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Factors and Future Projections for K–12 Declining Enrollment

Technical Appendices

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Supported with funding from the Sobrato Family Foundation

Appendix A. Supplemental Tables and Figures

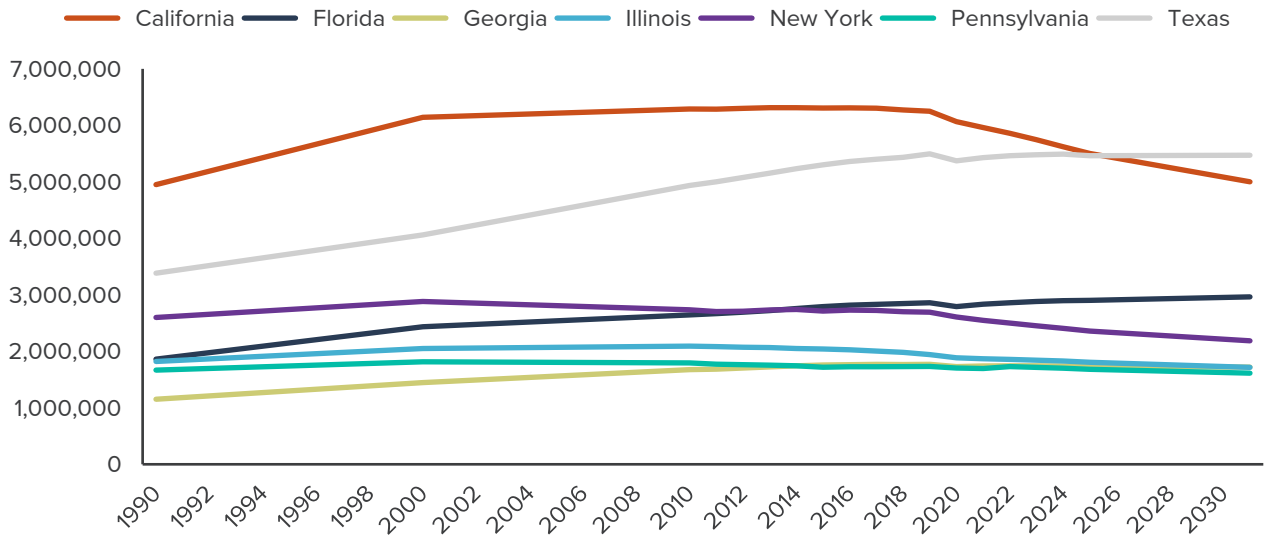
TABLE A1

County to region mapping

Region	Counties
Bay Area	Alameda; Contra Costa; Marin; Napa; San Francisco; San Mateo; Santa Clara; Solano; Sonoma
Central Coast	Monterey; San Benito; San Luis Obispo; Santa Barbara; Santa Cruz
Central Valley - Northern Valley	Butte; Colusa; Glenn; Shasta; Sutter; Tehama; Trinity; Yuba
Central Valley - Sacramento Metro	El Dorado; Placer; Sacramento; Yolo
Central Valley - San Joaquin Valley	Fresno; Kern; Kings; Madera; Merced; San Joaquin; Stanislaus; Tulare
Greater Los Angeles	Orange; Los Angeles; Ventura
Inland Empire	Riverside; San Bernardino;
North Coast and North State	Del Norte; Humboldt; Lake; Lassen; Mendocino; Modoc; Plumas; Siskiyou
San Diego & Imperial	Imperial; San Diego
Sierra	Alpine; Amador; Calaveras; Inyo; Mariposa; Mono; Nevada; Sierra; Tuolumne

FIGURE A1

Past and projected enrollment for California and other large states

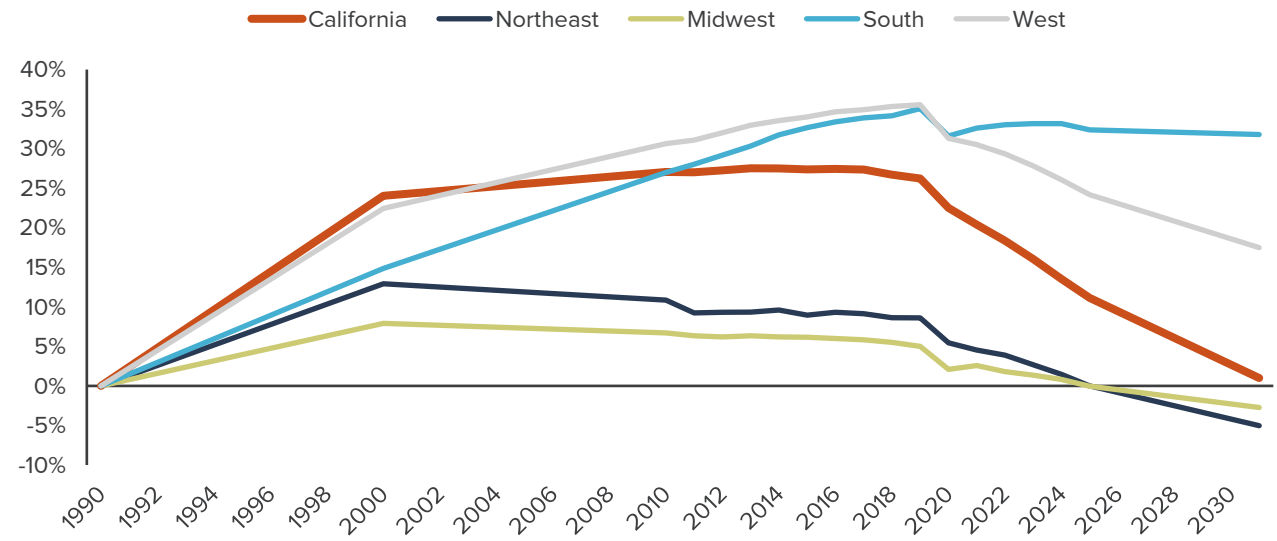


SOURCE: National Center for Education Statistics; Authors' calculations.

NOTE: Data shown for 2022-23 onwards are projections.

FIGURE A2

National NCES for California and by region, in % relative to 2021 enrollment

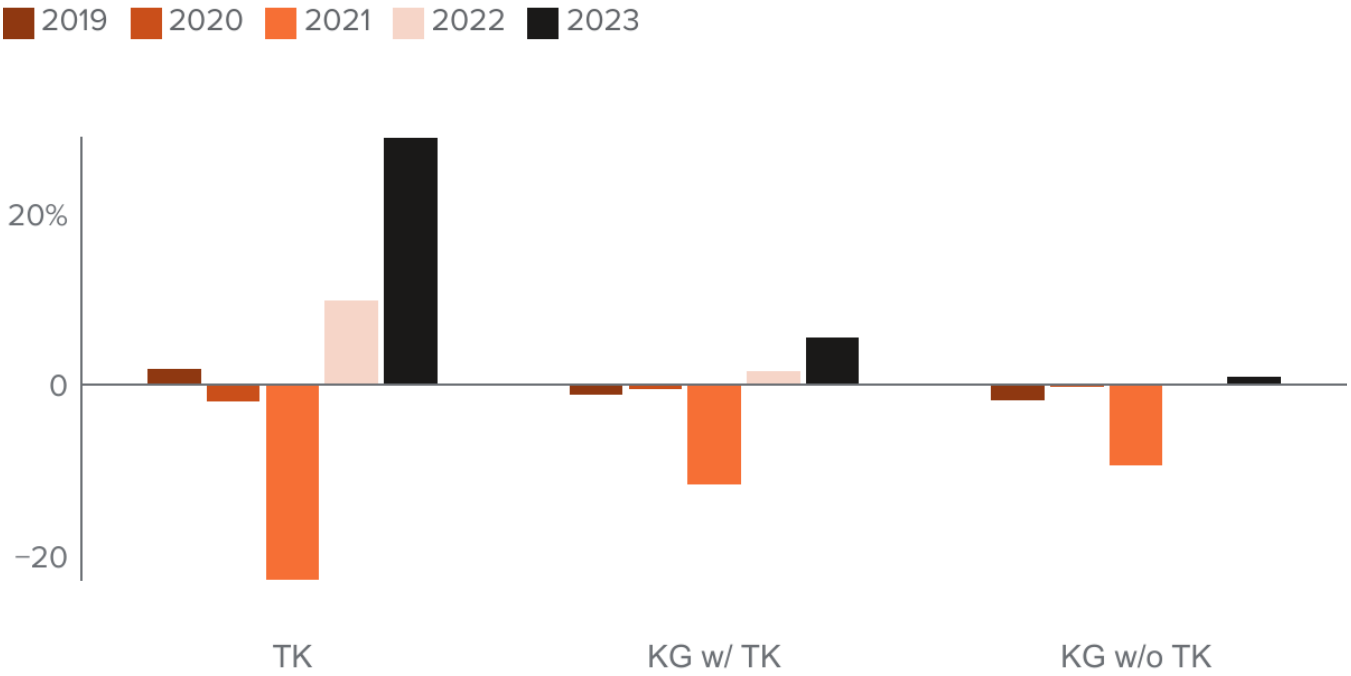


SOURCE: National Center for Education Statistics; Authors' calculations.

NOTE: Data shown for 2022-23 onwards are projections.

FIGURE A3

Transitional Kindergarten dominates the recent surge in Kindergarten enrollment

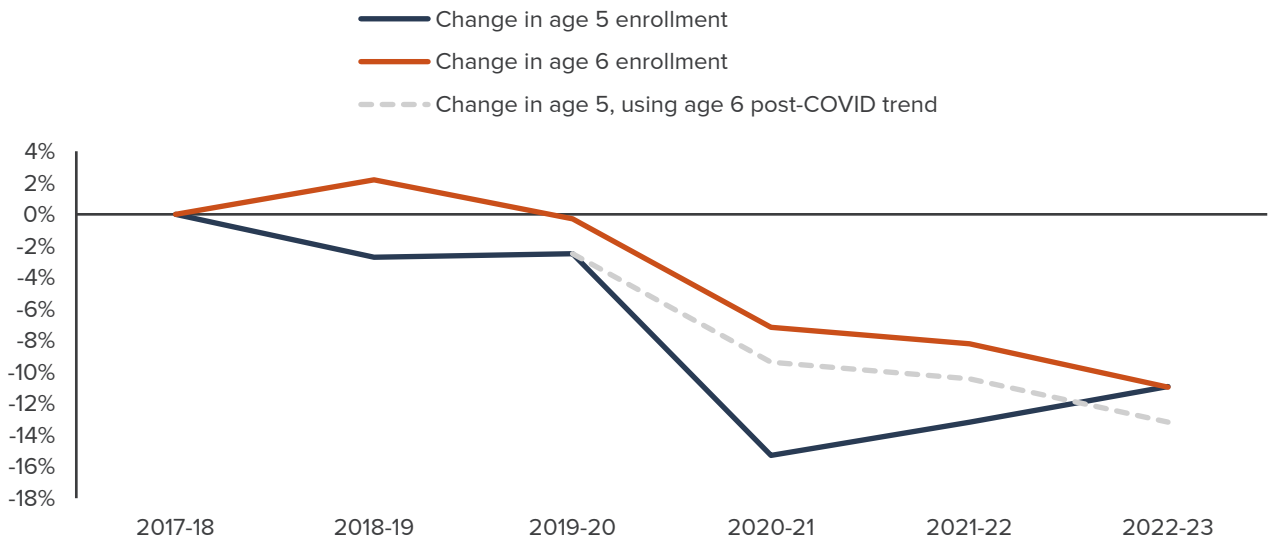


SOURCE: Author calculations using California Department of Education data.

NOTES: Data used for the percentage change in TK enrollment in 2023 was estimated using 2022 TK enrollment and the 2023 change in four-year-old enrollment in kindergarten.

FIGURE A4

Redshirting—Age 5 vs Age 6 KG enrollment

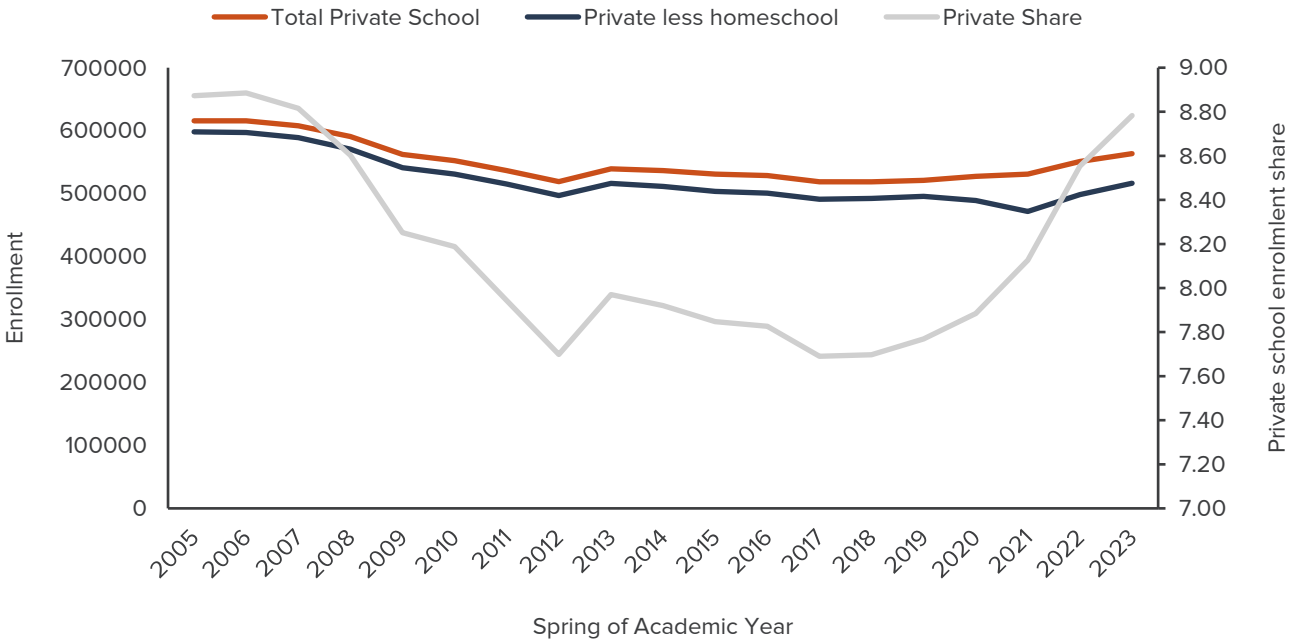


SOURCE: California Department of Education.

NOTE: Percent change relative to 2017-18 shown. Dashed line shows the counterfactual change in age 5 enrollment, had it followed the post-COVID trend for age 6 enrollment.

FIGURE A5

Private school share and private school enrollment, by year

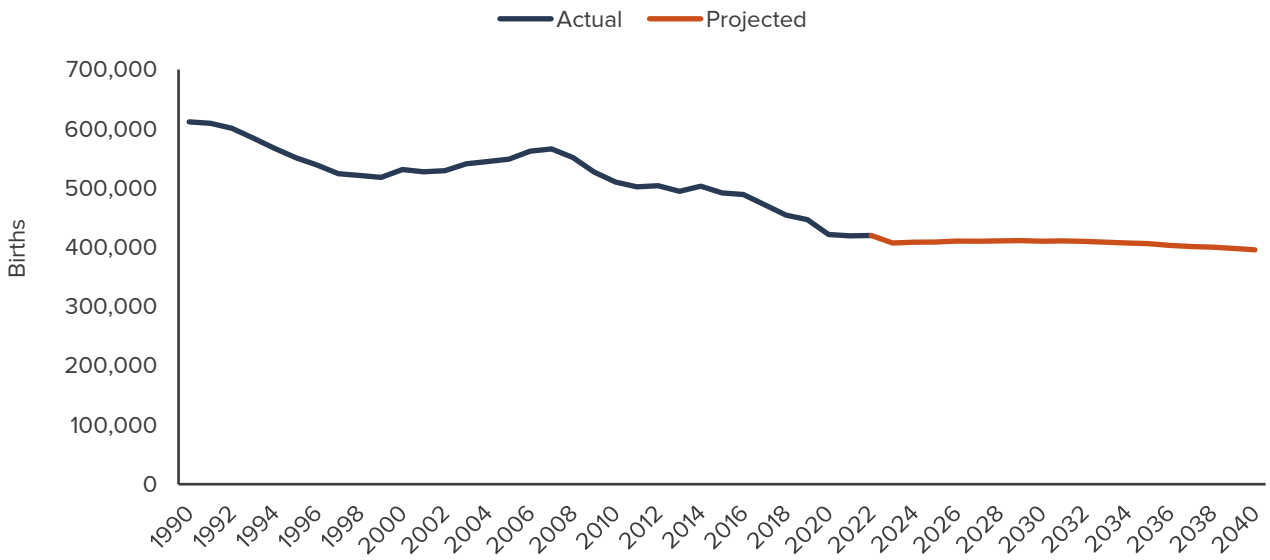


SOURCE: California Department of Education.

NOTE: Enrollment totals for the spring of the academic year shown (e.g. 2023 = 2022-23). Private school share (left axis) denotes share of total public and private enrollment in private schools (including homeschools).

FIGURE A6

Births, past and projected

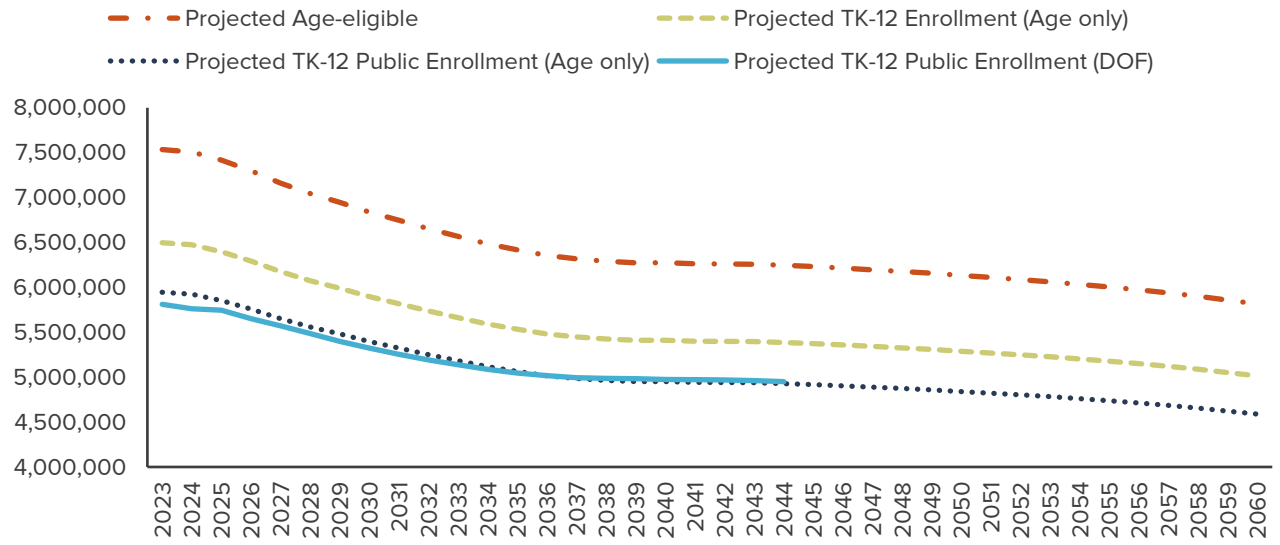


SOURCE: California Department of Finance.

NOTE: Data after 2022 are projected.

FIGURE A7

Projecting enrollment using population age projections

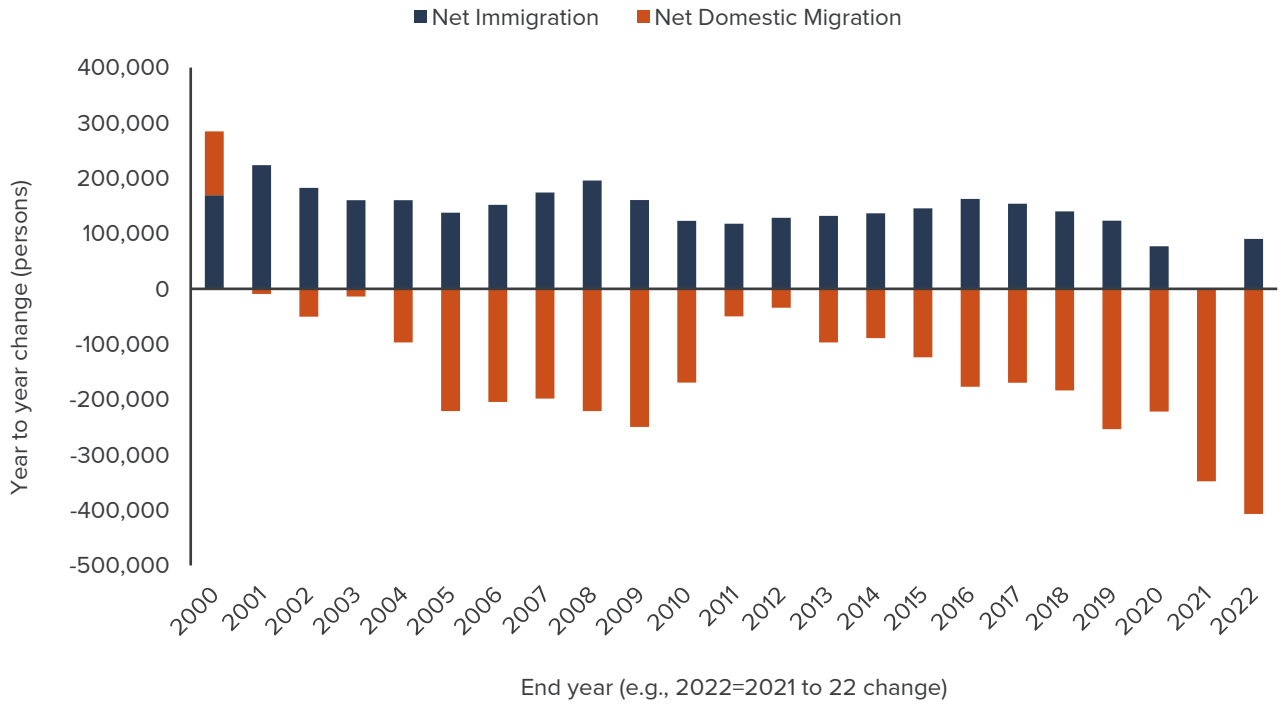


SOURCE: California Department of Finance; Authors' calculations

NOTE: Age-eligible projections based on projected 4-18 year olds in California. For years prior to universal TK expansion in 2025, projections assume an equal distribution of 4-year olds born across months of the year to determine the share eligible. Projected enrollment overall and for public TK-12 schools combines the age-eligible projections with a constant factor for private and public shares based on actual population estimates from 2020 thru 2022. Actual DOF projections using grade progression ratios and additional data are reported by the solid line, for comparison.

FIGURE A8

Net domestic outflows have accelerated, while net immigration has generally been positive

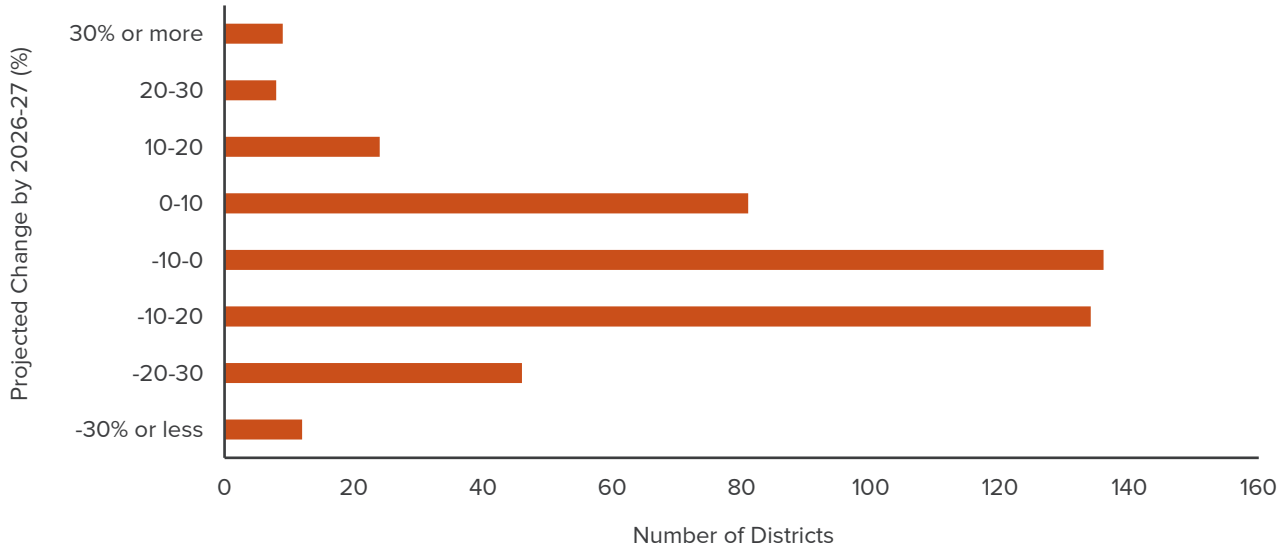


SOURCE: California Department of Finance.

NOTE: Change reported from July 1 of prior to July 1 of listed year.

FIGURE A9

Distribution of 5-year projections of district-level declines (DOF experimental projections)

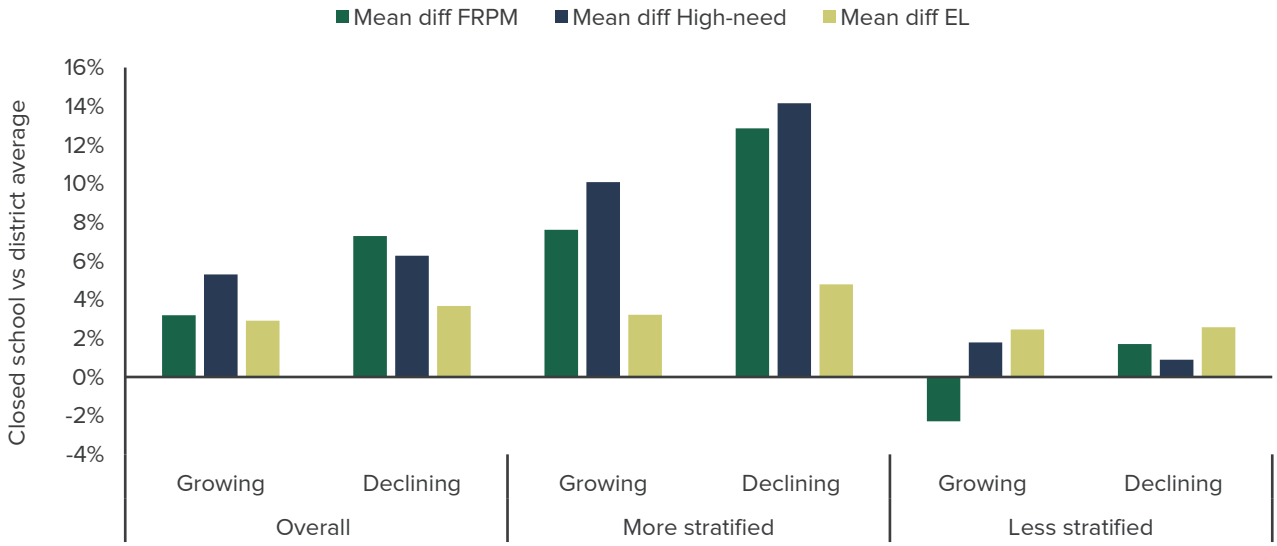


SOURCE: California Department of Finance; Authors' calculations.

NOTE: District-level projections are only available for larger districts. 5-year changes using projections based on one-year grade progression ratios reported.

FIGURE A10

In declining districts, closed schools have higher low-income, EL shares than schools that remain open (1996-2023)

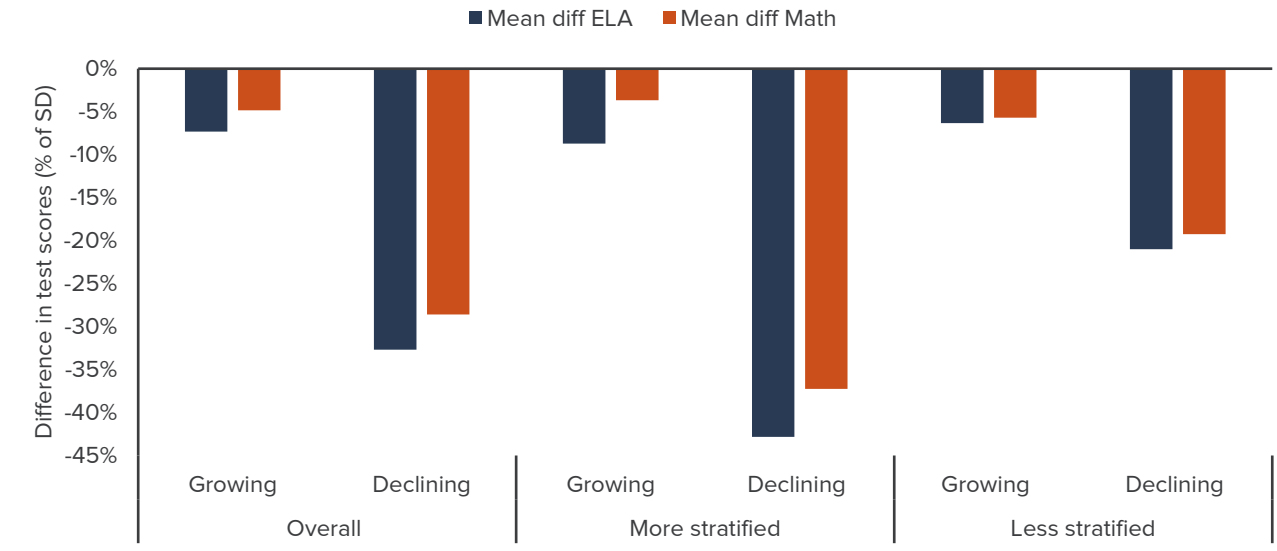


SOURCE: California Department of Education; Authors' calculations.

NOTE: More (less) stratified defined as being above (below) the median in the difference between the districtwide average school share low-income and the highest school share low-income in a district. Growing and declining districts defined using the lagged 5-year enrollment change at the time of the school closure. Mean differences for each closed school calculated using leave-out means that exclude that school from the districtwide average. Data span 1995-96 to 2022-23.

FIGURE A11

In declining districts, closed schools have lower test scores than schools that remain open (2003-2023)

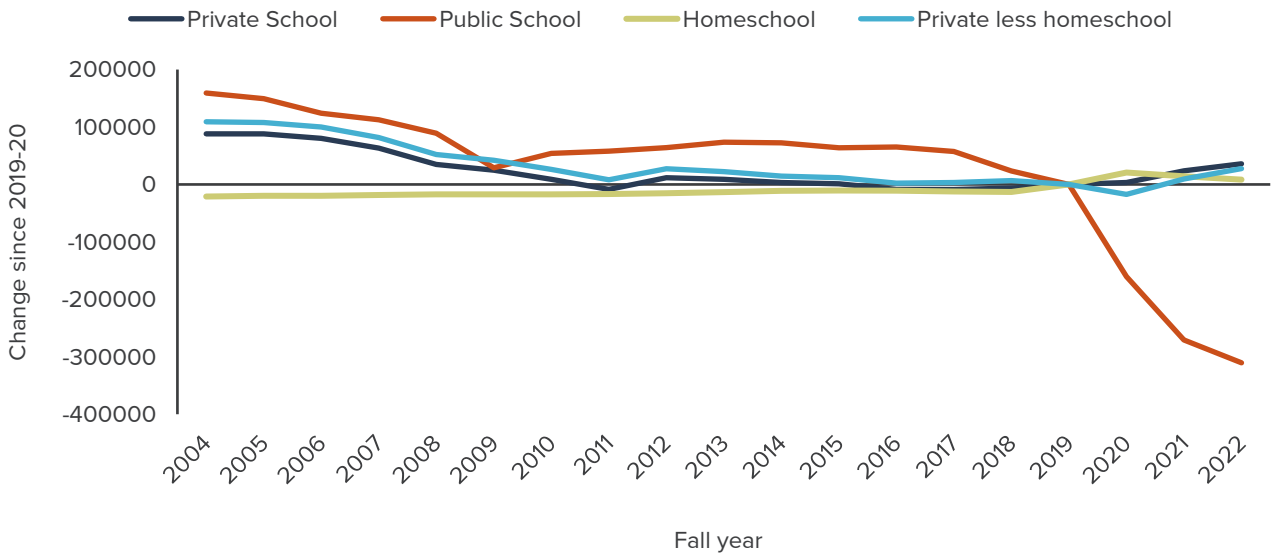


SOURCE: California Department of Education; Authors' calculations.

NOTE: Mean differences reported in standard deviation units. More (less) stratified defined as being above (below) the median in the difference between the districtwide average school share low-income and the highest school share low-income in a district. Growing and declining districts defined using the lagged 5-year enrollment change at the time of the school closure. Mean differences for each closed school calculated using leave-out means that exclude that school from the districtwide average. Data span 2002-03 to 2022-23 and include both CST and SBAC scores.

FIGURE A12

Public, private, homeschool, and private non-homeschool enrollment since 2004, relative to 2019 levels



SOURCE: California Department of Education.

NOTE: Enrollment relative to 2019-20 levels shown for private (dark green) and public (teal) school enrollment.

TABLE A2

Relationship between urbanicity and past district-level enrollment changes from 2017-18 to 2022-23

	1	2	3	4	5	6	7	8
Urban	-0.0775**	-0.0737**	-0.216***	-0.0177				
	(-3.08)	(-2.71)	(-4.27)	(-0.60)				
Suburb	-0.0691***	-0.0797***	-0.202***	-0.0194				
	(-3.32)	(-3.50)	(-4.20)	(-0.75)				
Town	-0.0161	-0.0255	-0.220***	-0.00759				
	(-0.66)	(-1.04)	(-3.85)	(-0.30)				
Observations	807	807	462	807	462	807	462	807
R-squared	0.020	0.059	0.150	0.161	0.084	0.123	0.109	0.160
Region Fixed Effect			X		X		X	
County Fixed Effect				X		X		X
Controls		X	X	X			X	X

SOURCES: California Department of Education; Authors' calculations.

NOTES: Dependent variable is the 5-year enrollment change from 2017-18 to 2022-23. Rural category is omitted baseline in regression. Controls include racial, EL, and low-income shares. T statistics in parentheses. * 0.1 ** .05 *** 0.01

TABLE A3

Relationship between urbanicity and projected district-level enrollment changes from 2021-22 to 2026-27

	1	2	3	4	5	6	7	8
Urban	-1.341***	-1.289***	-1.285***	-1.124***				
	(-6.69)	(-6.23)	(-6.10)	(-5.22)				
Suburb	-1.248***	-1.233***	-1.129***	-0.901***				
	(-6.58)	(-6.40)	(-5.69)	(-4.43)				
Town	-1.202***	-1.102***	-1.105***	-0.783**				
	(-5.03)	(-4.54)	(-4.58)	(-3.02)				
Observations	470	470	470	470	470	470	470	470
R-squared	0.096	0.139	0.172	0.300	0.046	0.207	0.099	0.253
Region Fixed Effect			X		X		X	
County Fixed Effect				X		X		X
Controls		X	X	X			X	X

SOURCES: California Department of Education; California Department of Finance; Authors' calculations.

NOTES: Dependent variable is the projected 5-year enrollment change from 2021-22 to 2026-27. Rural category is omitted baseline in regression. Controls include racial, EL, and low-income shares. T statistics in parentheses. * 0.1 ** .05 *** 0.01

TABLE A4

Relationship between demographics and past district-level enrollment changes from 2017-18 to 2022-23

	1	2	3	4	5	6	7	8
Asian (%)	-0.216				-0.0851	0.186	-0.0115	-0.00886
	(-1.31)				(-0.51)	(1.06)	(-0.06)	(-0.04)
Black (%)	0.174				-0.0457	-0.120	-0.192	-0.184
	(0.68)				(-0.18)	(-0.47)	(-0.66)	(-0.63)
Latino (%)	-0.0838				0.0228	0.0830	-0.240	-0.238
	(-0.68)				(0.18)	(0.65)	(-1.57)	(-1.54)
White (%)	0.00270				-0.00415	0.0761	-0.155	-0.155
	(0.02)				(-0.03)	(0.54)	(-0.96)	(-0.95)
EL (%)		-0.243***			-0.400***	-0.461***	-0.362***	-0.365***
		(-4.47)			(-4.35)	(-5.01)	(-3.54)	(-3.54)
Low-income (%)			0.0185		0.118**	0.00900	-0.0117	-0.0100
			(0.58)		(2.63)	(0.18)	(-0.21)	(-0.18)
Avg Test Score				-0.133**		-0.344***	-0.278**	-0.275**
				(-2.80)		(-4.34)	(-3.05)	(-2.96)
Observations	807	807	807	807	807	807	807	807
R-squared	0.015	0.024	0.000	0.010	0.043	0.065	0.171	0.171
County Fixed Effect							X	X
Controls for Urbanicity								X

SOURCES: California Department of Education; Authors' calculations.

NOTES: Dependent variable is the 5-year enrollment change from 2017-18 to 2022-23. T statistics in parentheses. * 0.1 ** .05 *** 0.01

TABLE A5

Relationship between demographics and projected district-level enrollment changes from 2021-22 to 2026-27

	1	2	3	4	5	6	7	8
Asian (%)	0.956				0.982	1.324	1.427	1.376
	(0.69)				(0.70)	(0.91)	(0.91)	(0.88)
Black (%)	6.811***				6.719***	6.510**	9.652***	9.875***
	(3.60)				(3.37)	(3.24)	(4.42)	(4.53)
Latino (%)	1.017				1.085	1.142	2.279	2.199
	(0.91)				(0.91)	(0.96)	(1.59)	(1.53)
White (%)	2.124				2.090	2.176	1.126	0.917
	(1.63)				(1.58)	(1.64)	(0.75)	(0.61)
EL (%)		-1.139**			-0.201	-0.301	-0.172	-0.183
		(-2.75)			(-0.32)	(-0.46)	(-0.24)	(-0.25)
Low-income (%)			-0.185		-0.00910	-0.203	-0.462	-0.447
			(-0.83)		(-0.02)	(-0.47)	(-0.99)	(-0.96)
Avg Test Score				-0.170		-0.567	1.592*	1.745*
				(-0.51)		(-0.88)	(2.26)	(2.48)
Observations	470	470	470	470	470	470	470	470
R-squared	0.055	0.016	0.001	0.001	0.055	0.057	0.302	0.310
County Fixed Effect							X	X
Controls for Urbanicity								X

SOURCES: California Department of Education; California Department of Finance; Authors' calculations.

NOTES: Dependent variable is the projected 5-year enrollment change from 2021-22 to 2026-27. T statistics in parentheses. * 0.1 ** .05 *** 0.01

Appendix B. Data Sources

This report uses a variety of data sources publicly provided by the California Department of Education (CDE), California Department of Finance (DOF), and the National Center for Education Statistics (NCES). There are three main types of data: district- and school-level enrollment and demographic records; state- and county-level enrollment projections; and federally collected statewide enrollment data. We describe each below:

District- and school-level enrollment and demographic records: Data on school and district enrollment, English Learner (EL) status, and student socio-demographic characteristics are also maintained by the CDE. Data on the "unduplicated" count of students, relevant for LCFF supplemental and concentration grant calculations, are available at the school and district levels beginning in 2013. School-by-grade enrollment, both overall and broken down by race/ethnicity/gender, as well as by EL status, is available going back to 1982. We collect school and district-level free and reduced-price lunch meal (FRPM) totals from three different files: for 2004–2022, we use the FRPM files, while for 2003, we use the AFDC files, which are available back to 1988. Where we use state- or county-level enrollment demographic shares, we rely on CDE reports via DataQuest.

State-, county-level, and district-level demographic enrollment records and projections: Data on statewide and county-level enrollment—both past and projected—are available publicly on the DOF website. We use the most recent projections from 2023 in our analyses of past and projected enrollment. In supplementary analyses, we also use the DOF's projected enrollment for large districts.

Federal statewide past and projected enrollment data: Data on state-level enrollment—both past and projected—is publicly available via the NCES. For comparisons with other states, we use NCES enrollment data and NCES projected enrollment from the 2021 projection vintage. NCES also reported enrollment aggregated nationally, and by region.

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