*

For each student in the analytic file, the study team created a series of binary indicator variables denoting demographic classification (race/ethnicity, eligibility for the National School Lunch Program, years in U.S. schools, primary language spoken at home, and grade level), participation in academic programming (receiving special education services, in gifted/talented education, and English learner program model), academic performance (prior-year STAAR reading performance level and prior-year TELPAS English proficiency level), and district locale. For each year of the study, the study team compared the average characteristics for the sample of test takers with the average characteristics of all English learner students. The study team considered differences greater than or equal to 5 percentage points between the TELPAS test takers and the English learner student population in a given year

meaningful. This threshold of 5 percentage points has been used in other reports related to English learner students (see, for example, Stoker et al., 2022).

*Research question 2: What are the rates of reclassification of Texas English learner students and the characteristics of reclassified students in the years spanning the onset of the COVID-19 pandemic (between 2017/18 and 2020/21)?*

The study team first calculated the annual reclassification rate. This rate was the proportion of English learner students continuing in school from one year to the next who were reclassified in the second year. For example, the reclassification rate for 2017/18 was the number of students whose status changed to reclassified in 2018/19 divided by the number of English learner students in 2017/18 who were still enrolled in 2018/19.

For the characteristics of reclassified students, the study team used an approach similar to research question 1, comparing the characteristics of reclassified English learner students with all English learner students. Differences greater than or equal to 5 percentage points between reclassified English learner students and the population of English learner students in a given year were considered meaningful.

*Research question 3: To what extent do the English proficiency scores of Texas English learner students in 2020/21 differ from scores of similar students in 2018/19, prior to the pandemic?*

To estimate differences in English proficiency between English learner students in 2018/19 and 2020/21, the study team used a matched comparison group analysis. Separately for each school level,[5] the study team selected English learner students with outcome TELPAS data in 2020/21 and prior-year TELPAS data in 2019/20.[6] Then using a propensity score matching procedure, the study team selected comparable groups of students who had outcome TELPAS data in 2018/19 and baseline TELPAS data in 2017/18 (table A8).

This approach used propensity score matching to help account for observed compositional differences across groups, including baseline differences in English proficiency. However, this approach was limited to students who had TELPAS data in each of the two years relevant to each cohort.[7] Results are not generalizable to other contexts, though they may be most informative about other English learner students with similar characteristics to those in the analytic sample.

[5] The study team defined school levels as elementary (grades 3–5), middle (grades 6–8), and high (grades 9–12).

[6] The spring 2020 administration of the TELPAS in Texas preceded the onset of the COVID-19 pandemic and proceeded as planned in most districts. Therefore, prior-year TELPAS scores were available for most students in 2020/21.

[7] For the 2020/21 TELPAS cohort, students must have had a 2019/20 TELPAS score, and for the comparison 2018/19 TELPAS cohort, students must have had a 2017/18 TELPAS score.

**Table A8. Number of Texas English learner students in grades 3–12 included in the analytic sample after matching, by Texas English Language Proficiency Assessment System domain, 2018/19 and 2020/21**

| Grade level | Listening | | Speaking | | Reading | | Writing | | Composite | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2020/21 | 2018/19 | 2020/21 | 2018/19 | 2020/21 | 2018/19 | 2020/21 | 2018/19 | 2020/21 | 2018/19 |
| **Elementary school** | | | | | | | | | | |
| Grade 3 | 58,577 | 58,577 | 58,577 | 58,577 | 64,790 | 64,790 | 43,715 | 43,715 | 32,676 | 32,676 |
| Grade 4 | 58,798 | 58,798 | 58,798 | 58,798 | 64,477 | 64,477 | 42,510 | 42,510 | 32,215 | 32,215 |
| Grade 5 | 59,703 | 59,703 | 59,703 | 59,703 | 64,637 | 64,437 | 42,733 | 42,733 | 33,612 | 33,612 |
| *Total* | *177,078* | *177,078* | *177,078* | *177,078* | *193,904* | *193,704* | *128,958* | *128,958* | *98,503* | *98,503* |
| **Middle school** | | | | | | | | | | |
| Grade 6 | 53,618 | 53,618 | 53,618 | 53,618 | 57,429 | 57,429 | 37,659 | 37,659 | 28,603 | 28,603 |
| Grade 7 | 42,156 | 42,156 | 42,156 | 42,156 | 46,318 | 46,318 | 29,843 | 29,843 | 21,092 | 21,092 |
| Grade 8 | 38,635 | 38,635 | 38,635 | 38,635 | 43,204 | 43,204 | 27,449 | 27,449 | 19,174 | 19,174 |
| *Total* | *134,409* | *134,409* | *134,409* | *134,409* | *146,951* | *146,951* | *94,951* | *94,951* | *68,869* | *68,869* |
| **High school** | | | | | | | | | | |
| Grade 9 | 30,664 | 30,664 | 30,664 | 30,664 | 34,012 | 34,012 | 21,765 | 21,765 | 14,876 | 14,876 |
| Grade 10 | 28,381 | 28,381 | 28,381 | 28,381 | 29,714 | 29,714 | 17,679 | 17,679 | 12,441 | 12,441 |
| Grade 11 | 19,994 | 19,994 | 19,994 | 19,994 | 21,215 | 21,215 | 12,770 | 12,770 | 8,941 | 8,941 |
| Grade 12 | 13,944 | 13,944 | 13,944 | 13,944 | 15,017 | 15,017 | 9,395 | 9,395 | 6,438 | 6,438 |
| *Total* | *92,983* | *92,983* | *92,983* | *92,983* | *99,958* | *99,958* | *61,609* | *61,609* | *42,696* | *42,696* |

Note: Speaking and listening domains have the same sample sizes because these sections are both administered online at the same time; very few students (for example, 20 students statewide in 2020/21) who take one of these sections do not take the other section. With matching, only students who took both sections were included in the sample.
Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

The parameter of interest in research question 3 was the average difference in TELPAS performance between English learner students in spring 2021 and spring 2019. The findings from this analysis should not be interpreted as causal because several factors may have confounded the estimates. If English learner instruction changed qualitatively from 2018/19 to 2019/20, it would not be possible to disentangle the impact of this change from the impact of the pandemic. In addition, if the demographic composition of the English learner student population changed across time, average differences in TELPAS performance from 2018/19 to 2020/21 may be a product of demographic change rather than the pandemic.

The study team limited findings in the body of the report to those in the listening, speaking, and reading domains because of high rates of missing data for writing and composite scores. For the 2020/21 cohort, the writing domain suffered from high rates of missing data on the TELPAS in the prior year, more so than other domains, and more than in the 2018/19 cohort. Missing data on the TELPAS in the prior year ranged from 6 percent to 17 percent missing in each domain, including writing, in the 2018/19 cohort and ranged from 22 percent to 38 percent in reading, speaking, and listening in the 2020/21 cohort. For

writing, missingness ranged from 38 percent to 61 percent in the 2020/21 cohort (see table B1 in appendix B). Furthermore, the writing domain rolled up into the composite scores, such that composite scores suffered from even greater rates of missingness. Results for both writing domain scores and composite scores are in appendix C.

The study team considered differences greater than or equal to 0.1 standard deviation between the two cohorts to be meaningful. This threshold was informed by guidance on effect sizes for educational interventions based on randomized controlled trials (Kraft, 2020), taking the .05 standard deviation threshold suggested for medium effect sizes and increasing it to 0.1 to account for the larger effect sizes typically obtained from studies that use a matching approach.

*Matching procedure*. The study team first selected all students with complete data within each school level and domain on student demographic characteristics (gender, race/ethnicity, National School Lunch Program eligibility, special education status, gifted/talented status, parent or guardian denial of English learner student services, Spanish as the primary home language,[8] years in U.S. schools[9]), school characteristics (enrollment count, percentage of English learner students, percentage of students eligible for the National School Lunch Program, percentage of students receiving special education services, average teacher experience), district characteristics (district locale, enrollment count), and domain specific prior-year TELPAS performance. The study team then identified a comparison group within each school level and domain for 2020/21 TELPAS test takers from the statewide sample of 2018/19 TELPAS test takers with complete data.[10] Propensity scores were calculated for each student in the 2018/19 and 2020/21 cohorts using a series of logistic regression models predicting a binary indicator for whether a student was from the 2020/21 cohort from these student-, school-, and district-level covariates, including prior-year TELPAS performance.

To construct the comparison groups, the study team used a 1:1 nearest neighbor approach because an optimal matching procedure required greater memory and computational resources than were available in the secure data environment in which the analysis was performed. A 1:1 matching scheme without replacement was used, given that the number of students in the 2020/21 cohort at each grade level was comparable in size with the 2018/19 cohort. Each 2020/21 cohort student was therefore matched to their nearest neighbor 2018/19 cohort student in terms of propensity score by domain and grade in a "greedy" fashion, meaning that the specific matches depend on the order in which they were made.[11] When matching with large samples, greedy matching can reach similar balance as optimal matching, especially when large numbers of covariates are used (Almeida & Bravo-Ureta, 2017; Gu & Rosenbaum, 1993).

[8] Given that students in Spanish-speaking homes made up about 90 percent of English learner students in this study, this variable was dichotomized rather than including levels for language groups that were less prevalent.

[9] To preserve sample representativeness, the study team added a category to this variable of "missing" rather than drop students with missing data. This affected 3 percent to 8 percent of students in each grade.

[10] All analyses were performed with R version 4.0.2 using the MatchIt package version 4.1.0.

[11] Initially, the study team attempted to find matches within districts for each 2020/21 cohort student. However, changes in the number of English learner students enrolled within districts limited the feasibility of this approach because of the limited number of English learner students with 1:1 matches within districts.

*Baseline equivalence*. The study team assessed baseline equivalence by examining the effect size of each covariate used in the matching model and prior-year TELPAS score. For a regression-based quasi-experimental study to meet the requirements of the What Works Clearinghouse Group Design Standards with Reservations (Version 4.1), baseline equivalence on outcome variables must be less than 0.05 standard deviation or less than 0.25 standard deviation if outcome measures include a statistical adjustment for baseline differences. For the 15 domain-by-grade models, baseline equivalence less than |.25| for Hedges' *g* (continuous variables) and Cox's Index (categorical variables) was achieved on 99.2 percent of 834 covariates.[12] Baseline equivalence less than |.25| was achieved on prior-year TELPAS scores, eligibility for the National School Lunch Program, and special education status in all 15 domain-by-school level models (table A9).

[12] The number of covariates (*n* = 834) represents the number of covariates used in matching across nine grades (that is, grades 3–12) for the four TELPAS domains (that is, listening, speaking, reading, writing) and TELPAS composite samples.

## Table A9. Baseline equivalence between 2020/21 Texas English learner students and matched English learner students from 2018/19

| Baseline covariates | Elementary school | Middle school | High school |
|---|---|---|---|
| | Hedge's *g*/Cox's index | Hedge's *g*/Cox's index | Hedge's *g*/Cox's index |
| **Listening** | | | |
| Average standard deviation difference | 0.01 | 0.01 | 0.01 |
| Prior-year TELPAS listening domain | 0.05 | 0.14 | 0.11 |
| Eligible for the National School Lunch Program | 0.00 | 0.01 | -0.02 |
| Special education status | 0.04 | -0.02 | -0.04 |
| **Speaking** | | | |
| Average standard deviation difference | 0.01 | 0.01 | 0.00 |
| Prior-year TELPAS speaking domain | -0.01 | 0.00 | -0.10 |
| Eligible for the National School Lunch Program | -0.01 | 0.00 | -0.02 |
| Special education status | 0.03 | -0.02 | -0.03 |
| **Reading** | | | |
| Average standard deviation difference | 0.01 | 0.01 | 0.01 |
| Prior-year TELPAS reading domain | 0.01 | 0.07 | 0.12 |
| Eligible for the National School Lunch Program | 0.01 | 0.01 | -0.01 |
| Special education status | 0.05 | -0.01 | -0.03 |
| **Writing** | | | |
| Average standard deviation difference | 0.01 | 0.00 | 0.00 |
| Prior-year TELPAS writing domain | -0.01 | 0.05 | 0.05 |
| Eligible for the National School Lunch Program | -0.09 | -0.08 | -0.08 |
| Special education status | -0.04 | -0.09 | -0.06 |
| **Composite** | | | |
| Average standard deviation difference | 0.00 | 0.00 | 0.00 |
| Prior-year TELPAS composite | 0.00 | 0.05 | 0.03 |
| Eligible for the National School Lunch Program | -0.08 | -0.10 | -0.09 |
| Special education status | -0.05 | -0.10 | -0.06 |

TELPAS is the Texas English Language Proficiency Assessment System.

Note: The average standard deviation difference is the simple average of baseline equivalence effect sizes expressed in Hedges' *g* and Cox's index for continuous and categorical baseline covariates, respectively. Average standard deviation differences and prior-year TELPAS differences are expressed in Hedges' *g*, whereas eligibility for the National School Lunch Program and special education status are expressed in Cox's index.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

*Analytic approach.* First, the study team standardized TELPAS scores by grade level and school year using statewide means and standard deviations to permit analysis across grade levels and school years.[13] For each school level by domain combination, the study team fit multilevel models regressing domain-specific TELPAS scale score performance (continuous) on baseline covariates, including prior-year TELPAS score, and an indicator variable for cohort. Ordinal logistic regression was used for writing domain scores, which were represented as integers ranging between 1 and 4. However, because the patterns of results from ordinal logistic regression were similar to findings when using linear regression, results from linear regressions are presented.

A formal description of the three-level mixed model with random effects at the school and district levels (equation 1) is as follows:

$$Y_{isdt} = \mu + \beta_1 PrePostCOVID_{isdt} + \beta_2 \boldsymbol{PriorYearTELPAS_{isdt}} + \gamma_P D_d + \delta_P Sch_{sd} + \pi_P Stu_{isd} + \eta_d + \xi_{sd} + \varepsilon_{isdt} \quad (1)$$

where $Y_{isdt}$ was the TELPAS score for student $i$ in school $s$ in district $d$ and year $t$. $PrePostCOVID_{isdt}$ was an indicator variable capturing the 2020/21 school year (that is, equal to "1" during 2020/21 and "0" in 2018/19). $\boldsymbol{PriorYearTELPAS_{isdt}}$ was a single vector of prior-year TELPAS scores. $D_d$ were the $P$ number of time-invariant district-level covariates, $Sch_{sd}$ were the $P$ number of time-invariant school-level covariates, and $Stu_{isd}$ were the $P$ number of time-invariant student-level covariates (see table A1 for student, school, and district covariates). The residuals reflected the nested structure of the data at the student ($\varepsilon_{isdt}$), school ($\eta_d$), and district ($\xi_{sd}$) levels. The indicator of substantive interest, $\beta_1 PrePostCOVID_{isdt}$, represented the conditional differences in TELPAS scores across English learner students tested in 2020/21 and a comparable group of English learner students tested in 2018/19.

To calculate standardized effect sizes for each school level and domain, the study team divided the $PrePostCOVID_{isdt}$ coefficient by the standard deviation of the outcome variable in the 2018/19 cohort for the appropriate school level and domain combination.

### *Research question 4: Is student participation in a particular English learner program model associated with the English proficiency scores of Texas English learner students in 2020/21?*

To answer research question 4, the study team conducted a series of correlational analyses examining the associations between 2020/21 TELPAS scores and participation in English learner program models. These analyses involved English learner students in grades 3–12 with outcome TELPAS data in 2020/21 and English learner program model data.[14] Not all program models were available in all schools or districts or at all school levels because some depended on specialized teacher certifications or a

[13] Formally, $TELPAS_{igt} = {}^{Y_{igt} - \mu_{gt}}/_{\sigma_{gt}}$, where $Y_{igt}$ is the TELPAS scale score for student $i$ in grade $g$ and year $t$; $\mu_{gt}$ is the statewide average TELPAS scale score in grade $g$ and year $t$; and $\sigma_{gt}$ is the statewide standard deviation for TELPAS scale scores in grade $g$ and year $t$.

[14] The study team used dummy variable adjustment to impute values for students with missing prior-year TELPAS. As a result, TELPAS missingness in 2019/20 does not reduce the research question 4 sample to the same degree as the research question 3 sample.

particular density of other-language speakers enrolled in school.[15] The percentages of students who participated in each program model in 2020/21 are in table B1 in appendix B.

The study team estimated a set of models that included indicators for the program model in 2020/21 to represent the policy-relevant feature of interest. Correlational analyses were conducted for each TELPAS domain (listening, speaking, reading, writing) and for the composite score at each school level. To account for students nested in schools and districts, the data were modeled using multilevel models. A formal description of a three-level mixed model with random effects at the school and district levels (equation 2) is as follows:

$$Y_{isd} = \mu + \beta_1 Program_{isd} + \beta_2 PriorYearTELPAS_{isd} + \gamma_P D_d + \delta_P Sch_{sd} + \pi_P Stu_{isd} + \eta_d + \xi_{sd} + \varepsilon_{isd} \quad (2)$$

where $Y$ was the 2020/21 TELPAS scale score for student $i$ in school $s$ in district $d$, $PriorYearTELPAS_{isd}$ was an indicator containing 2019/20 TELPAS scores, $D_d$ were the $P$ number of district-level covariates (for example, district locale and enrollment size), $Sch_{sd}$ were the $P$ number of school-level covariates measured in 2020/21 (for example, school enrollment size, prior-year state accountability rating), and $Stu_{isd}$ were the $P$ number of nonmalleable student-level covariates measured in 2020/21 (for example, grade level, race/ethnicity, special education status, gifted/talented status, eligibility for the National School Lunch Program). Including prior-year TELPAS scores enabled the study team to estimate the relationship between English learner program model and 2020/21 TELPAS scores, beyond English learner student TELPAS performance in 2019/20.

The indicator of substantive interest was $\beta_1 Program_{isd}$, representing the program model in 2020/21. The study team selected the reference category for each school level to be the English learner program model with the most students at each school level.

As with research question 3, the study team limited findings in the body of the report to those in the listening, speaking, and reading domains because of high rates of missing data for the writing and composite scores. With a lack of variation in program models among grades 6–12, the analyses for those school levels are not included in the report.

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[15] Because the range of available programs was smaller for high school students, the study team collapsed some program model indicators to achieve sufficient sample sizes within indicator categories for high school students.

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## Appendix B. Supporting tables

This appendix provides supporting analyses for the findings in the report.

### *Research question 1*

Table B1 shows the characteristics of Texas English Language Proficiency Assessment System (TELPAS) test takers and all English learner students.

**Table B1. Characteristics of Texas English Language Proficiency Assessment System test takers and the full Texas English learner student population in each study year (percentage), 2017/18–2020/21**

| Characteristic | 2017/18 | | 2018/19 | | 2019/20 | | 2020/21 | |
|---|---|---|---|---|---|---|---|---|
| | Tested | All EL | Tested | All EL | Tested | All EL | Tested | All EL |
| **Student characteristic** | | | | | | | | |
| Asian | 4.6 | 4.7 | 4.7 | 4.7 | 4.6 | 4.8 | 5.0 | 4.8 |
| Black | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.7 | 1.6 | 1.6 |
| Hispanic | 90.6 | 90.4 | 90.3 | 90.2 | 90.6 | 90.2 | 89.9 | 90.2 |
| White | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 | 2.6 | 2.7 | 2.6 |
| Eligible for the National School Lunch Program | 84.8 | 84.5 | 86.4 | 86.2 | 86.1 | 85.4 | 84.8 | 84.8 |
| Receiving special education services | 10.1 | 10.4 | 10.1 | 10.8 | 10.5 | 11.4 | 11.2 | 12.1 |
| Identified as gifted/talented | 3.7 | 3.6 | 4.0 | 3.9 | 4.4 | 4.1 | 4.7 | 4.5 |
| Primary home language is Spanish | 91.4 | 91.2 | 90.9 | 90.7 | 90.9 | 90.5 | 90.1 | 90.3 |
| **Academic and language proficiency** | | | | | | | | |
| Prior-year STAAR reading, proficient | 40.0 | 39.8 | 47.5 | 47.2 | 52.2 | 51.3 | –[a] | –[a] |
| Prior-year TELPAS reading, beginning | 13.0 | 13.2 | 9.7 | 10.0 | 12.8 | 12.9 | 12.6 | 12.8 |
| Prior-year TELPAS reading, intermediate | 32.5 | 32.4 | 35.8 | 35.9 | 34.5 | 34.6 | 32.8 | 33.4 |
| Prior-year TELPAS reading, advanced | 38.3 | 38.2 | 33.0 | 32.8 | 29.1 | 29.0 | 27.7 | 27.5 |
| Prior-year TELPAS reading, advanced high | 16.2 | 16.2 | 21.5 | 21.3 | 23.7 | 23.5 | 26.9 | 26.4 |
| Prior-year TELPAS speaking, beginning | 5.7 | 5.9 | 8.8 | 9.3 | 15.4 | 15.9 | 14.8 | 16.1 |
| Prior-year TELPAS speaking, intermediate | 18.2 | 18.3 | 40.5 | 40.5 | 42.6 | 42.2 | 40.9 | 40.6 |
| Prior-year TELPAS speaking, advanced | 34.0 | 33.9 | 43.7 | 43.4 | 31.4 | 31.3 | 36.1 | 35.4 |
| Prior-year TELPAS speaking, advanced high | 42.0 | 42.0 | 6.9 | 6.9 | 10.6 | 10.6 | 8.1 | 7.9 |
| Prior-year TELPAS listening, beginning | 3.6 | 3.7 | 4.2 | 4.5 | 6.2 | 6.4 | 5.7 | 6.0 |
| Prior-year TELPAS listening, intermediate | 13.6 | 13.7 | 25.4 | 25.6 | 24.6 | 24.7 | 20.5 | 21.0 |
| Prior-year TELPAS listening, advanced | 31.3 | 31.1 | 43.0 | 42.7 | 36.9 | 36.8 | 34.9 | 34.6 |
| Prior-year TELPAS listening, advanced high | 51.6 | 51.5 | 27.4 | 27.2 | 32.3 | 32.1 | 38.8 | 38.3 |
| Prior-year TELPAS writing, beginning | 8.7 | 8.8 | 8.6 | 8.8 | 8.1 | 8.1 | 8.8 | 8.8 |
| Prior-year TELPAS writing, intermediate | 28.3 | 28.3 | 28.1 | 28.1 | 27.6 | 27.5 | 25.1 | 25.0 |
| Prior-year TELPAS writing, advanced | 38.5 | 38.3 | 36.8 | 36.6 | 36.4 | 36.4 | 34.6 | 34.6 |
| Prior-year TELPAS writing, advanced high | 24.5 | 24.6 | 26.5 | 26.4 | 27.9 | 27.9 | 31.5 | 31.6 |
| Prior-year TELPAS composite, beginning | 6.2 | 6.3 | 2.2 | 2.4 | 3.6 | 3.7 | 3.9 | 4.1 |
| Prior-year TELPAS composite, intermediate | 24.5 | 24.6 | 32.1 | 32.5 | 35.9 | 36.0 | 30.8 | 31.6 |

| Characteristic | 2017/18 | | 2018/19 | | 2019/20 | | 2020/21 | |
|---|---|---|---|---|---|---|---|---|
| | Tested | All EL | Tested | All EL | Tested | All EL | Tested | All EL |
| Prior-year TELPAS composite, advanced | 44.4 | 44.2 | 50.7 | 50.3 | 45.6 | 45.4 | 45.5 | 45.0 |
| Prior-year TELPAS composite, advanced high | 24.8 | 24.9 | 14.9 | 14.8 | 14.9 | 14.9 | 19.8 | 19.3 |
| **English learner program model** | | | | | | | | |
| Transitional bilingual, early exit | 13.7 | 13.4 | 12.0 | 11.8 | 10.1 | 9.3 | 9.0 | 8.4 |
| Transitional bilingual, late exit | 5.0 | 4.8 | 3.9 | 3.8 | 3.0 | 2.8 | 2.9 | 2.6 |
| Two-way dual-language immersion | 4.0 | 3.9 | 4.1 | 4.1 | 4.3 | 4.0 | 4.5 | 4.2 |
| One-way dual-language immersion | 10.9 | 10.7 | 10.2 | 10.0 | 10.1 | 9.2 | 9.7 | 8.9 |
| English as a second language, content-based | 29.4 | 29.8 | 17.6 | 17.8 | 12.3 | 12.8 | 9.0 | 8.7 |
| English as a second language, pullout | 32.2 | 32.4 | 47.5 | 47.8 | 43.7 | 44.8 | 48.3 | 50.2 |
| Parent or guardian denial of service | 4.7 | 4.8 | 4.5 | 4.7 | 4.2 | 4.5 | 4.2 | 4.5 |
| First year receiving English learner services | 3.2 | 3.2 | 3.4 | 3.4 | 4.4 | 4.4 | 1.7 | 1.7 |
| **District characteristic** | | | | | | | | |
| Major urban (percentage) | 26.4 | 26.4 | 25.9 | 25.9 | 26.4 | 25.5 | 23.5 | 24.8 |
| Suburban (percentage) | 31.8 | 31.7 | 31.7 | 31.6 | 31.9 | 32.0 | 32.4 | 31.8 |
| Rural (percentage) | 1.2 | 1.2 | 1.2 | 1.2 | 0.9 | 1.2 | 1.2 | 1.2 |
| Charter (percentage) | 7.1 | 7.3 | 7.9 | 8.0 | 8.2 | 8.5 | 9.2 | 9.4 |
| Average total enrolled students (number) | 54,274 | 54,303 | 52,547 | 52,512 | 54,050 | 52,608 | 48,458 | 49,595 |
| *Percentage of English learner students who were tested* | *96.0* | – | *95.8* | – | *83.3* | – | *89.6* | – |

– is not available. EL is English learner student. STAAR is State of Texas Assessments of Academic Readiness. TELPAS is Texas English Language Proficiency Assessment System.

Note: STAAR reading scores include STAAR assessments administered in either English or Spanish.

a. STAAR was not administered in 2019/20; therefore, there were no prior-year data for the 2020/21 cohort.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

### *Research question 2*

Table B2 shows the characteristics of reclassified English learner students.

**Table B2. Characteristics of reclassified Texas English learner students (percentage), 2017/18–2020/21**

| Variable | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|
| **Student characteristic** | | | | |
| Asian | 9.2 | 10.8 | 12.0 | 13.5 |
| Black | 1.6 | 1.8 | 2.3 | 2.5 |
| Hispanic | 85.5 | 82.9 | 80.8 | 78.6 |
| White | 3.0 | 3.6 | 4.0 | 4.5 |
| Eligible for the National School Lunch Program | 78.1 | 77.4 | 75.3 | 71.4 |
| Receiving special education services | 3.9 | 4.3 | 4.1 | 4.5 |
| Identified as gifted/talented | 10.6 | 11.9 | 12.3 | 14.3 |
| Primary home language is Spanish | 86.0 | 83.1 | 81.2 | 78.7 |
| **Academic and language proficiency** | | | | |
| Prior-year STAAR reading, proficient | 92.5 | 95.6 | 96.3 | —[a] |
| Prior-year TELPAS reading, beginning | <1.0 | <1.0 | <1.0 | <1.0 |
| Prior-year TELPAS reading, intermediate | 4.0 | 6.1 | 5.7 | 3.8 |
| Prior-year TELPAS reading, advanced | 37.3 | 28.6 | 23.9 | 14.6 |
| Prior-year TELPAS reading, advanced high | 58.1 | 64.7 | 69.9 | 81.3 |
| Prior-year TELPAS speaking, beginning | <1.0 | 3.7 | 5.1 | 2.7 |
| Prior-year TELPAS speaking, intermediate | <1.0 | 21.2 | 21.3 | 16.2 |
| Prior-year TELPAS speaking, advanced | 5.2 | 50.5 | 27.8 | 34.8 |
| Prior-year TELPAS speaking, advanced high | 93.7 | 24.6 | 45.9 | 46.2 |
| Prior-year TELPAS listening, beginning | <1.0 | <1.0 | <1.0 | <1.0 |
| Prior-year TELPAS listening, intermediate | <1.0 | 4.6 | 3.5 | 1.5 |
| Prior-year TELPAS listening, advanced | 3.5 | 30.8 | 21.7 | 11.5 |
| Prior-year TELPAS listening, advanced high | 95.7 | 64.0 | 74.7 | 86.0 |
| Prior-year TELPAS writing, beginning | <1.0 | <1.0 | <1.0 | <1.0 |
| Prior-year TELPAS writing, intermediate | 1.1 | 1.7 | 1.7 | 1.7 |
| Prior-year TELPAS writing, advanced | 8.8 | 10.6 | 11.9 | 6.1 |
| Prior-year TELPAS writing, advanced high | 89.9 | 87.2 | 86.2 | 91.9 |
| Prior-year TELPAS composite, beginning | <1.0 | <1.0 | <1.0 | <1.0 |
| Prior-year TELPAS composite, intermediate | <1.0 | 5.0 | 6.1 | 1.8 |
| Prior-year TELPAS composite, advanced | 9.8 | 34.5 | 29.1 | 6.0 |
| Prior-year TELPAS composite, advanced high | 89.5 | 60.1 | 64.7 | 92.1 |
| **English learner program model** | | | | |
| Transitional bilingual, early exit | <1.0 | <1.0 | <1.0 | <1.0 |
| Transitional bilingual, late exit | <1.0 | <1.0 | <1.0 | <1.0 |
| Two-way dual-language immersion | 1.8 | 2.0 | 2.9 | 3.0 |
| One-way dual-language immersion | <1.0 | <1.0 | <1.0 | 1.2 |

| Variable | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
|---|---|---|---|---|
| English as a second language, content-based | <1.0 | <1.0 | <1.0 | <1.0 |
| English as a second language, pullout | <1.0 | <1.0 | <1.0 | <1.0 |
| Parent or guardian denial of service | <1.0 | <1.0 | <1.0 | <1.0 |
| Percentage in first year in U.S. schools (newcomer) | 1.8 | 2.0 | 2.9 | 3.0 |
| **District characteristic** | | | | |
| Major urban (percentage) | 21.4 | 17.6 | 15.7 | 11.8 |
| Suburban (percentage) | 38.1 | 44.4 | 41.2 | 42.2 |
| Rural (percentage) | <1.0 | <1.0 | <1.0 | <1.0 |
| Charter (percentage) | 6.1 | 4.3 | 6.7 | 8.2 |
| Average total enrolled students (number) | 52,048 | 60,275 | 50,277 | 42,032 |

– is not available. STAAR is State of Texas Assessments of Academic Readiness. TELPAS is Texas English Language Proficiency Assessment System.

a. STAAR was not administered in 2019/20; therefore, there were no prior-year data for the 2020/21 cohort.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

### *Research question 3*

Table B3 shows findings related to differences in TELPAS performance for the writing and composite domains. Full results are in tables B4–B6.

**Table B3. Differences in performance on the Texas English Language Proficiency Assessment System writing and composite domains between the 2020/21 cohort and the 2018/19 cohort**

| Statistic | Writing | Composite |
|---|---|---|
| **Grades 3–5** | | |
| Estimated difference (standard deviation units) | -0.12* | -0.15* |
| Sample size | 257,916 | 197,006 |
| **Grades 6–8** | | |
| Estimated difference (standard deviation units) | -0.08 | -0.07 |
| Sample size | 189,902 | 137,738 |
| **Grades 9–12** | | |
| Estimated difference (standard deviation units) | -0.02 | 0.07 |
| Sample size | 123,218 | 85,392 |

* denotes a difference of 0.1 standard deviation or higher between the 2020/21 and 2018/19 cohorts, which was considered a meaningful difference.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

**Table B4. Differences in performance on all Texas English Language Proficiency Assessment System domains between the 2020/21 cohort and the 2018/19 cohort, full model estimates, grades 3–5**

| | Composite | | Listening | | Reading | | Speaking | | Writing | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| 2020/21 cohort | -0.15*** | 0.00 | -0.14*** | 0.00 | -0.17*** | 0.00 | -0.29*** | 0.00 | -0.12*** | 0.00 |
| Baseline TELPAS | 0.69*** | 0.00 | 0.50*** | 0.00 | 0.65*** | 0.00 | 0.35*** | 0.00 | 0.63*** | 0.00 |
| Male | -0.02*** | 0.00 | 0.00 | 0.00 | -0.01*** | 0.00 | -0.03*** | 0.00 | -0.10*** | 0.00 |
| Black | -0.07*** | -0.01 | -0.08*** | -0.01 | -0.06*** | -0.01 | 0.03* | -0.01 | -0.04** | -0.01 |
| Hispanic | -0.07*** | -0.01 | -0.10*** | -0.01 | -0.11*** | -0.01 | -0.01 | -0.01 | -0.06*** | -0.01 |
| American Indian/Alaska Native | -0.10*** | -0.02 | -0.10*** | -0.02 | -0.11*** | -0.02 | -0.06** | -0.02 | -0.05* | -0.02 |
| Native Hawaiian/Other Pacific Islander | -0.11** | -0.04 | -0.15*** | -0.04 | -0.16*** | -0.03 | -0.07 | -0.05 | -0.05 | -0.04 |
| Two or more races | -0.02 | -0.03 | -0.08** | -0.02 | -0.03 | -0.02 | 0.04 | -0.03 | 0.03 | -0.03 |
| White | -0.05*** | -0.01 | -0.08*** | -0.01 | -0.07*** | -0.01 | 0.03** | -0.01 | -0.04*** | -0.01 |
| Eligible for the National School Lunch Program | -0.05*** | 0.00 | -0.07*** | 0.00 | -0.07*** | 0.00 | -0.05*** | 0.00 | -0.06*** | 0.00 |
| Receiving special education services | -0.25*** | 0.00 | -0.30*** | 0.00 | -0.23*** | 0.00 | -0.24*** | 0.00 | -0.32*** | 0.00 |
| Identified as gifted/talented | 0.19*** | 0.00 | 0.36*** | 0.00 | 0.32*** | 0.00 | 0.27*** | -0.01 | 0.24*** | -0.01 |
| Parent or guardian denial of service | -0.01 | -0.01 | 0.03*** | -0.01 | 0.02** | -0.01 | 0.00 | -0.01 | 0.01 | -0.01 |
| Primary homelanguage is Spanish | -0.01 | -0.01 | -0.03*** | -0.01 | -0.02** | -0.01 | -0.02* | -0.01 | 0.00 | -0.01 |
| Second year in U.S. schools | 0.06** | -0.02 | -0.03 | -0.02 | 0.01 | -0.02 | -0.10*** | -0.02 | 0.05* | -0.02 |
| Third year in U.S. schools | 0.10*** | -0.02 | 0.12*** | -0.02 | 0.08*** | -0.02 | 0.07*** | -0.02 | 0.19*** | -0.02 |
| Fourth year in U.S. schools | 0.04* | -0.02 | 0.12*** | -0.02 | 0.01 | -0.02 | 0.14*** | -0.02 | 0.19*** | -0.02 |
| Fifth year in U.S. schools | 0.01 | -0.02 | 0.13*** | -0.02 | -0.02 | -0.02 | 0.13*** | -0.02 | 0.20*** | -0.02 |
| Sixth year in U.S. schools | -0.08*** | -0.02 | 0.03 | -0.02 | -0.09*** | -0.02 | 0.02 | -0.02 | 0.12*** | -0.02 |
| Missing years in U.S. schools data | 0.01 | -0.02 | 0.07** | -0.02 | 0.04 | -0.02 | 0.03 | -0.03 | 0.13*** | -0.03 |
| Independent town district | -0.05* | -0.02 | 0.00 | -0.02 | -0.01 | -0.02 | -0.02 | -0.04 | 0.00 | -0.03 |
| Major suburban district | 0.02 | -0.02 | 0.06** | -0.02 | 0.03* | -0.02 | -0.09* | -0.04 | 0.01 | -0.02 |
| Major urban district | 0.01 | -0.04 | 0.14*** | -0.03 | 0.01 | -0.03 | -0.43*** | -0.07 | -0.10** | -0.04 |

| Variable | Composite | | Listening | | Reading | | Speaking | | Writing | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Nonmetropolitan fast-growing district | -0.14** | -0.05 | -0.01 | -0.04 | -0.08* | -0.04 | -0.02 | -0.07 | 0.00 | -0.05 |
| Nonmetropolitan stable district | 0.00 | -0.02 | 0.00 | -0.02 | -0.02 | -0.02 | -0.03 | -0.04 | 0.02 | -0.03 |
| Other central city district | 0.02 | -0.02 | 0.04* | -0.02 | 0.00 | -0.02 | -0.09* | -0.04 | 0.01 | -0.03 |
| Other central city suburban district | -0.01 | -0.02 | 0.00 | -0.02 | -0.01 | -0.02 | -0.05 | -0.03 | 0.00 | -0.02 |
| Rural district | -0.03 | -0.02 | -0.03 | -0.02 | -0.02 | -0.02 | -0.07 | -0.04 | -0.02 | -0.03 |
| District total enrollment | 0.00 | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 |
| District percentage of English learner students | 0.00 | 0.00 | 0.00 | 0.00 | 0.00** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School total enrollment | 0.00* | 0.00 | 0.00* | 0.00 | 0.00** | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 |
| School percentage of English learner students | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00*** | 0.00 |
| School percentage of students who are eligible for the National School Lunch Program | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 |
| School percentage of students receiving special education services | 0.00 | 0.00 | 0.00 | 0.00 | 0.00* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School average teacher experience | 0.00** | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01*** | 0.00 |
| Intercept | 0.19*** | -0.03 | 0.25*** | -0.03 | 0.29*** | -0.02 | 0.29*** | -0.04 | -0.07* | -0.03 |

| Statistic | Composite | Listening | Reading | Speaking | Writing |
|---|---|---|---|---|---|
| *N* | 197,006 | 354,156 | 387,808 | 354,156 | 257,916 |
| Sigma | 0.56 | 0.71 | 0.63 | 0.80 | 0.66 |
| Log-likelihood | -165,953.91 | -382,153.49 | -373,227.11 | -427,079.22 | -261,807.81 |
| Akaike information criterion | 331,989.82 | 764,388.97 | 746,536.22 | 854,240.43 | 523,697.62 |
| Bayesian information criterion | 332,407.65 | 764,830.85 | 746,981.82 | 854,682.31 | 524,126.49 |
| REMLcrit | 331,907.82 | 764,306.97 | 746,454.22 | 854,158.43 | 523,615.62 |
| Residual degrees of freedom | 196,965 | 354,115 | 387,767 | 354,115 | 257,875 |

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

STAAR is State of Texas Assessments of Academic Readiness. TELPAS is Texas English Language Proficiency Assessment System.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

**Table B5. Differences in performance on all Texas English Language Proficiency Assessment System domains between the 2020/21 cohort and the 2018/19 cohort, full model estimates, grades 6–8**

| | Composite | | Listening | | Reading | | Speaking | | Writing | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| 2020/21 cohort | -0.07*** | 0.00 | -0.30*** | 0.00 | -0.07*** | 0.00 | -0.02*** | 0.00 | -0.08*** | 0.00 |
| Baseline TELPAS | 0.69*** | 0.00 | 0.54*** | 0.00 | 0.60*** | 0.00 | 0.39*** | 0.00 | 0.54*** | 0.00 |
| Male | -0.09*** | 0.00 | -0.09*** | 0.00 | -0.07*** | 0.00 | -0.04*** | 0.00 | -0.15*** | 0.00 |
| Black | -0.07*** | -0.02 | -0.04** | -0.02 | -0.12*** | -0.01 | 0.04** | -0.02 | -0.03 | -0.02 |
| Hispanic | -0.10*** | -0.01 | -0.08*** | -0.01 | -0.12*** | -0.01 | -0.08*** | -0.01 | -0.07*** | -0.01 |
| American Indian/Alaska Native | -0.06* | -0.03 | -0.06* | -0.03 | -0.12*** | -0.02 | -0.06* | -0.03 | 0.00 | -0.03 |
| Native Hawaiian/Other Pacific Islander | -0.19*** | -0.05 | -0.08 | -0.05 | -0.23*** | -0.04 | -0.20*** | -0.05 | -0.04 | -0.05 |
| Two or more races | -0.02 | -0.04 | -0.13*** | -0.04 | -0.09** | -0.03 | 0.00 | -0.04 | 0.00 | -0.04 |
| White | -0.06*** | -0.01 | -0.09*** | -0.01 | -0.11*** | -0.01 | -0.01 | -0.01 | -0.02 | -0.01 |
| Eligible for the National School Lunch Program | -0.05*** | 0.00 | -0.06*** | 0.00 | -0.05*** | 0.00 | -0.05*** | -0.01 | -0.05*** | -0.01 |
| Receiving special education services | -0.20*** | -0.01 | -0.25*** | 0.00 | -0.23*** | 0.00 | -0.15*** | 0.00 | -0.31*** | -0.01 |
| Identified as gifted/talented | 0.21*** | -0.01 | 0.30*** | -0.01 | 0.28*** | -0.01 | 0.20*** | -0.01 | 0.22*** | -0.01 |
| Parent or guardian denial of service | 0.01 | -0.01 | 0.04*** | -0.01 | 0.02*** | -0.01 | 0.00 | -0.01 | 0.05*** | -0.01 |
| Primary home language is Spanish | -0.04*** | -0.01 | -0.04*** | -0.01 | -0.05*** | -0.01 | -0.07*** | -0.01 | -0.03** | -0.01 |
| Second year in U.S. schools | 0.06* | -0.03 | -0.12*** | -0.02 | -0.04* | -0.02 | 0.02 | -0.02 | -0.04 | -0.03 |
| Third year in U.S. schools | 0.06* | -0.03 | -0.02 | -0.02 | 0.03 | -0.02 | 0.09*** | -0.02 | 0.03 | -0.03 |
| Fourth year in U.S. schools | 0.06* | -0.03 | 0.08*** | -0.02 | 0.07*** | -0.02 | 0.14*** | -0.02 | 0.12*** | -0.03 |
| Fifth year in U.S. schools | 0.01 | -0.03 | 0.13*** | -0.02 | 0.05** | -0.02 | 0.14*** | -0.02 | 0.16*** | -0.03 |
| Sixth year in U.S. schools | 0.02 | -0.03 | 0.15*** | -0.02 | 0.06** | -0.02 | 0.16*** | -0.02 | 0.22*** | -0.02 |
| Missing years in U.S. schools data | 0.00 | -0.03 | 0.09*** | -0.03 | 0.06** | -0.02 | 0.14*** | -0.03 | 0.19*** | -0.03 |
| Independent town district | -0.13*** | -0.03 | -0.08** | -0.02 | -0.08** | -0.02 | -0.09 | -0.05 | -0.08* | -0.03 |
| Major suburban district | -0.05* | -0.02 | -0.04* | -0.02 | -0.05* | -0.02 | 0.01 | -0.04 | -0.04 | -0.03 |
| Major urban district | 0.01 | -0.04 | 0.02 | -0.03 | 0.01 | -0.03 | 0.06 | -0.07 | -0.15** | -0.04 |
| Nonmetropolitan fast-growing district | -0.04 | -0.06 | 0.00 | -0.05 | 0.00 | -0.04 | -0.05 | -0.07 | -0.06 | -0.06 |
| Nonmetropolitan stable district | -0.06* | -0.03 | -0.04 | -0.02 | -0.05* | -0.02 | -0.03 | -0.04 | 0.00 | -0.03 |

| Variable | Composite | | Listening | | Reading | | Speaking | | Writing | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Other central city district | -0.07** | -0.03 | -0.04 | -0.02 | -0.07** | -0.02 | -0.05 | -0.04 | -0.02 | -0.03 |
| Other central city suburban district | -0.10*** | -0.02 | -0.08*** | -0.02 | -0.08*** | -0.02 | -0.12*** | -0.04 | -0.02 | -0.03 |
| Rural district | -0.08** | -0.03 | -0.05* | -0.02 | -0.05* | -0.02 | -0.12** | -0.04 | -0.01 | -0.03 |
| District total enrollment | 0.00* | 0.00 | 0.00*** | 0.00 | 0.00* | 0.00 | 0.00 | 0.00 | 0.00*** | 0.00 |
| District percentage of English learner students | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School total enrollment | 0.00 | 0.00 | 0.00** | 0.00 | 0.00 | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 |
| School percentage of English learner students | 0.00 | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School percentage of students who are eligible for the National School Lunch Program | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 |
| School percentage of students receiving special education services | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01*** | 0.00 | 0.00 | 0.00 |
| School average teacher experience | 0.01*** | 0.00 | 0.00* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01*** | 0.00 |
| Intercept | 0.47*** | -0.04 | 0.43*** | -0.03 | 0.51*** | -0.03 | 0.45*** | -0.05 | -0.01 | -0.04 |

| Statistic | Composite | Listening | Reading | Speaking | Writing |
|---|---|---|---|---|---|
| *N* | 137,738 | 268,818 | 293,902 | 268,818 | 189,902 |
| Sigma | 0.58 | 0.74 | 0.67 | 0.81 | 0.69 |
| Log-likelihood | -121,120.99 | -303,349.92 | -301,443.22 | -326,939.11 | -200,338.18 |
| Akaike information criterion | 242,323.97 | 606,781.84 | 602,968.43 | 653,960.22 | 400,758.36 |
| Bayesian information criterion | 242,727.13 | 607,212.41 | 603,402.66 | 654,390.79 | 401,174.69 |
| REMLcrit | 242,241.97 | 606,699.84 | 602,886.43 | 653,878.22 | 400,676.36 |
| Residual degrees of freedom | 137,697 | 268,777 | 293,861 | 268,777 | 189,861 |

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

STAAR is State of Texas Assessments of Academic Readiness. TELPAS is Texas English Language Proficiency Assessment System.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

**Table B6. Differences in performance on all Texas English Language Proficiency Assessment System domains between the 2020/21 cohort and the 2018/19 cohort, full model estimates, grades 9–12**

| | Composite | | Listening | | Reading | | Speaking | | Writing | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| 2020/21 cohort | 0.07*** | -0.01 | -0.06*** | 0.00 | -0.06*** | 0.00 | 0.18*** | 0.00 | -0.02** | -0.01 |
| Baseline TELPAS | 0.69*** | 0.00 | 0.51*** | 0.00 | 0.58*** | 0.00 | 0.46*** | 0.00 | 0.48*** | 0.00 |
| Male | -0.06*** | 0.00 | -0.01* | 0.00 | -0.06*** | 0.00 | -0.05*** | 0.00 | -0.12*** | 0.00 |
| Black | -0.06** | -0.02 | -0.05*** | -0.02 | -0.06*** | -0.01 | -0.02 | -0.02 | -0.02 | -0.02 |
| Hispanic | -0.09*** | -0.02 | -0.09*** | -0.01 | -0.07*** | -0.01 | -0.14*** | -0.02 | -0.01 | -0.02 |
| American Indian/Alaska Native | -0.08 | -0.04 | -0.09** | -0.03 | -0.06* | -0.03 | -0.11** | -0.04 | 0.00 | -0.04 |
| Native Hawaiian/Other Pacific Islander | -0.16** | -0.06 | -0.15** | -0.05 | -0.16*** | -0.05 | -0.24*** | -0.06 | -0.03 | -0.06 |
| Two or more races | -0.08 | -0.05 | -0.05 | -0.04 | -0.04 | -0.04 | -0.04 | -0.05 | 0.00 | -0.05 |
| White | -0.05** | -0.02 | -0.06*** | -0.01 | -0.05*** | -0.01 | -0.07*** | -0.02 | 0.01 | -0.02 |
| Eligible for the National School Lunch Program | -0.01* | -0.01 | 0.00 | 0.00 | -0.01** | 0.00 | -0.01 | -0.01 | -0.03*** | -0.01 |
| Receiving special education services | -0.12*** | -0.01 | -0.14*** | 0.00 | -0.14*** | 0.00 | -0.08*** | -0.01 | -0.26*** | -0.01 |
| Identified as gifted/talented | 0.18*** | -0.02 | 0.25*** | -0.01 | 0.14*** | -0.01 | 0.16*** | -0.02 | 0.22*** | -0.02 |
| Parent or guardian denial of service | 0.03*** | -0.01 | 0.02* | -0.01 | 0.03*** | -0.01 | 0.03*** | -0.01 | 0.07*** | -0.01 |
| Primary home language is Spanish | -0.02 | -0.02 | -0.02 | -0.01 | -0.04** | -0.01 | -0.05*** | -0.01 | -0.05** | -0.02 |
| Second year in U.S. schools | 0.04 | -0.03 | -0.06** | -0.02 | -0.02 | -0.02 | 0.03 | -0.03 | -0.05 | -0.03 |
| Third year in U.S. schools | 0.03 | -0.03 | -0.03 | -0.02 | 0.01 | -0.02 | 0.02 | -0.03 | -0.04 | -0.03 |
| Fourth year in U.S. schools | 0.00 | -0.03 | 0.01 | -0.02 | 0.04 | -0.02 | 0.04 | -0.03 | 0.01 | -0.03 |
| Fifth year in U.S. schools | -0.02 | -0.03 | 0.03 | -0.02 | 0.03 | -0.02 | 0.04 | -0.03 | 0.02 | -0.03 |
| Sixth year in U.S. schools | -0.02 | -0.03 | 0.04 | -0.02 | 0.07*** | -0.02 | 0.04 | -0.02 | 0.20*** | -0.03 |
| Missing years in U.S. schools data | -0.04 | -0.04 | 0.01 | -0.03 | 0.05 | -0.03 | 0.05 | -0.03 | 0.10* | -0.04 |
| Independent town district | -0.12*** | -0.03 | -0.05 | -0.03 | -0.08** | -0.03 | -0.11* | -0.04 | -0.06 | -0.04 |
| Major suburban district | -0.09** | -0.03 | -0.02 | -0.02 | -0.02 | -0.02 | -0.03 | -0.04 | -0.08* | -0.03 |
| Major urban district | -0.03 | -0.04 | 0.08* | -0.03 | 0.09* | -0.04 | 0.02 | -0.06 | -0.11* | -0.05 |
| Nonmetropolitan fast-growing district | -0.04 | -0.06 | 0.01 | -0.05 | 0.01 | -0.05 | -0.07 | -0.07 | 0.00 | -0.07 |
| Nonmetropolitan stable district | -0.09** | -0.03 | -0.04 | -0.03 | -0.07** | -0.03 | -0.04 | -0.04 | -0.02 | -0.04 |

| Variable | Composite | | Listening | | Reading | | Speaking | | Writing | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Other central city district | -0.10** | -0.03 | -0.04 | -0.02 | -0.03 | -0.03 | -0.06 | -0.04 | -0.06 | -0.04 |
| Other central city suburban district | -0.11*** | -0.03 | -0.06** | -0.02 | -0.08*** | -0.02 | -0.08* | -0.04 | -0.05 | -0.03 |
| Rural district | 0.01 | -0.03 | 0.02 | -0.03 | 0.02 | -0.03 | 0.04 | -0.04 | 0.01 | -0.04 |
| District total enrollment | 0.00 | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00* | 0.00 |
| District percentage of English learner students | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School total enrollment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 |
| School percentage of English learner students | 0.00* | 0.00 | 0.00** | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School percentage of students who are eligible for the National School Lunch Program | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 |
| School percentage of students receiving special education services | -0.01*** | 0.00 | -0.01*** | 0.00 | -0.01*** | 0.00 | -0.02*** | 0.00 | 0.00 | 0.00 |
| School average teacher experience | 0.00 | 0.00 | 0.00 | 0.00 | -0.01** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Intercept | 0.65*** | -0.05 | 0.50*** | -0.03 | 0.47*** | -0.03 | 0.77*** | -0.05 | 0.23*** | -0.05 |

| Statistic | Composite | Listening | Reading | Speaking | Writing |
|---|---|---|---|---|---|
| *N* | 85,392 | 185,966 | 199,916 | 185,966 | 123,218 |
| Sigma | 0.58 | 0.67 | 0.67 | 0.80 | 0.75 |
| Log-likelihood | -75,702.88 | -189,299.73 | -203,422.63 | -224,340.40 | -139,677.65 |
| Akaike information criterion | 151,489.76 | 378,683.47 | 406,929.25 | 448,764.81 | 279,439.30 |
| Bayesian information criterion | 151,882.67 | 379,109.07 | 407,357.89 | 449,190.40 | 279,847.61 |
| REMLcrit | 151,405.76 | 378,599.47 | 406,845.25 | 448,680.81 | 279,355.30 |
| Residual degrees of freedom | 85,350 | 185,924 | 199,874 | 185,924 | 123,176 |

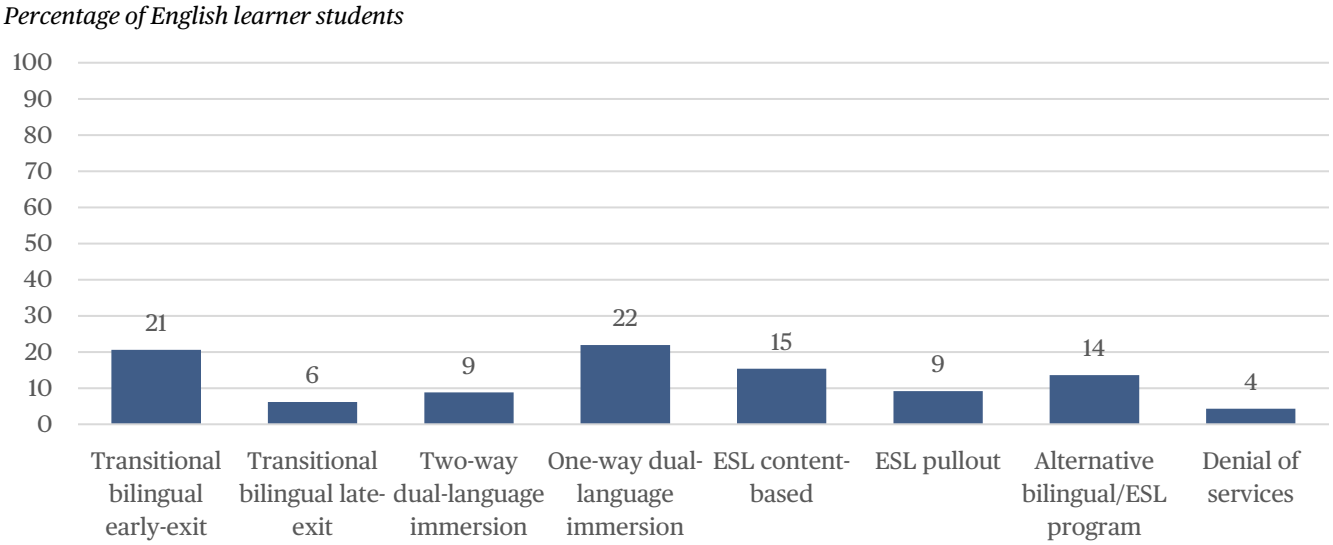
* Significant at $p < .05$; ** significant at $p < .01$; *** significant at $p < .001$.
STAAR is State of Texas Assessments of Academic Readiness. TELPAS is Texas English Language Proficiency Assessment System.
Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

### *Research question 4*

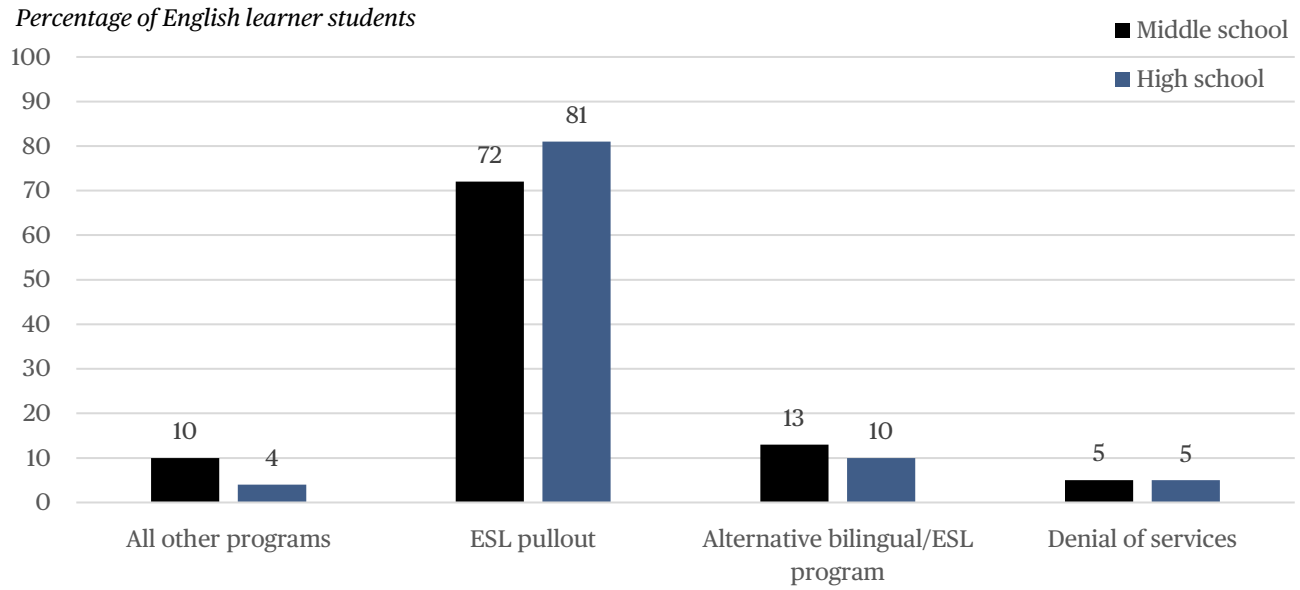
The availability of English learner program models varies across school levels. Elementary students in Texas participate in a variety of program models, including early-exit and late-exit transitional bilingual, one-way and two-way dual-language immersion, and English as a second language (ESL) pullout and content-based models. At the middle and high school levels, English learner students are almost exclusively served through ESL content-based instruction, with some students in ESL pullout programs (figure B1). Across all levels in 2020/21, approximately 10 percent to 15 percent of English learner students participated in a program model taught by a teacher who is not certified in that particular model. Approximately 5 percent of English learner students in 2020/21 did not receive any language services because of family choice (parent or guardian denial of service).

**Figure B1. Elementary students in Texas were served through multiple types of English learner program models, whereas middle and high school students were mostly served by English as a second language pullout programs, 2020/21**

*Panel A. Elementary school*




*Panel B. Middle school and high school*




ESL is English as a second language.

Note: The sample included 747,178 English learner students, including 290,629 in elementary school, 245,676 in middle school, and 210,873 in high school. Denial of service refers to a family's choice for their student not to participate in a bilingual or ESL program. Alternative bilingual/ESL program refers to program models in which the instructor is not certified to teach that program model.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

**Table B7. Differences in performance on all Texas English Language Proficiency Assessment System domains, 2020/21 cohort, grades 3–5**

| | Listening | | Speaking | | Writing | | Reading | | Composite | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Transitional bilingual, early-exit | -0.03** | -0.01 | 0.00 | -0.01 | 0.02 | -0.01 | -0.02** | -0.01 | -0.01 | -0.01 |
| Transitional bilingual, late-exit | -0.05*** | -0.01 | -0.03* | -0.01 | 0.00 | -0.01 | -0.03* | -0.01 | -0.03* | -0.01 |
| Two-way dual-language immersion | 0.05*** | -0.01 | 0.08*** | -0.01 | 0.12*** | -0.01 | 0.07*** | -0.01 | 0.12*** | -0.01 |
| ESL content-based | 0.03** | -0.01 | 0.02* | -0.01 | 0.05*** | -0.01 | 0.02** | -0.01 | 0.06*** | -0.01 |
| ESL pull-out | 0.00 | -0.01 | 0.01 | -0.01 | 0.04*** | -0.01 | -0.01 | -0.01 | 0.04*** | -0.01 |
| Alternative bilingual/ESL program | -0.02* | -0.01 | 0.00 | -0.01 | -0.02* | -0.01 | -0.02* | -0.01 | 0.00 | -0.01 |
| Parent or guardian denial of service | 0.10*** | -0.01 | 0.04*** | -0.01 | 0.17*** | -0.01 | 0.09*** | -0.01 | 0.15*** | -0.01 |
| Baseline TELPAS | 0.52*** | 0.00 | 0.41*** | 0.00 | 0.56*** | 0.00 | 0.67*** | 0.00 | 0.61*** | 0.00 |
| Baseline TELPAS missing | -0.08*** | 0.00 | -0.13*** | -0.01 | -0.13*** | -0.01 | -0.09*** | 0.00 | -0.15*** | -0.01 |
| Male | -0.07*** | 0.00 | -0.05*** | 0.00 | -0.16*** | 0.00 | 0.00 | 0.00 | -0.10*** | 0.00 |
| Black | -0.03* | -0.01 | 0.05** | -0.02 | -0.07*** | -0.01 | -0.05*** | -0.01 | -0.04** | -0.01 |
| Hispanic | -0.09*** | -0.01 | -0.01 | -0.01 | -0.14*** | -0.01 | -0.13*** | -0.01 | -0.14*** | -0.01 |
| American Indian/Alaska Native | -0.07** | -0.02 | -0.05* | -0.03 | -0.10*** | -0.02 | -0.13*** | -0.02 | -0.13*** | -0.02 |
| Native Hawaiian | -0.22*** | -0.05 | -0.03 | -0.05 | -0.21*** | -0.05 | -0.27*** | -0.04 | -0.25*** | -0.05 |
| Two or more races | -0.07* | -0.03 | 0.00 | -0.03 | -0.01 | -0.03 | -0.02 | -0.03 | -0.04 | -0.03 |
| White | -0.06*** | -0.01 | 0.04** | -0.01 | -0.10*** | -0.01 | -0.09*** | -0.01 | -0.10*** | -0.01 |
| Eligible for the National School Lunch Program | -0.08*** | -0.01 | -0.06*** | -0.01 | -0.10*** | 0.00 | -0.11*** | 0.00 | -0.12*** | 0.00 |
| Receiving special education services | -0.43*** | -0.01 | -0.25*** | -0.01 | -0.56*** | -0.01 | -0.34*** | 0.00 | -0.65*** | -0.01 |
| Identified as gifted/talented | 0.53*** | -0.01 | 0.29*** | -0.01 | 0.49*** | -0.01 | 0.47*** | -0.01 | 0.61*** | -0.01 |
| Primary home language is Spanish | -0.04*** | -0.01 | -0.02 | -0.01 | -0.04*** | -0.01 | -0.05*** | -0.01 | -0.04*** | -0.01 |
| Second year in U.S. schools | 0.27*** | -0.02 | 0.22*** | -0.02 | 0.18*** | -0.02 | 0.24*** | -0.01 | 0.18*** | -0.02 |
| Third year in U.S. schools | 0.79*** | -0.01 | 0.74*** | -0.02 | 0.74*** | -0.01 | 0.55*** | -0.01 | 0.88*** | -0.01 |
| Fourth year in U.S. schools | 0.87*** | -0.01 | 0.86*** | -0.02 | 0.91*** | -0.01 | 0.57*** | -0.01 | 1.04*** | -0.01 |
| Fifth year in U.S. schools | 0.91*** | -0.02 | 0.87*** | -0.02 | 1.00*** | -0.01 | 0.59*** | -0.01 | 1.12*** | -0.01 |
| Sixth year in U.S. schools | 0.79*** | -0.02 | 0.77*** | -0.02 | 0.87*** | -0.02 | 0.48*** | -0.02 | 0.95*** | -0.02 |
| Missing years in U.S. schools data | 0.78*** | -0.02 | 0.69*** | -0.03 | 0.77*** | -0.02 | 0.54*** | -0.02 | 0.91*** | -0.02 |
| Independent town district | -0.02 | -0.03 | 0.05 | -0.05 | 0.01 | -0.04 | -0.04 | -0.03 | -0.01 | -0.04 |

| Variable | Listening | | Speaking | | Writing | | Reading | | Composite | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error | Coefficient | Standard error |
| Major suburban district | -0.04 | -0.03 | 0.02 | -0.04 | -0.02 | -0.03 | -0.04 | -0.03 | -0.03 | -0.03 |
| Major urban district | -0.15** | -0.05 | -0.09 | -0.09 | -0.16* | -0.06 | -0.14** | -0.05 | -0.19** | -0.07 |
| Nonmetropolitan fast-growing district | -0.08 | -0.06 | -0.03 | -0.08 | 0.06 | -0.07 | -0.14** | -0.05 | -0.08 | -0.06 |
| Nonmetropolitan stable district | -0.03 | -0.03 | 0.01 | -0.04 | 0.04 | -0.03 | -0.01 | -0.03 | 0.01 | -0.03 |
| Other central city district | -0.06 | -0.03 | 0.01 | -0.05 | 0.03 | -0.04 | -0.07* | -0.03 | -0.01 | -0.04 |
| Other central city suburban district | -0.05 | -0.03 | -0.02 | -0.04 | 0.00 | -0.03 | -0.06* | -0.02 | -0.04 | -0.03 |
| Rural district | -0.09** | -0.03 | -0.08 | -0.04 | 0.03 | -0.03 | -0.05 | -0.03 | -0.05 | -0.03 |
| District total enrollment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| District percentage of English learner students | 0.00*** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00** | 0.00 | 0.00 | 0.00 |
| School total enrollment | 0.00 | 0.00 | 0.00* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School percentage of English learner students | 0.00 | 0.00 | 0.00 | 0.00 | 0.00* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School percentage of students who are eligible for the National School Lunch Program | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | 0.00*** | 0.00 | -0.01*** | 0.00 |
| School percentage of students receiving special education services | 0.00 | 0.00 | 0.00 | 0.00 | 0.00* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| School average teacher experience | 0.01*** | 0.00 | 0.00 | 0.00 | 0.01*** | 0.00 | 0.00** | 0.00 | 0.01*** | 0.00 |
| Intercept | -0.23*** | -0.04 | -0.27*** | -0.05 | -0.32*** | -0.04 | 0.04 | -0.03 | -0.21*** | -0.04 |

| Statistic | Listening | Speaking | Writing | Reading | Composite |
|---|---|---|---|---|---|
| *N* | 252,446 | 252,446 | 272,800 | 252,726 | 247,151 |
| Sigma | 0.79 | 0.85 | 0.78 | 0.69 | 0.76 |
| Log-likelihood | -300,207.07 | -319,625.10 | -324,385.90 | -267,678.07 | -285,669.16 |
| Akaike information criterion | 600,508.14 | 639,344.20 | 648,865.80 | 535,450.14 | 571,432.33 |
| Bayesian information criterion | 600,998.77 | 639,834.83 | 649,360.07 | 535,940.82 | 571,921.96 |
| REMLcrit | 600,414.14 | 639,250.20 | 648,771.80 | 535,356.14 | 571,338.33 |
| Residual degrees of freedom | 252,399 | 252,399 | 272,753 | 252,679 | 247,104 |

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

ESL is English as a second language. TELPAS is Texas English Language Proficiency Assessment System.

Note: One-way dual-language immersion is the reference category.

Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

# Appendix C. Supplemental analyses

## *Research question 1*

There are multiple ways to define a test taker (such as based on having a specific domain score, having at least one domain score, or having all domain scores). The study team explored different definitions, and between these differing definitions and the four years included in the study (2017/18 to 2020/21), there were 2,118 possible comparisons between the test-taking sample and the population. However, across all definitions, differences between the test-taking sample and the English learner student population exceed 5 percentage points in only seven instances. Most were found either when defining Texas English Language Proficiency Assessment System (TELPAS) takers as those with writing domain scores in 2019/20 or having earned a composite score in 2019/20 (which requires all four domains be complete). One exception was in 2020/21 with respect to the percentage of students in their sixth year of being in a U.S. school. In fact, 1,933 out of 2,118 possible compositional differences (91 percent) across all years and test-taker definitions were within 1 percentage point. Most differences that exceeded 1 percentage point were in 2019/20. Larger differences were found when defining a test taker using the writing domain or having earned a composite score (where the test-taking samples were smallest) and almost always in 2019/20. Furthermore, differences that exceeded 1 percentage point tended to be among the district-level variables, such as district locale, and less often among student-level variables.

## *Research question 3*

For research question 3, the study team excluded students with missing data on baseline student-, school-, and district-level variables, including prior-year TELPAS scores from the same domain as the outcome. Missing TELPAS scores posed an analytic challenge because of the importance of baseline English proficiency as a covariate. A higher percentage of TELPAS scores were missing in 2019/20 than in other years, which affected the analysis for the 2020/21 cohort because it used 2019/20 TELPAS scores as a baseline measure (see table A5 in appendix A).

The study team conducted sensitivity analyses to test the robustness of the study's findings using two different approaches to handling missing data. First, the study team excluded baseline TELPAS scores as a covariate for the full cohort. Second, the study team imputed baseline TELPAS scores when missing. The findings from sensitivity analyses were similar to the findings from the main analyses.

### *Sensitivity analyses excluding prior-year TELPAS as a covariate*

The study team repeated the analysis described in the main report, omitting prior-year TELPAS scores from the analytic models. The findings were similar to the findings described in the main report, with a few exceptions. In this alternate analysis, the difference in listening scores between grades 3–5 students in the 2020/21 cohort and the 2018/19 cohort was not meaningful, in contrast to the meaningful differences found in the analysis presented in the main report (see figure 2 in the main report and table C1). The same was true for the difference in speaking scores for grades 9–12 students.

**Table C1. Findings of sensitivity analysis conducted without including prior-year Texas English Language Proficiency Assessment System scores, 2018/19 and 2020/21**

| Statistic | TELPAS domain | | | | |
|---|---|---|---|---|---|
| | Listening | Speaking | Reading | Writing | Composite |
| **Grades 3–5** | | | | | |
| Difference (standard deviation units) | -0.05 | -0.32* | -0.13* | -0.17* | -0.18* |
| Sample size | 504,892 | 504,892 | 505,452 | 544,430 | 494,302 |
| **Grades 6–8** | | | | | |
| Difference (standard deviation units) | -0.15* | -0.04 | 0.01 | -0.10* | -0.07 |
| Sample size | 390,226 | 390,226 | 390,814 | 398,662 | 358,542 |
| **Grades 9–12** | | | | | |
| Difference (standard deviation units) | 0.04 | 0.07 | 0.04 | -0.04 | 0.05 |
| Sample size | 276,796 | 276,796 | 277,328 | 281,092 | 242,858 |

* Denotes a difference of greater than or equal to 0.1 standard deviation, which was considered a meaningful difference.
TELPAS is Texas English Language Proficiency Assessment System.
Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

### *Sensitivity analyses using imputation of missing data*

To understand the extent to which results were influenced by selection bias created by missing prior-year TELPAS scores for the 2020/21 cohort, the study team imputed prior-year TELPAS scores according to the following procedure.

For each school level, cohort, and domain separately, the study team used multivariate imputation[16] to generate five different values for students missing prior-year TELPAS scores based on student demographic characteristics. Then the model for research question 3 was refit on the five imputed datasets for each grade by domain combination and estimates were pooled according to Rubin's rules.

Imputation models largely replicated findings presented in the main report, though standardized differences were somewhat smaller in all domains (see figure 2 in the main report and table C2).

[16] Using R version 4.0.2 and the R 'mice' package version 3.11.0, the study team employed a fully conditional specification approach to model each student's missing TELPAS score as a function of other available covariates, including race/ethnicity, gender, eligibility for National School Lunch Program, receiving special education services, identified as gifted/talented, parent or guardian denial of service, Spanish as primary home language, years in U.S. schools, school total enrollment, school percentage of English learner students, school percentage of students who are eligible for the National School Lunch Program, school percentage of students receiving special education services, district locale, and district total enrollment.

**Table C2. Findings of sensitivity analysis conducted using multiple imputation of missing data for prior-year year Texas English Language Proficiency Assessment System scores, 2018/19 and 2020/21**

| Statistic | TELPAS domain | | | | |
|---|---|---|---|---|---|
| | Listening | Speaking | Reading | Writing | Composite |
| **Grades 3–5** | | | | | |
| Difference (standard deviation units) | -0.11* | -0.31* | -0.16* | -0.17* | -0.19* |
| Sample size | 537,869 | 537,869 | 538,310 | 557,806 | 531,943 |
| **Grades 6–8** | | | | | |
| Difference (standard deviation units) | -0.27* | -0.04 | -0.06 | -0.13* | -0.13* |
| Sample size | 394,908 | 394,908 | 395,436 | 404,589 | 378,201 |
| **Grades 9–12** | | | | | |
| Difference (standard deviation units) | -0.03 | 0.13* | -0.04 | -0.06 | 0.01 |
| Sample size | 286,117 | 286,117 | 286,555 | 291,135 | 264,314 |

* Denotes a difference of greater than or equal to 0.1 standard deviation, which was considered a meaningful difference.
Source: Authors' analysis of data provided by the Texas Education Agency and the University of Texas Education Research Center.

REL 2023-144

November 2022

This report was prepared for the Institute of Education Sciences (IES) under Contract 91990018C002 by the Regional Educational Laboratory Southwest administered by the American Institutes for Research. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.