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APPENDIXES
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Regional Educational Laboratory Southwest
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College Enrollment and Completion among Texas High School Graduates with a Disability

See https://go.usa.gov/x7Nnc for the full report.

Appendix A. Data and methods

This appendix describes the data sources used, data procedures, population characteristics, and analysis methods.

Data sources

This study used student-level administrative data from Texas, available through the data repository at the Texas Education Research Center at the University of Texas. The data repository contains administrative records for all students who enroll in a Texas public school or Texas college. The files required for this study were provided to the Texas Education Research Center by the Texas Education Agency, which collects K–12 accountability, performance, and financial data from Texas public school districts, and the Texas Higher Education Coordinating Board, which collects postsecondary enrollment and completion records from Texas public and private colleges. The Texas Education Research Center records contain a unique student identifier that permits linking of secondary and postsecondary records while maintaining student anonymity.

The study team used data files from the Texas Education Agency on four statewide cohorts of high school graduates (2006/07 through 2009/10) and linked longitudinal postsecondary data from the Texas Higher Education Coordinating Board for 2007/08 through 2017/18 (table A1).

High school data from the Texas Education Agency. The study used student-level data for high school students in Texas public schools from the Texas Education Agency's Public Information Management System database. Variables included high school of enrollment, demographic characteristics, program participation (such as participation in the national school lunch program), and high school graduation status. For students with a disability the study used variables designating special education status during the school year in which they graduated from high school and their primary disability[1] (see table A1). Because Texas local education agencies are required by statute to submit school records to the database and because data on demographic characteristics, program membership, and special education participation were taken from students' last year of enrollment in high school, no students were missing information on demographic characteristics or special

[1] The Texas Education Agency collects student-level indicators for 13 disability types: auditory impairment, autism, deaf-blindness, developmental delay, emotional disturbance, learning disability, mental retardation (referred to as intellectual disability in this study), orthopedic impairment, other health impairment, speech impairment, traumatic brain injury, visual impairment, and noncategorical early childhood. Two disability types—developmental delay and noncategorical early childhood—were not represented in the data for this study because these disability types apply only to early childhood students.

education status. For supplemental analyses disaggregated by the Texas Education Service Center serving students' last high school, a small number of students' last high school of enrollment (68, or less than 1 percent of the total sample) could not be linked to the Education Service Center serving their district. Students missing an Education Service Center assignment were removed using listwise deletion.

Postsecondary data from the Texas Higher Education Coordinating Board. The study used student-level data on students enrolled in a public or private college in Texas. Variables included enrollment term, credit hours, degree intention, and credentials (degrees and certificates) attained. The data files included records on students in public two-year colleges, public four-year colleges and universities, and independent nonprofit four-year colleges and universities (see table A1).

Table A1. Data sources and student-level variables used in the study

Agency and dataset	Variables	Years	Research questions
Texas Education Agency			
Student enrollment	School and district of enrollment Student disability status Economic disadvantage status Gender Race/ethnicity	2006/07–2009/10	All
Students in special education	Student disability status Primary disability	2006/07–2009/10	All
High school graduation	Diploma type Graduation date Leaver date and type	2007/08–2010/11	All
Texas Higher Education Coordinating Board			
Public two-year college enrollment	Credit hours enrolled Highest credential of intent	2007/08–2017/18	1, 2
Public four-year college enrollment Independent four-year college enrollment	Credit hours enrolled Highest credential of intent	2007/08–2017/18	All
Public two-year college credentials	Two-year college credential records	2007/08–2017/18	2
Public four-year college credentials Independent four-year college credentials	Independent four-year college credential records	2009/10–2017/18	2, 3

Source: Authors' compilation.

Data and methods for research question 1

To address research question 1, the study team longitudinally examined four cohorts of Texas high school graduates and the percentage of students from these cohorts who enrolled in an eligible Texas college. This section summarizes the methods used to construct the population, track postsecondary enrollment, and generate the findings.

Study population of high school graduates. The study team used three state accountability data files from the Texas Education Agency to construct the analytic file: annual high school graduation records; annual fall accountability snapshot enrollment records for identifying the student enrollment subset for calculating school and district accountability ratings, which contained student demographic and program membership records; and annual fall accountability snapshot special education participation records. Students were eligible for inclusion in

the study if they had a nonmissing graduation record in one of the four annual graduation files.[2] Students were first assigned to an annual high school graduating cohort for the four study years (2006/07 through 2009/10). Next, the study team used the unique student identifiers to link high school graduates to the accountability data files capturing students' disability status and primary disability type and eligibility for the national school lunch program, gender, and race/ethnicity, from the fall accountability collections for each school year. For characteristics that may vary across school years, such as disability status and participation in the national school lunch program, membership in these subgroups was defined based on records from graduates' last year of high school.

The resultant study population for research question 1 comprised all students with a disability (106,736 graduates) and all other students (902,672 graduates) who graduated from a public high school in Texas during 2006/07 through 2009/10. The population was diverse in terms of primary disability type, socioeconomic status (eligibility for the national school lunch program), and race/ethnicity (tables A2 and A3). The study team included students who were enrolled in high school for more than four years and students who were over-age, because students with a disability sometimes require more than four years to complete high school requirements. In Texas students with a disability and general education students are expected to complete the same credit requirements. The individualized education program for students with a disability permits flexibility in meeting graduation requirements, depending on the type and severity of the disability.

Table A2. Number of Texas public high school graduates, by disability status, and primary disability type and graduating cohort, 2006/07–2009/10 graduating cohorts

Disability status and primary disability type	Graduating cohort				Total graduates
	2006/07	2007/08	2008/09	2009/10	
Without disability	207,892	219,337	230,549	244,894	902,672
With any disability	26,929	26,657	26,426	26,724	106,736
Auditory impairment	353	383	395	405	1,536
Autism	520	632	824	930	2,906
Deaf-blindness	8	8	7	8	31
Emotional disturbance	1,987	2,050	1,998	2,085	8,120
Learning disability	18,303	17,853	17,168	17,253	70,577
Intellectual disability	2,082	2,076	2,128	2,057	8,343
Orthopedic impairment	297	301	290	259	1,147
Other health impairment	2,917	2,923	3,165	3,310	12,315
Speech impairment	159	132	121	134	546
Traumatic brain injury	138	130	135	121	524
Visual impairment	165	169	195	162	691

Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

[2] High school graduation data were reported by local education agencies to the Texas Education Agency in the first accountability submission in the fall of the subsequent school year. Students may have more than one graduation event across school years. Duplications reflect mainly revisions in graduates' diploma type. For students with multiple graduation events across school years, the study team retained students' first graduation event. The number of students in each graduating cohort included in this study differs slightly from the numbers reported publicly by the Texas Education Agency because the study team retained only one graduation event per student.

Table A3. Number and percentage of Texas public high school graduates, by demographic characteristics and disability status, 2006/07–2009/10 graduating cohorts

	Graduates without a disability		Graduates with a disability	
Demographic characteristic	Number	Percent	Number	Percent
Eligibility for the national school lunch program				
Eligible	332,809	85.6	55,791	14.4
Not eligible	569,863	91.8	50,945	8.2
Gender				
Female	466,922	92.5	37,904	7.5
Male	435,750	86.4	68,832	13.6
Race/ethnicity				
American Indian/Alaska Native	3,634	88.4	476	11.6
Asian/Pacific Islander	38,317	97.2	1,116	2.8
Black	113,228	83.8	21,869	16.2
Hispanic	347,797	89.3	41,646	10.7
Two or more races	3,447	91.9	302	8.1
White	396,249	90.6	41,327	9.4

Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Postsecondary enrollment among high school graduates. The study team used postsecondary enrollment records from the Texas Higher Education Coordinating Board to identify 2006/07–2009/10 high school graduates who enrolled in a Texas two-year or four-year college within two years of graduation.[3] Students who enrolled within this window were assigned to a single two-year or four-year college type based on the number of credit hours taken at the first college in which they enrolled within the two-year eligibility window. The procedures and decision rules for determining whether a student enrolled within two years of high school graduation, and the methods for assigning students to a two-year or four-year institution type, are summarized below.

The postsecondary enrollment data were reported by colleges separately by school year, institution type (for example, public two-year college, public four-year public college, independent/private four-year college), and enrollment term. The data did not allow the study to examine enrollment in private two-year colleges, for-profit colleges, or colleges outside Texas. According to the Texas Higher Education Coordinating Board, Texas had one private not-for-profit two-year college in 2017/18, which enrolled 545 students. According to Integrated Postsecondary Education Data System data, 93,810 Texas students enrolled in a for-profit college in 2017/18 (4.2 percent of all students enrolled in a Texas college).

The study team created a panel dataset with a row for every student enrolled in a Texas college, by semester, institution type, and school year. This file was then linked to the high school graduate file using the unique student identifiers. Only students who were in the high school graduate file and who were successfully matched to a postsecondary enrollment record were retained.

Some students were enrolled in multiple institution types within or across enrollment terms. For instance, some students were concurrently enrolled in both a two-year and a four-year college in a single semester (typically about 20 percent of students), and some students might have transferred across institution types between enrollment terms. To resolve concurrent enrollments within a semester, the study team selected the enrollment record associated with the highest number of credit hours; where credit hours were identical, the study team

[3] A large majority (90 percent) of Texas high school graduates who enroll in a college enroll in a college in Texas (Texas Higher Education Coordinating Board, 2017).

selected the four-year enrollment record over the two-year enrollment record. Next, the study team identified students' first postsecondary enrollment term that met the study criterion of six credit hours per semester for being classified as enrolled in college. The decision rules were modified to accommodate private four-year colleges, which do not report credit hours in their enrollment census submissions to the Texas Higher Education Coordinating Board. All enrollments in these colleges were considered to have met the credit hour threshold. The postsecondary enrollment record was used to assign students to an institution type.

These methods allowed the study team to identify all students from the graduating cohorts who had enrolled in a public two-year college or a public or private four-year college in Texas within two years of high school graduation and who met the minimum requirement of six credit hours per semester. The study team tabulated the numbers of graduates by cohort, disability status, primary disability type, and demographic characteristics who met the criteria for postsecondary enrollment (tables A4–A6).

Table A4. Number of Texas public high school graduates who enrolled in a Texas college within two years of graduation, by disability status, primary disability type, and institution type where initially enrolled, 2006/07–2009/10 graduating cohorts

Disability status and primary disability type	Two-year college	Two-year college with the intention of attaining a baccalaureate degree	Four-year college	Total two-year and four-year colleges
Without disability	310,199	116,966	263,619	573,818
With any disability	29,437	7,787	3,176	32,613
Auditory impairment	537	139	106	643
Autism	824	257	174	998
Emotional disturbance	2,218	664	216	2,434
Intellectual disability	324	47	21	345
Learning disability	20,284	5,106	1,879	22,163
Orthopedic impairment	312	91	58	370
Other health impairment	4,391	1,303	510	4,901
Speech impairment	203	64	85	288
Visual impairment	212	74	106	318

Note. Findings are not displayed for graduates with deaf-blindness because of small cell sizes. Complementary cell suppression was applied to the next smallest group (traumatic brain injury) to prevent recovery of the masked small cell size counts.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Table A5. Number of Texas public high school graduates who enrolled in a Texas college within two years of graduation, by disability status, high school graduating cohort, and institution type where initially enrolled, 2006/07–2009/10 graduating cohorts

Disability status and graduating cohort	Two-year college	Four-year college	Total two-year and four-year colleges
Graduates without a disability			
2006/07	69,058	63,012	132,070
2007/08	75,364	64,865	140,229
2008/09	81,701	66,197	147,898
2009/10	84,076	69,545	153,621
All cohorts	310,199	263,619	573,818
Graduates with a disability			
2006/07	6,859	806	7,665
2007/08	7,207	780	7,987
2008/09	7,659	806	8,465
2009/10	7,712	784	8,496
All cohorts	29,437	3,176	32,613

Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Table A6. Number of Texas public high school graduates who enrolled in a Texas college within two years of graduation, by demographic characteristics, disability status, and institution type where initially enrolled, 2006/07–2009/10 graduating cohorts

	Graduates without a disability		Graduates with a disability	
Demographic characteristic	Two-year college	Four-year college	Two-year college	Four-year college
Eligibility for the national school lunch program				
Eligible	115,025	67,101	13,170	1,200
Not eligible	195,174	196,518	16,267	1,976
Gender				
Female	145,137	119,700	11,040	2,107
Male	165,062	143,919	18,397	1,069
Race/ethnicity				
American Indian/Alaska Native	1,217	898	128	11
Asian/Pacific Islander	9,440	17,083	417	54
Black	35,916	36,888	6,164	1,080
Hispanic	125,791	71,744	10,433	637
Two or more races	1,149	1,111	92	12
White	136,686	135,895	12,203	1,382

Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Percentages of high school graduates enrolled in Texas colleges. To develop the findings presented in the report, the study team calculated the percentages of graduates who enrolled and who did not enroll in college. All calculations were conducted separately for graduates with a disability and graduates without a disability using the number of high school graduates as the denominator and the number of graduates with an eligible postsecondary enrollment record as the numerator. This calculation was applied to the overall population of high school

graduates and to subgroups of graduates disaggregated by demographic characteristics (eligibility for the national school lunch program, gender, and race/ethnicity), primary disability type, initial enrollment institution type (two-year or four-year), and Texas geographic region (Texas Education Service Center region).

Data and methods for research questions 2 and 3

To address research questions 2 and 3, the study team examined the subpopulation of high school graduates identified through research question 1 who had enrolled in a Texas college (see tables A4–A6). The study team longitudinally examined attainment of college credentials among this subpopulation. This section summarizes the methods used to track outcomes and generate findings.

Longitudinal tracking of students. The linked data allowed the study team to follow each graduating cohort longitudinally for up to eight academic years after the final year of high school, depending on the timing of students' transition to a college (table A7). The eight-year follow-up period was applied to each cohort, even if data were available for more than eight years. For example, students from the 2006/07 cohort were tracked only through 2014/15. The study set a two-year window for initial college enrollment, a four-year window from the year of initial enrollment for outcomes (associate degree, certificate, upward transfer) among graduates who enrolled in a two-year college, and a seven-year window from the year of initial enrollment for attainment of a baccalaureate degree. The eligibility window began in the first semester in which a student met the enrollment intensity criterion of six credit hours.

Table A7. Graduating cohorts and school years examined for attainment of Texas college credentials, 2006/07–2017/18

Cohort	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
2006/07	HS	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	—	—	—
2007/08	—	HS	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	—	—
2008/09	—	—	HS	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	—
2009/10	—	—	—	HS	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8

— is not applicable.
Note: "HS" refers to the year of high school graduation. "Y" refers to the number of years following high school graduation.
Source: Authors' compilation.

Attainment of higher education credentials. For research question 2 the study team examined three non–mutually exclusive college outcomes among high school graduates who initially enrolled in a two-year college:[4]

- Attainment of a certificate within four years of the first qualifying enrollment term.
- Attainment of an associate degree within four years of the first qualifying enrollment term.
- Upward transfer within four years of the first qualifying enrollment term.

For research question 3 the study team examined one college outcome among high school graduates who initially enrolled in a two-year college with the intention of transferring to a four-year college to attain a baccalaureate degree and graduates who initially enrolled in a four-year college:

- Attainment of a baccalaureate degree within seven years of the first qualifying enrollment term.

The postsecondary credential data were organized separately by school year and institution type and included all students—irrespective of whether they graduated from a Texas public high school—who attained a two-year or four-year credential from 2007/08 through 2017/18. The study team pruned the universe of credential attainers by using the unique student identifiers to link the credential records and postsecondary enrollment records to the

[4] The two-year college credentials excluded field of study and core curriculum completers and baccalaureate degrees awarded at two-year colleges.

records of eligible students' high school graduation, demographic characteristics, and program membership data. The study team retained the school year, institution type, and credential for each qualifying degree or certificate that a student attained from 2007/08 through 2017/18. For each credential type the study team created a dichotomous indicator variable that was equal to 1 if a student attained the credential within the eligibility window and 0 otherwise.[5]

For two-year colleges the outcomes examined included both credential attainment and upward transfer because some students who initially enroll in a two-year college do not intend to complete a two-year credential but plan to transfer to a four-year college to attain a baccalaureate degree. Upward transfer was defined as transferring from a two-year college to a four-year college within four years of the first term in which a student met the enrollment intensity requirement. As for the two-year credential attainment outcomes, students were eligible for inclusion only if they enrolled in a two-year college for at least six credit hours within two years of graduating from high school. To be classified as having transferred upward, a student had to have enrolled in a four-year college for at least one semester within the four-year window. A minimum credit hour rule was not applied. The issue of concurrent enrollments within a semester at different types of postsecondary colleges was resolved by selecting the college associated with the highest number of credit hours or, if identical, by privileging enrollment in a four-year college over enrollment in a two-year college. Students who initially enrolled in a two-year college and who were concurrently enrolled in a four-year college for fewer hours than they were enrolled in a two-year college were not classified as having transferred upward during that enrollment term.

For research question 2 on attaining a credential or transferring upward at a two-year college, the study team tabulated the numbers of high school graduates who initially enrolled in a two-year college and attained any of the three outcomes within four years of the first qualifying enrollment term, by disability status, primary disability type, and demographic characteristics (tables A8 and A9).

Table A8. Number of Texas public high school graduates who initially enrolled in a Texas two-year public college, by disability status, primary disability type, and two-year-college outcome within four years, 2006/07–2009/10 graduating cohorts

Disability status and primary disability type	Attained a certificate	Attained an associate degree	Transferred upward[a]	Attained any two-year-college outcome	Did not attain any two-year-college outcome
Without disability	12,692	39,572	80,862	106,220	203,979
With any disability	1,780	1,381	2,608	4,854	24,583
Auditory impairment	48	39	74	127	410
Autism	52	105	126	213	611
Emotional disturbance	68	78	150	248	1,970
Learning disability	1,336	847	1,563	3,202	17,082
Orthopedic impairment	10	34	67	87	225
Other health impairment	227	212	497	790	3,601
Speech impairment	14	28	52	75	128

Note: Findings are not displayed for graduates with deaf-blindness, traumatic brain injury, intellectual disability, or visual impairment because of small cell sizes.
a. Transferred from a two-year college to a four-year college.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

[5] Students who attained multiple credentials of the same type (for example, two associate or baccalaureate degrees in the same term or multiple terms) were treated the same way as students who attained one credential.

Table A9. Number of Texas public high school graduates with a disability who initially enrolled in a Texas two-year public college, by demographic characteristic and two-year-college outcome within four years, 2006/07–2009/10 graduating cohorts

Demographic characteristic	Attained a certificate	Attained an associate degree	Transferred upward[a]	Attained any two-year-college outcome	Did not attain any two-year-college outcome
Eligibility for the national school lunch program					
Eligible	729	420	772	1,647	11,523
Not eligible	1,051	961	1,836	3,207	13,060
Gender					
Female	396	586	1,032	1,618	9,422
Male	1,384	795	1,576	3,236	15,161
Race/ethnicity					
Asian/Pacific Islander	14	30	76	102	315
Black	186	147	546	766	5,398
Hispanic	635	395	592	1,342	9,091
White	936	800	1,372	2,611	9,592

Note: Findings are not displayed for graduates with two or more race/ethnicity classifications because of small cell sizes. Complementary cell suppression was applied to the next smallest group (American Indian/Alaska Native) to prevent recovery of the masked small cell size counts.
a. Transferred from a two-year college to a four-year college.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

For research question 3 on attaining a baccalaureate degree within seven years of initial enrollment, the analysis included all high school graduates who initially enrolled in a four-year college and graduates who initially enrolled in a two-year college with the intention of transferring to a four-year college (table A10). Students who initially enroll in a two-year college may declare on their enrollment forms an intention to transfer to a four-year college and attain a baccalaureate degree. Students who declared this intention during their initial eligible enrollment term (the term in which they enrolled for at least six credit hours) were included in this analysis. The study team tabulated the numbers of eligible high school graduates who attained a baccalaureate degree within seven years of the first qualifying enrollment term, by disability status, primary disability type, and demographic characteristics (tables A11 and A12).

Table A10. Number of Texas public high school graduates eligible for inclusion in analysis of baccalaureate degree attainment, by disability status and eligibility group, 2006/07–2009/10 graduating cohorts

Disability status	Initially enrolled in a four-year college	Initially enrolled in a two-year college with the intention of attaining a baccalaureate degree	Total number of eligible graduates
Without disability	263,619	116,966	380,585
With any disability	3,176	7,787	10,963

Source: Authors' analysis of data from the Texas Education Agency and the Texas Higher Education Coordinating Board.

Table A11. Number of Texas public high school graduates who initially enrolled in a Texas four-year college or in a two-year college with the intention of attaining a baccalaureate degree, by disability status, primary disability type, and baccalaureate degree attainment within seven years, 2006/07–2009/10 graduating cohorts

Disability status and primary disability type	Attained a baccalaureate degree	Did not attain a baccalaureate degree
Without disability	193,030	187,555
With any disability	1,708	9,255
Auditory impairment	84	161
Autism	136	295
Emotional disturbance	89	791
Learning disability	841	6,144
Orthopedic impairment	58	91
Other health impairment	351	1,462
Speech impairment	55	94
Visual impairment	81	99

Note: Findings are not displayed for graduates with deaf-blindness, traumatic brain injury, or intellectual disability because of small cell sizes.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Table A12. Number of Texas public high school graduates with a disability who initially enrolled in a Texas four-year college or in a two-year college with the intention of attaining a baccalaureate degree, by student subgroup and baccalaureate degree attainment within seven years, 2006/07–2009/10 graduating cohorts

Demographic characteristic	Attained a baccalaureate degree	Did not attain a baccalaureate degree
Eligibility for the national school lunch program		
Eligible	352	3,955
Not eligible	1,356	5,300
Gender		
Female	713	3,286
Male	995	5,969
Race/ethnicity		
Asian/Pacific Islander	58	155
Black	236	2,190
Hispanic	322	3,160
White	1,074	3,679

Note: Findings are not displayed for graduates with two or more race/ethnicity classifications because of small cell sizes. Complementary cell suppression was applied to the next smallest group (American Indian/Alaska Native) to prevent recovery of the masked small cell size counts.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Percentages of high school graduates enrolled in Texas colleges who attained any of the college completion outcomes examined in the study. The percentages of high school graduates in college who attained any of the college completion outcomes examined in the study and the percentages who did not were calculated separately for graduates with a disability and graduates without a disability. The denominator was the number of high school graduates who enrolled in an eligible Texas college within two years. The numerator was the number of high school graduates in college who attained any academic credential or transferred upward within four years for research question 2 and the number who attained a four-year degree within seven years for research question 3. These percentages were calculated for the overall population and for subgroups of high school graduates

disaggregated by demographic characteristics (eligibility for the national school lunch program, gender, and race/ethnicity), primary disability type, institution type of initial enrollment (two-year or four-year), and Texas geographic region.

Method for classifying the magnitude of group contrasts

The study team calculated the magnitude of group differences, using standardized differences, for some of the findings presented in the main report. The study team designated a standardized difference of an absolute value of 0.25 standard deviation units or greater as representing a substantial difference.

Because the main report presents the findings as percentages, the study team computed standardized differences using the Cox index method (Sanchez-Meca et al., 2003; What Works Clearinghouse, 2017). Briefly, the method standardizes differences by dividing the log of the odds ratios between two groups by a constant, 1.65; this value was chosen for the constant because the rescaled log odds ratio produces estimates that more closely approximate a normal distribution (Sanchez-Meca et al., 2003):

$$Cox\ index = \frac{ln\ (OR)}{1.65}$$

where *ln(OR)* is calculated by taking the natural logarithm of odds ratios between two groups:

$$ln\ (OR) = ln\left(\frac{p_i/(1-p_i)}{p_c/(1-p_c)}\right)$$

The study team applied the Cox index calculation for key group differences of interest, primarily to compare enrollment and college completion among high school graduates with a disability by demographic subgroups, and between graduates with a disability and graduates without a disability. For research question 1 the study team applied the Cox index to compare enrollment in two-year and four-year colleges among graduates with a disability, enrollment by graduates with a disability in different demographic subgroups, and enrollment in two-year and four-year colleges between graduates with a disability and graduates without a disability (see figures C1 and C2 in appendix C). For research question 2 the study team applied the Cox index to compare attainment of any of the two-year-college outcomes by high school graduates with a disability in different demographic subgroups and between graduates with a disability and graduates without a disability (see figures C3 and C5 in appendix C). For research question 3 the study team applied the Cox index to compare attainment of a baccalaureate degree by high school graduates with a disability in different demographic subgroups and between graduates with a disability and graduates without a disability, overall and by institution type (two-year or four-year) where initially enrolled (see figures C4 and C6 in appendix C).[6]

For each of these key comparisons of interest, the study team calculated the standardized difference between paired groups of students. The report presents these findings as the differences between a group of interest and a reference group. For example, the subgroup of high school graduates with a disability who were eligible for the national school lunch program was compared with a reference subgroup of graduates with a disability who were not eligible. All high school graduates with a disability were compared with a reference group of all graduates without a disability.

The study team did not apply the Cox index calculation when examining variability among graduates with a disability by primary disability type. The study team determined there was no useful reference group for students with different disability types. This is because of the large differences in incidence among disability types (nearly two-thirds of graduates with a disability in the study were designated by their high school as having a learning

[6] For parsimony the report does not present Cox index statistics or standardized differences for subgroup enrollment in two-year colleges compared with four-year colleges or subgroup attainment of the different types of two-year-college outcomes measured. The report presents the percentages of high school graduates who attained these outcomes.

disability) and because of the considerable qualitative differences in the severity of disabilities that may affect students' academic outcomes across disability types.

Limitations

This study had several limitations. First, in order to focus on students near the point of postsecondary transition, the study was limited to high school students who were designated by their school district as having a disability in grade 12 and who graduated. Students who received special education services before grade 12 but not in grade 12 and students who did not graduate from high school were not considered graduates with a disability for this study. Conditioning study eligibility on graduation creates a population of students who are more likely to attain postsecondary outcomes than the broader population of all high school students with a disability, because academically struggling students with a disability are more likely to drop out before graduation. In addition, districts might vary in how they designate disabilities, while changes in state and local policies might also affect which students are designated as having a disability. In Texas the percentage of public school students designated for special education services fell from 11.6 percent to 8.6 percent between 2003/04 and 2016/17 (Texas Education Agency, 2004, 2017). One contributing factor to the decline was the adoption of a new accountability indicator designed to reduce overidentification of students eligible for special education services, which penalized school districts that exceeded 8.5 percent of students designated for special education services (Rosenthal, 2016). Because of variability in local designation of student disabilities, it is possible that the data used for this study designated fewer students as having disabilities than the true population of students with different types of qualifying disabilities established in the Individuals with Disabilities Education Improvement Act of 2004.

Second, the study examined college enrollment in a limited set of Texas colleges with available data within a two-year window of high school graduation. The data from the Texas Higher Education Coordinating Board did not include information on enrollment in private two-year colleges, for-profit colleges, or colleges outside Texas. Enrollment was limited to a two-year window because a large majority of high school graduates who ever enroll in college initially enroll within two years. Allowing a longer window of time would also have required going further back in time for high school graduating cohorts. Student enrollment and completion numbers would likely be higher than those reported in the study if data were available for students in other types of colleges and if a longer window of time had been allowed for enrollment. Because college completion is conditional on college enrollment (and high school graduation), the study may overstate or understate college completion among high school graduates in Texas, depending on which students are not observed in the analysis.

Third, the study was limited to descriptive analysis of college enrollment and completion patterns. Due to limitations in data availability, and in accordance with the purpose of the study, the study did not examine factors that are likely to affect postsecondary success, such as institutional context or climate, student motivation or academic ability, and whether and how much students access special services for students with a disability. Given the dearth of information on postsecondary experiences and outcomes for students with a disability, both in Texas and nationally, this descriptive analysis can help stakeholders understand the observable patterns in the data and explore opportunities for further research and data collection related to students with a disability in college.

Finally, the generalizability of findings may be limited geographically to Texas and temporally to the cohorts and years retrospectively examined. Factors affecting students' postsecondary success may differ across states or across time within a state, such that the patterns observed in this study might not be observed elsewhere or might not persist across subsequent cohorts of Texas high school graduates with a disability. However, considering the large scale of the study, the results should be informative to colleges in both Texas and other states that are interested in postsecondary outcomes for students with a disability.

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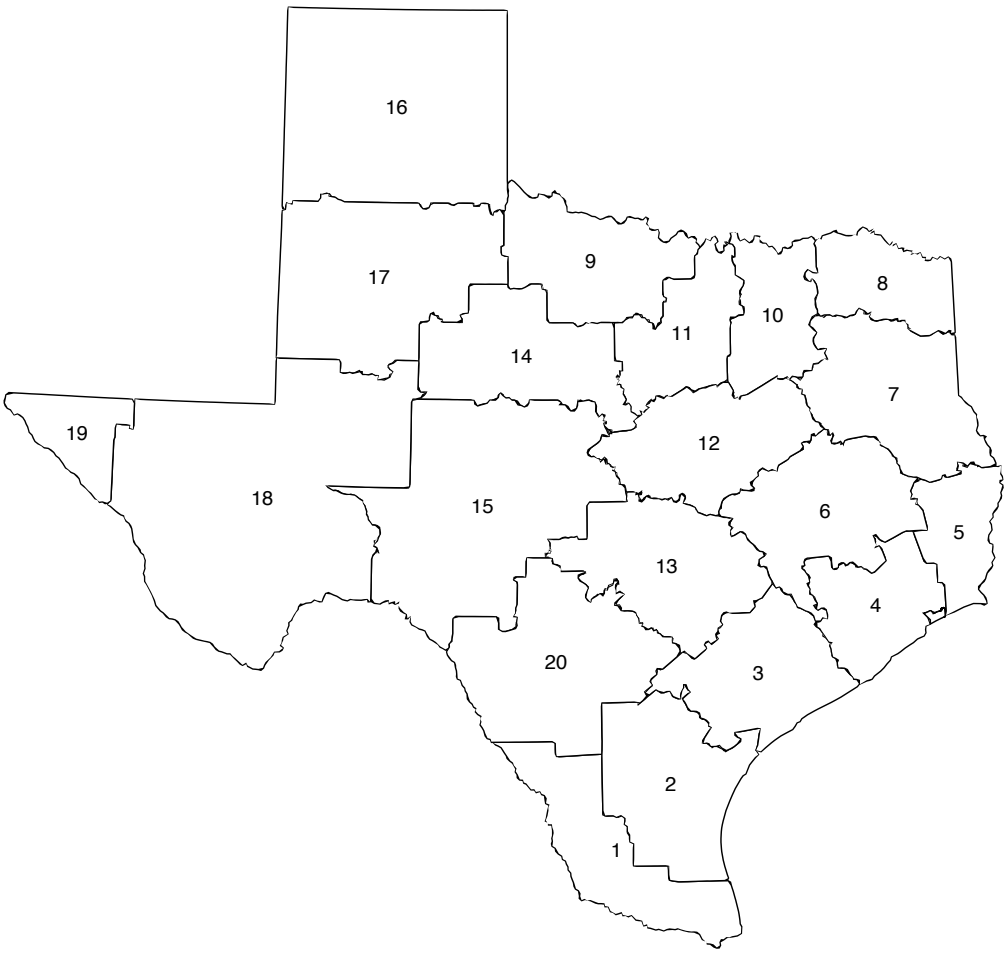
Appendix B. Supplemental findings by Texas geographic region

This appendix includes supplemental findings for enrollment in Texas colleges and attainment of college outcomes among high school graduates with a disability, by Texas region.

Figure B1. Map of Texas Education Service Center regions



Region 1: Edinburg
Region 2: Corpus Christi
Region 3: Victoria
Region 4: Houston
Region 5: Beaumont
Region 6: Huntsville
Region 7: Kilgore
Region 8: Mt. Pleasant
Region 9: Wichita Falls
Region 10: Richardson
Region 11: Fort Worth
Region 12: Waco
Region 13: Austin
Region 14: Abilene
Region 15: San Angelo
Region 16: Amarillo
Region 17: Lubbock
Region 18: Midland
Region 19: El Paso
Region 20: San Antonio

Source: Texas Education Agency.

Table B1. Number and percentage of 2006/07–2009/10 Texas public high school graduates with a disability who enrolled in a Texas college within two years of graduation, by college type where initially enrolled and Texas Education Service Center region of students' last high school

Texas Education Service Center region	Two-year college		Four-year college		Total two-year and four-year colleges		Did not enroll within two years	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Abilene	542	27.9	51	2.6	593	30.5	1,349	69.5
Amarillo	630	28.0	49	2.2	679	30.2	1,572	69.8
Austin	1,901	24.7	309	4.0	2,210	28.8	5,472	71.2
Beaumont	581	23.1	84	3.3	665	26.5	1,848	73.5
Corpus Christi	729	23.8	81	2.6	810	26.5	2,247	73.5
Edinburg	2,581	32.5	154	1.9	2,735	34.4	5,207	65.6
El Paso	1,048	32.8	105	3.3	1,153	36.1	2,042	63.9
Fort Worth	2,690	27.0	265	2.7	2,955	29.7	6,995	70.3
Houston	4,979	27.1	712	3.9	5,691	30.9	12,714	69.1
Huntsville	882	22.3	94	2.4	976	24.7	2,974	75.3
Kilgore	1,379	25.1	178	3.2	1,557	28.4	3,929	71.6
Lubbock	482	21.4	51	2.3	533	23.7	1,718	76.3
Midland	420	22.2	52	2.7	472	24.9	1,424	75.1
Mt Pleasant	654	30.7	35	1.6	689	32.3	1,444	67.7
Richardson	4,582	30.1	508	3.3	5,090	33.4	10,153	66.6
San Angelo	354	22.7	72	4.6	426	27.3	1,133	72.7
San Antonio	2,804	29.4	243	2.5	3,047	31.9	6,500	68.1
Victoria	401	24.3	19	1.2	420	25.5	1,230	74.5
Waco	1,576	33.4	83	1.8	1,659	35.1	3,063	64.9
Total number of graduates	29,437		3,176		32,613		74,123	

Note: Findings are not displayed for graduates who could not be linked to a Texas Education Service Center region because of small cell sizes. Complementary cell suppression was applied to the next smallest group (Wichita Falls) to prevent recovery of the masked small cell size counts. Percentages may not sum to totals or to 100 because of rounding.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Table B2. Number and percentage of high school graduates with a disability who attained a two-year credential or transferred upward within four years of initial enrollment in a Texas two-year college, by Education Service Center region of students' last high school, 2006/07–2009/10 graduating cohorts in Texas

Texas Education Service Center region	Attained a certificate		Attained an associate degree		Transferred upward[a]		Attained any two-year-college outcome		Did not attain any two-year-college outcome	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Abilene	53	9.8	22	4.1	45	8.3	109	20.1	433	79.9
Amarillo	75	11.9	31	4.9	41	6.5	123	19.5	507	80.5
Austin	55	2.9	51	2.7	182	9.6	259	13.6	1,642	86.4
Beaumont	49	8.4	43	7.4	43	7.4	113	19.4	468	80.6
Corpus Christi	56	7.7	19	2.6	30	4.1	94	12.9	635	87.1
Edinburg	214	8.3	110	4.3	171	6.6	417	16.2	2,164	83.8
El Paso	29	2.8	50	4.8	78	7.4	117	11.2	931	88.8
Fort Worth	124	4.6	169	6.3	309	11.5	485	18.0	2,205	82.0
Houston	235	4.7	257	5.2	570	11.4	898	18.0	4,081	82.0
Huntsville	49	5.6	37	4.2	116	13.2	174	19.7	708	80.3
Kilgore	139	10.1	85	6.2	106	7.7	279	20.2	1,100	79.8
Lubbock	51	10.6	13	2.7	32	6.6	86	17.8	396	82.2
Midland	35	8.3	19	4.5	27	6.4	63	15.0	357	85.0
Mt Pleasant	83	12.7	29	4.4	32	4.9	128	19.6	526	80.4
Richardson	216	4.7	214	4.7	434	9.5	714	15.6	3,868	84.4
San Angelo	49	13.8	17	4.8	19	5.4	74	20.9	280	79.1
San Antonio	99	3.5	119	4.2	213	7.6	342	12.2	2,462	87.8
Victoria	45	11.2	20	5.0	28	7.0	87	21.7	314	78.3
Waco	100	6.3	66	4.2	106	6.7	236	15.0	1,340	85.0
Total number of graduates	1,780		1,381		2,608		4,854		24,583	

Note: Findings are not displayed for graduates who could not be linked to a Texas Education Service Center region because of small cell sizes. Complementary cell suppression was applied to the next smallest group (Wichita Falls) to prevent recovery of the masked small cell size counts. Two-year-college outcomes are not mutually exclusive. The number of graduates who achieved each of the two-year-college outcomes does not sum to the total number of graduates who achieved at least one two-year-college outcome.

a. Transferred from a two-year college to a four-year college.

Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Table B3. Number and percentage of high school graduates with a disability who attained a baccalaureate degree within seven years of initial college enrollment, by Texas Education Service Center region of students' last high school, 2006/07–2009/10 graduating cohorts in Texas

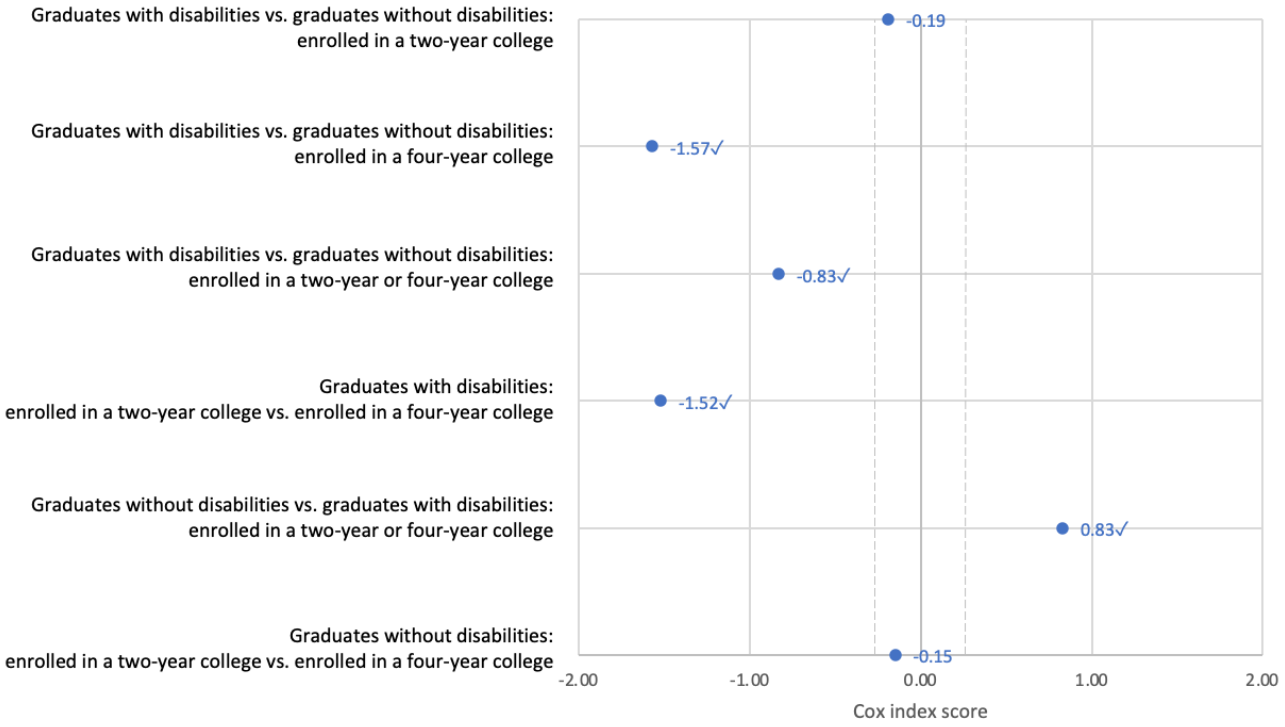
Texas Education Service Center region	Attained a baccalaureate degree		Did not attain a baccalaureate degree	
	Number	Percent	Number	Percent
Abilene	25	17.4	119	82.6
Amarillo	19	13.0	127	87.0
Austin	180	20.0	722	80.0
Beaumont	31	21.4	114	78.6
Corpus Christi	23	13.5	147	86.5
Edinburg	82	10.0	742	90.0
El Paso	28	22.6	96	77.4
Fort Worth	186	19.9	750	80.1
Houston	406	20.6	1,561	79.4
Huntsville	63	20.9	239	79.1
Kilgore	34	7.3	433	92.7
Lubbock	19	9.6	179	90.4
Midland	16	17.2	77	82.8
Mt Pleasant	12	6.1	184	93.9
Richardson	319	17.9	1,465	82.1
San Angelo	14	10.9	114	89.1
San Antonio	180	9.1	1,791	90.9
Victoria	11	14.5	65	85.5
Waco	40	12.4	282	87.6
Total number of graduates	1,708		9,255	

Note: Findings are not displayed for graduates who could not be linked to a Texas Education Service Center region because of small cell sizes. Complementary cell suppression was applied to the next smallest group (Wichita Falls) to prevent recovery of the masked small cell size counts. Counts by two-year outcome type do not sum to the total number of graduates due to suppression. Numbers include graduates who initially enrolled in a four-year college or who initially enrolled in a two-year college with the intention of transferring (see appendix A).
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Appendix C. Standardized group differences

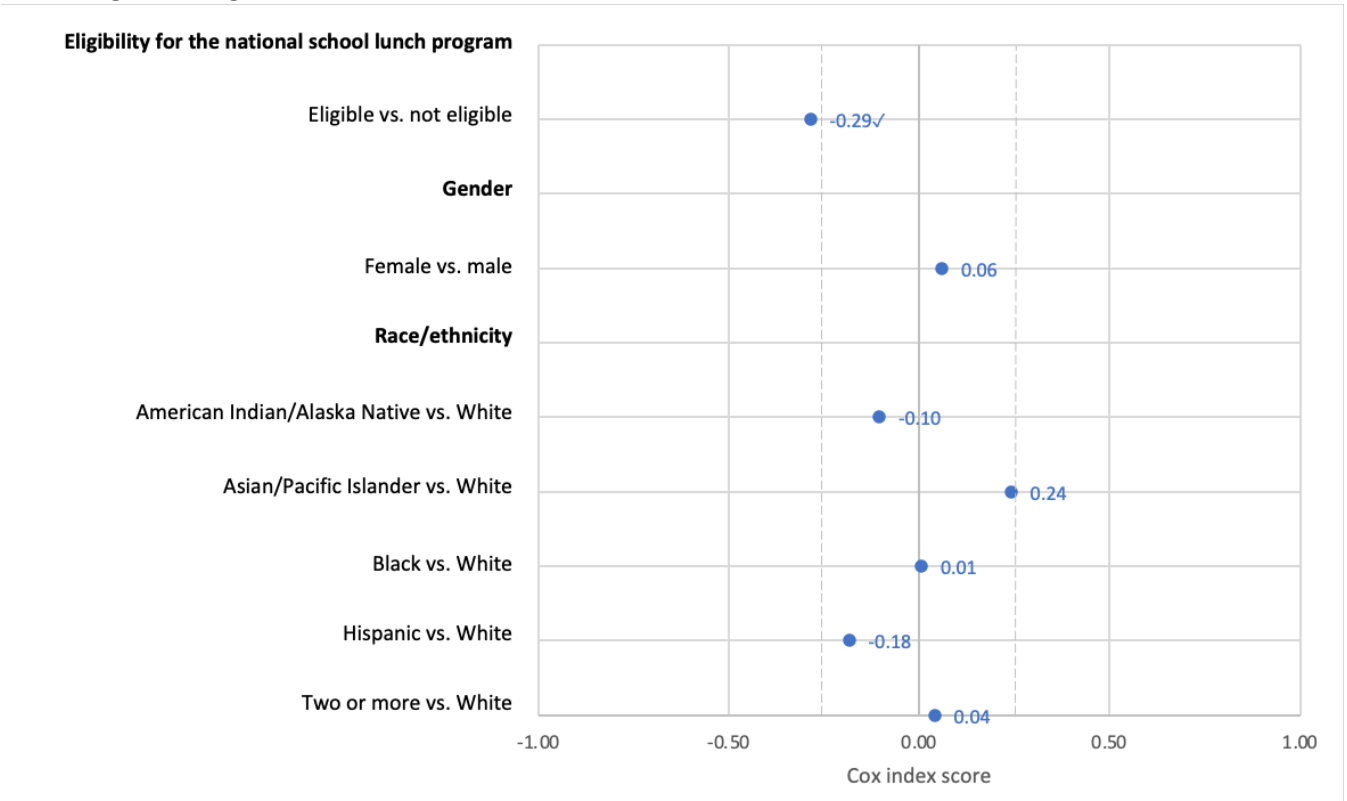
This appendix provides the Cox index score for each group contrast presented in the main report.

Figure C1. Cox index standardized differences in the percentages of high school graduates who enrolled in a Texas two-year or four-year college within two years of graduation, by high school disability status, 2006/07–2009/10 graduating cohorts in Texas



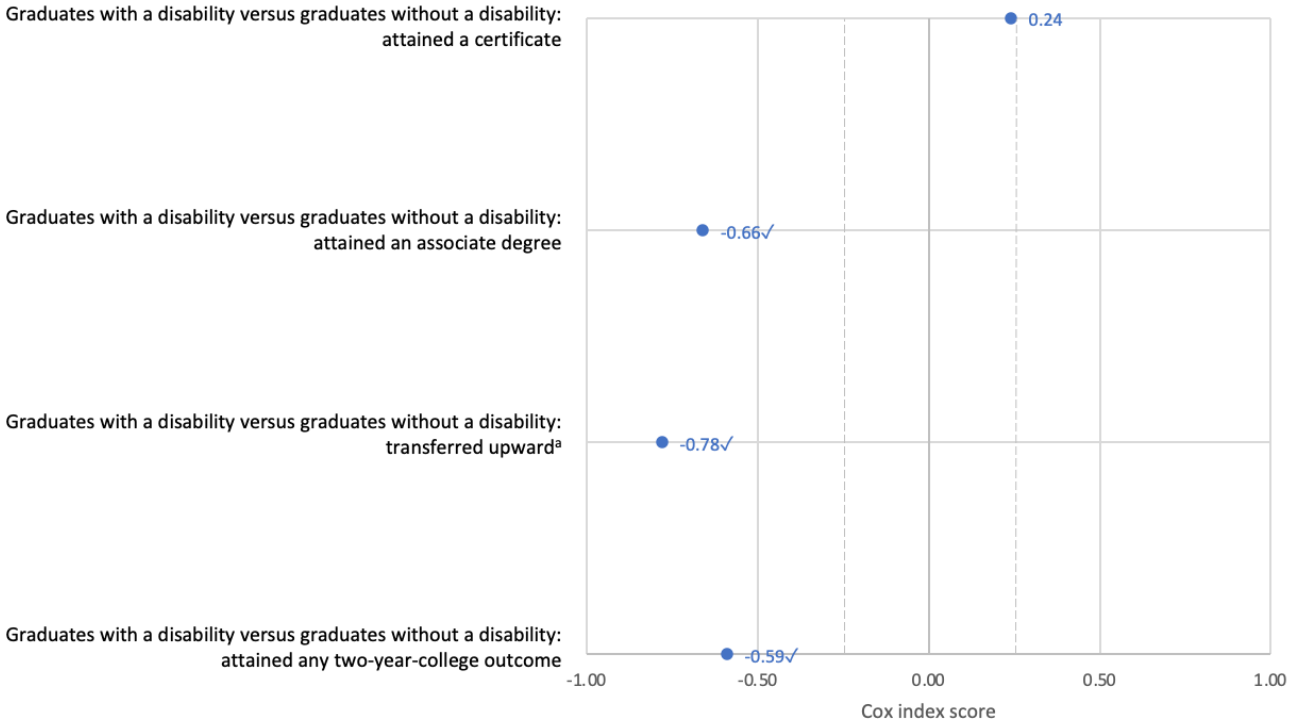
Note: Dashed vertical lines denote the cutoffs for substantial group differences (–0.25 standard deviation units or greater magnitude for negative differences and 0.25 standard deviation units or greater magnitude for positive differences). Check marks indicate a substantial difference in the outcome of interest between the primary subgroup and the reference group. Data from this figure are referenced in figure 1 in the main report.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Figure C2. Cox index standardized differences in the percentages of high school graduates with a disability who enrolled in a Texas college within two years of graduation, by demographic characteristics, 2006/07–2009/10 graduating cohorts in Texas



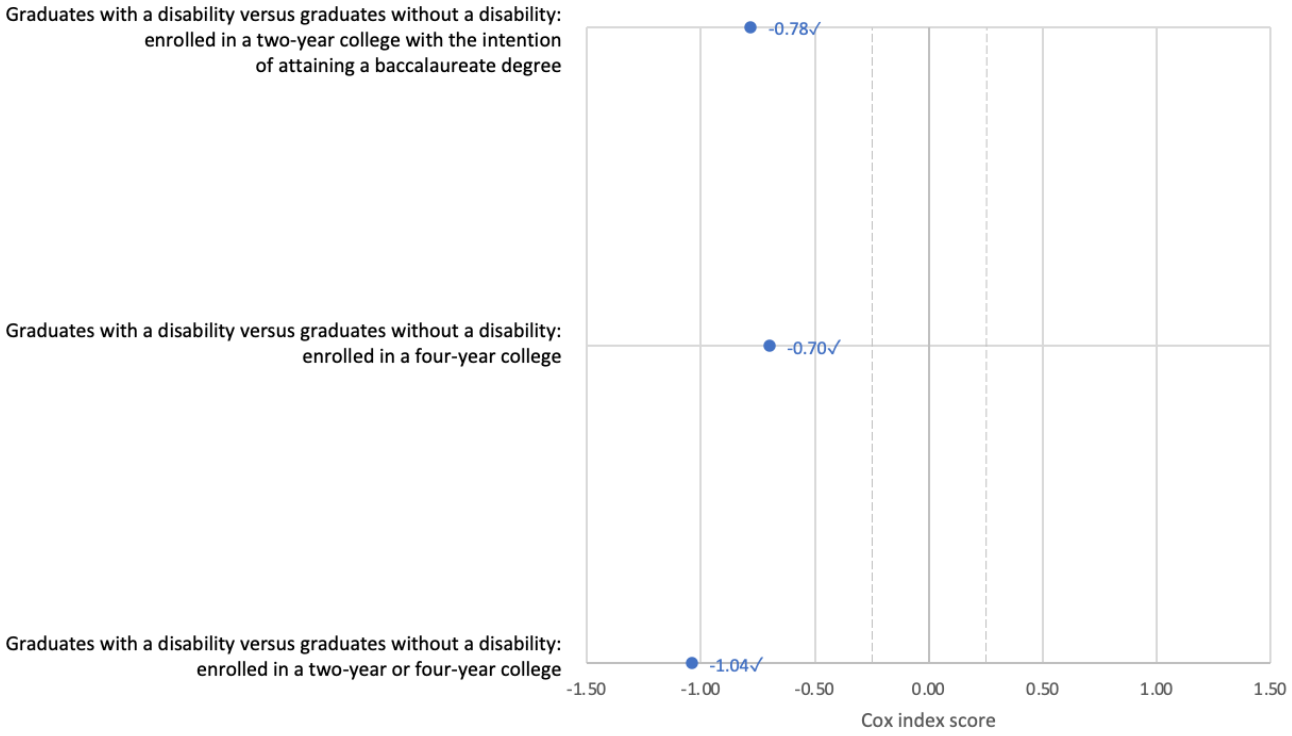
Note: Dashed vertical lines denote cutoffs for substantial group differences (–0.25 standard deviation units or greater magnitude for negative differences and 0.25 standard deviation units or greater magnitude for positive differences). Check marks indicate a substantial difference in the outcome of interest between the primary subgroup and the reference group. Data from this figure are referenced in figure 2 in the main report.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Figure C3. Cox index standardized differences in the percentages of high school graduates who attained a two-year credential or transferred upward within four years of initial enrollment in a Texas two-year college, by disability status, 2006/07–2009/10 graduating cohorts in Texas



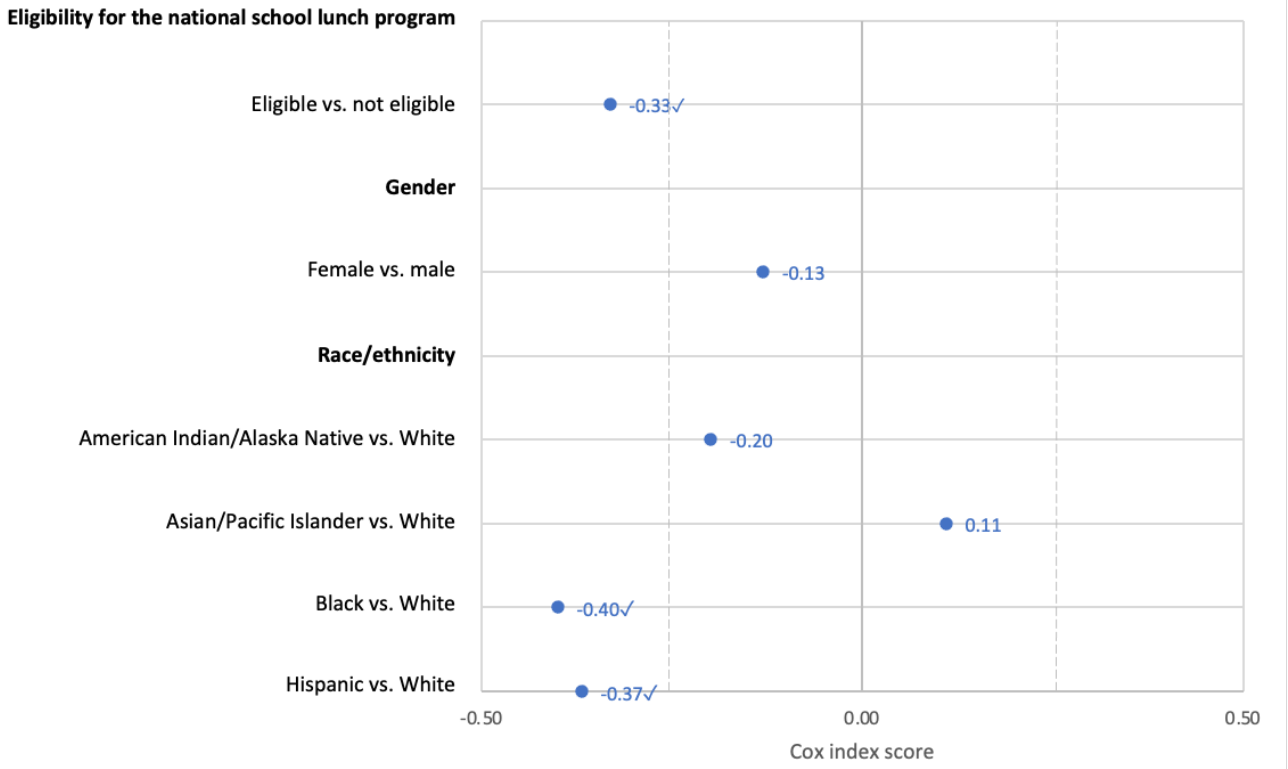
Note: Dashed vertical lines denote cutoffs for substantial group differences (−0.25 standard deviation units or greater magnitude for negative differences and 0.25 standard deviation units or greater magnitude for positive differences). Check marks indicate a substantial difference in the outcome of interest between the primary subgroup and the reference group. Data from this figure are referenced in figure 4 in the main report.
a. Transferred from a two-year college to a four-year college.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Figure C4. Cox index standardized differences in the percentages of high school graduates who completed a baccalaureate degree within seven years of initial enrollment in a Texas college, by disability status and institution type where initially enrolled, 2006/07–2009/10 graduating cohorts in Texas



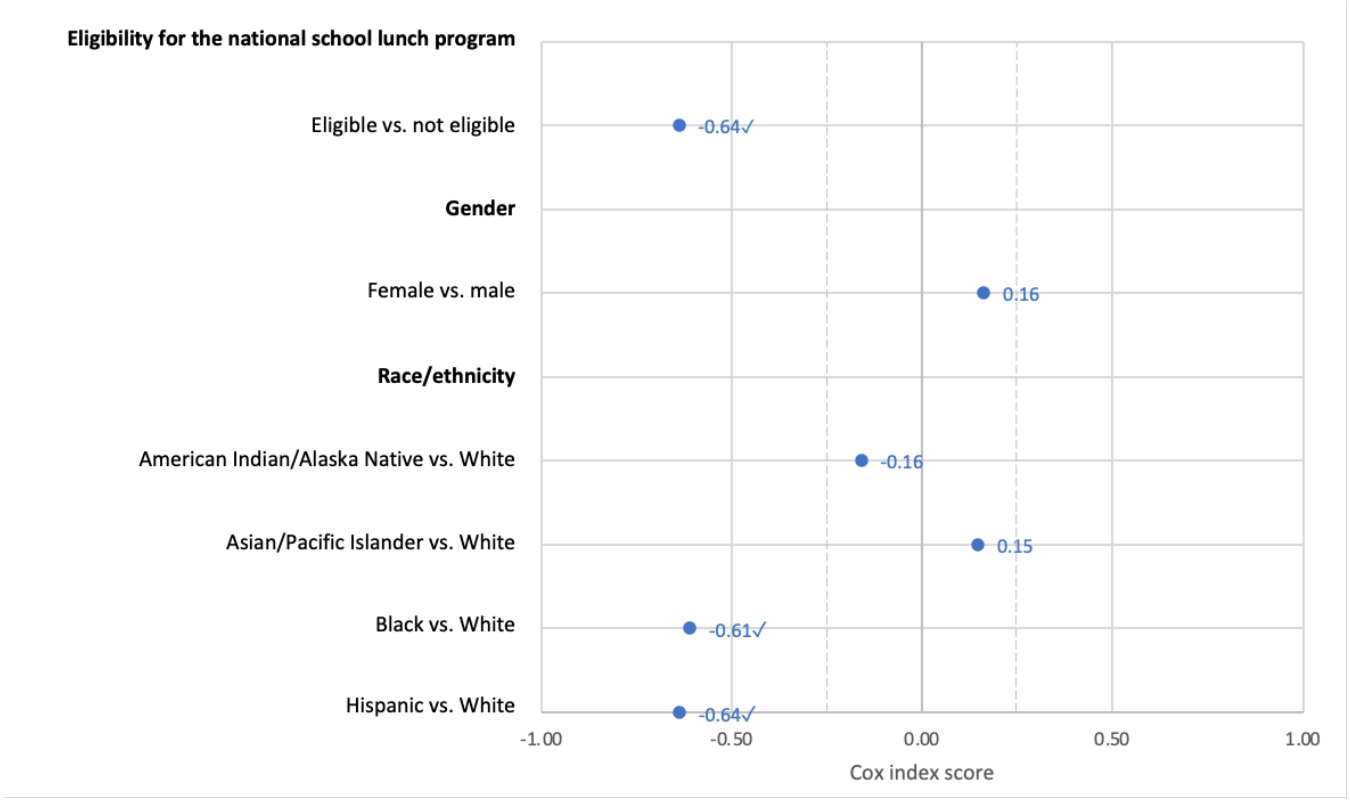
Note: Dashed vertical lines denote cutoffs for substantial group differences (–0.25 standard deviation units or greater magnitude for negative differences and 0.25 standard deviation units or greater magnitude for positive differences). Check marks indicate a substantial difference in the outcome of interest between the primary subgroup and the reference group. Data from this figure are referenced in figure 5 in the main report.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Figure C5. Cox index standardized differences in the percentages of high school graduates with a disability who completed a credential or transferred upward within four years of initial enrollment in a Texas two-year college, by demographic characteristics, 2006/07–2009/10 graduating cohorts in Texas



Note: Dashed vertical lines denote cutoffs for substantial group differences (–0.25 standard deviation units or greater magnitude for negative differences and 0.25 standard deviation units or greater magnitude for positive differences). Check marks indicate a substantial difference in the outcome of interest between the primary subgroup and the reference group. Data from the figure are referenced in figure 6 in the main report.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.

Figure C6. Cox index standardized differences in the percentages of high school graduates with a disability who completed a baccalaureate degree within seven years of initial enrollment in a Texas college, by demographic characteristics, 2006/07–2009/10 graduating cohorts in Texas



Note: Dashed vertical lines denote cutoffs for substantial group differences (–0.25 standard deviation units or greater magnitude for negative differences and 0.25 standard deviation units or greater magnitude for positive differences). Check marks indicate a substantial difference in the outcome of interest between the primary subgroup and the reference group. Data from this figure are referenced in figure 7 in the main report.
Source: Authors' analysis of data from Texas state longitudinal system administrative records accessed at the Texas Education Research Center.