# Investing in California's School Facilities

*How Local General Obligation Bonds Shape Student Outcomes*

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# Contents

# Executive Summary

Across the United States, public school systems spend tens of billions each year on capital outlay (e.g., construction, major repairs, and modernization) — roughly $82 billion in fiscal year (FY) 2022.[1] Even with that spending, one estimate concludes the nation still underinvests in school facilities by roughly $85 billion per year.[2] School facilities are the backbone of learning environments, and when facilities fall short, students can be exposed to conditions that disrupt teaching and learning.[3]

California reflects these broader challenges. One study finds that 38% of California students attended a school with at least one facility deficiency, and 15% attended a school with an "extreme" deficiency, with problems more concentrated in districts with fewer resources.[4] California lacks a comprehensive dataset that fully captures facility conditions, complicating planning and targeting of investments.[5] One 2018 projection estimated that California school districts would need approximately $117 billion over the next decade for facility modernization and new construction.[6]

## How California Pays for School Facilities

Research describing California's financing patterns shows that local general obligation (GO) bonds are the dominant funding stream for many districts' facility projects, while state support is episodic and can be difficult to access, especially for smaller districts with limited administrative capacity or specialized facility staff. [7] In practice, this means the timing and scale of facility upgrades often depend on whether districts can run successful bond campaigns and then navigate multistep planning and compliance processes for securing state funds from the School Facility Program (SFP). Districts that are not successful in passing GO bonds are left without a revenue stream to conduct facility improvements or new construction, leaving students to be taught in inadequate facilities. Districts that are successful in GO bond passage, and those that add to that revenue with state funds, can invest in maintaining and upgrading students' learning environments, potentially creating conditions that support strong academic outcomes.

**This raises a key policy question: Do facility investments lead to improved student outcomes?** If facility investments do support student learning, then how California designs state policy for funding school infrastructure has real consequences for which students experience those benefits and which do not.

## About This Study

To explore the question of how facility investments influence student outcomes, this study brought together insights from prior research, district leader conversations, and results from an empirical study to examine how school facility investments work in practice and whether they improve student outcomes in California.

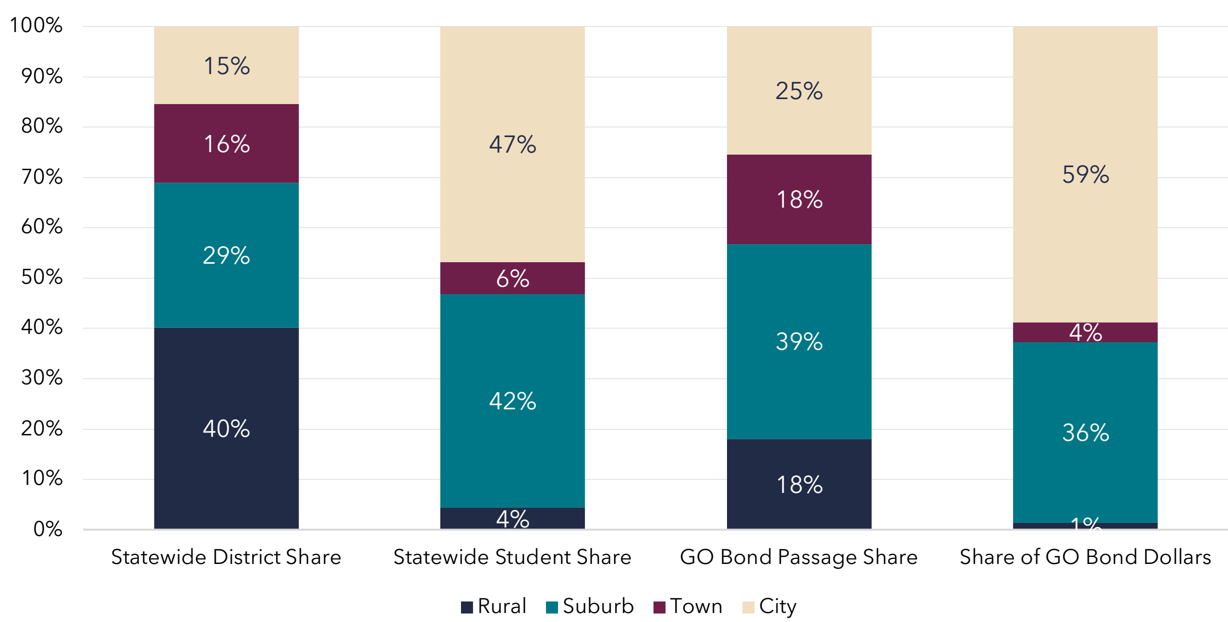
To situate the empirical findings, we first provide a descriptive overview of local GO bond elections. We document patterns in bond proposals, passage rates, and dollar amounts across California to show how capital funding varies by district type. The empirical study uses a dynamic regression discontinuity design, comparing districts where a bond narrowly passed with similar districts where it narrowly failed to estimate the causal effects of bond authorization on capital spending and student outcomes.[8] Using district-level data from school year (SY) 2009–10 through SY18–19, the dynamic approach follows districts for multiple years before and after each election to capture both spending increases after bond passage and any subsequent changes in district-level student outcomes.

## Key Findings

The descriptive analysis shows that local GO bonds are a major, recurring feature of California school facility funding: 1,123 bonds were proposed and 849 passed (a 76% passage rate), and the total amount of passed bond funding over the period totals approximately $116 billion. Local bond activity follows the general election cycle, and when state GO bonds are on the ballot, local GO bonds are likely to do well. High volume years for bond elections include SY15–16 and SY23–24, which aligned with statewide GO bonds in 2016 (Proposition 51) and 2024 (Proposition 2).

While districts routinely authorize GO bonds, the distribution of bond dollars is uneven across districts and regions. City and unified districts, along with districts in higher-wealth regions like the Bay Area, account for a disproportionately large share of total dollars relative to their share of students, while rural and town districts and those in regions like the Inland Empire generate far less than their student enrollment would suggest, reflecting differences in local tax base strength and local administrative capacity (Figure 1).

**FIGURE 1. SHARE OF DISTRICTS, STUDENTS, AND LOCAL GO BOND OUTCOMES BY LOCALE, CALIFORNIA, SY09-10 TO SY23-24**



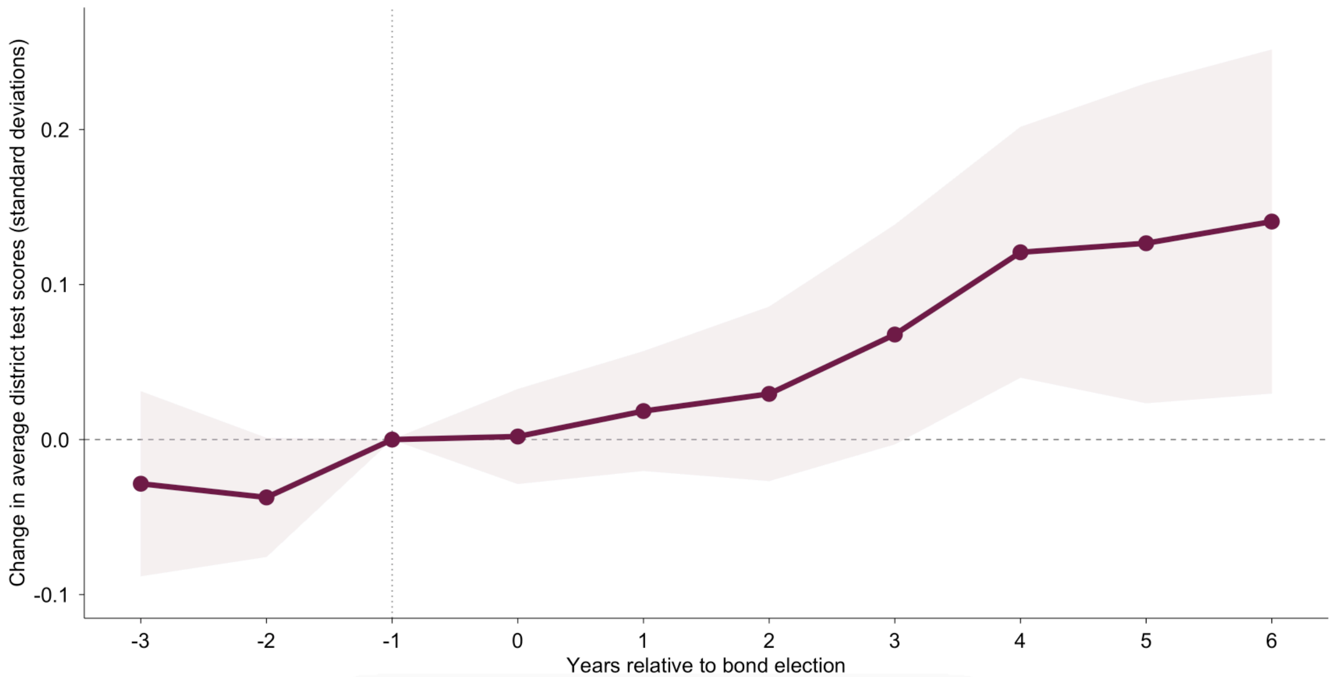

The descriptive analysis also suggests that California voters prioritize bond measures for project types that align with prior research linking core facility investments to academic gains.[9]

Results from the empirical study produced **strong causal evidence that increased facility spending improves district test scores**. The results also show a consistent pattern: Facility investments take time, but they are linked to later improvements in student outcomes.

- **Capital spending rises two to three years after bond passage.** The results showed that capital spending increased most clearly two to three years after a successful bond election, consistent with timelines for planning and construction.

- **Test-score gains emerge four to six years after bond authorization.** Districts that narrowly passed a bond experienced increases in district test scores, with the clearest gains in years four through six. Average district test scores increased by approximately 0.12 to 0.14 standard deviations (Figure 2).

**FIGURE 2. CHANGES IN DISTRICT TEST SCORES FOLLOWING LOCAL GO BOND PASSAGE, CALIFORNIA**




***Notes***: *This figure shows changes in average district test scores in mathematics and ELA (pooled across grades 3–8) for districts that narrowly passed a bond relative to those that narrowly failed, compared to the year before the election. Effects are shown in standard deviation units, so differences can be interpreted as changes in average achievement relative to the statewide distribution. Points represent estimated effects, and shaded bands show 95% confidence intervals.*

- **The gains are meaningful in size.** Using established benchmarks, these achievement gains translate to roughly three to four additional months of learning (about 60–70 instructional days) in districts that narrowly passed a bond, compared with districts that narrowly failed to secure voter approval.[10]

- **Gains appear strongest in mathematics and largest in low-income districts.** When the analysis separates subjects, the overall achievement gains are driven more by mathematics scores, and effects are largest in districts serving higher shares of low-income students, consistent with prior research.[11]

- **Results are not explained by major shifts in attendance or enrollment.** The study finds little evidence of meaningful shifts in attendance following bond passage, and while enrollment estimates move slightly in some years, results are not strong enough to support clear conclusions.

## What Policymakers Can Do

This study adds to a growing body of evidence in California that facility investments can support student learning, especially in districts with fewer resources.[12] Policymakers can use these findings to inform ongoing debates about how to improve California's facility funding system in order to promote greater adequacy and fairness in school infrastructure investments. The policy considerations below are informed by these findings and conversations with district leaders:

1) **Modernize how California tracks school facility conditions.** State policymakers should consider collecting and publicly reporting more comprehensive facility condition data (beyond basic visual inspections) so the state can direct dollars where conditions are least conducive to student learning.

2) **Ensure state support is more predictable and sufficient.** State policymakers should consider reducing boom-and-bust funding cycles by creating a more regular, reliable timeline for capital support, so districts can plan and execute school facility projects without years of uncertainty.

3) **Reduce administrative barriers and improve access.** State policymakers should consider providing stronger technical assistance and simplify processes so smaller, rural, and under-resourced districts can more effectively propose and authorize local GO bonds and access state matching funds.

4) **Prioritize projects most likely to improve student learning.** Local policymakers should consider prioritizing facility investments that most directly improve student health and learning environments, particularly those that research links to academic benefits.[13]

5) **Invest in continued research on the effects of facility investments.** State policymakers and education stakeholders have a role to play in supporting future research that examines the educational and broader community effects of school facility investments, such as the effects on housing markets.

This study strengthens the case for viewing school facilities as an essential public investment and for designing policies that ensure consistent access to healthy, modern learning environments across the state.

# Introduction

School facilities are one of the largest and most visible public investments that school districts can make. Facilities shape critical aspects of the learning environment, from whether classrooms stay warm in winter and cool during the summer, to whether students learn in spaces free from environmental hazards, to whether science labs can support high-quality learning opportunities. Yet despite their central role, school facilities have historically received uneven attention in policy debates and research, both nationally and in California.

At its core, California's approach to school facilities hinges on whether learning environments are viewed by state policymakers as essential public infrastructure or as local projects that happen only when communities can afford them. Since most facility dollars in California come from local bonds backed by increases in property taxes, districts vary dramatically in their ability to modernize aging buildings, address health and safety deficiencies, and create learning environments that support students and staff. State support through the SFP helps, but the state's reliance on episodic infusions of funding has contributed to backlogs, uncertainty, and uneven local capacity to invest in school facilities.

Against this backdrop, this study provides updated California-specific evidence by investigating the relationship between school facility investments and student outcomes. Establishing a strong link between facility investments and student outcomes would raise important policy questions about state funding structures that produce persistent underinvestment and uneven access to capital funding for districts.

# California K-12 School Facility Funding Policy

California's school facility financing system is complex and heavily dependent on local revenue. Districts rely primarily on voter-approved GO bonds to fund major repairs, modernization, and new construction, with state aid playing a more limited and intermittent role. GO bonds are a form of long-term borrowing issued by the local government and financed through an increase in local property taxes.[14] Reliance on voter approval of GO bonds produces substantial variation in districts' ability to invest in school facilities, differences that are driven by local tax base strength, administrative capacity, and the timing of available state matching funds. The section below outlines how facility funding works in California and why it leads to uneven local investment across districts, setting the stage for understanding how capital funding patterns shape student outcomes.

## Districts across the United States and in California spend a substantial amount of funding on school facilities

Across the nation, capital spending accounts for around 9% of school district expenditures, or roughly $82 billion in FY22.[15] Yet research suggests the nation is still underinvesting in school facilities by $85 billion each year, leaving many students to attend schools with conditions that pose health and safety risks.[16]

California is no exception. The state alone accounted for 13% of all K–12 capital outlay spending nationwide in SY21-22 ($10.5 billion).[17] However, one of the few studies to examine facility conditions throughout the state found that 38% of California students attended a school with at least one facility deficiency, and 15% attended a school with an extreme deficiency that posed health or safety risks.[18] Deficiencies were disproportionately concentrated in small-town districts and those with lower capital spending and smaller tax bases.[19] Aging infrastructure compounds these challenges, with one study finding that approximately 30% of schools in the state are 50 years or older, and about 10% are 70 years or older.[20] Additional evidence shows that 74% of California school districts do not meet recommended benchmarks for either annual maintenance and operations or capital renewal spending. This finding suggests that many California schools are aging faster than they are being modernized.[21]

One of the few statewide estimates available, published in 2018, projected that California districts would need roughly $117 billion for facility modernization and new construction over the following decade, but the limited nature of public facility-condition data makes it difficult for policymakers to obtain a clear picture of facility needs across districts and plan state investments accordingly.[22] The data that exists is collected using the state's Facility Inspection Tool (FIT) and reported through School Accountability Report Cards (SARC). The lowest-performing schools in the state are subject to extra facility quality oversight through Williams facility reviews.[23] These reviews are a result of a 2004 class-action settlement and require county offices of education to inspect low-performing schools using the FIT and report their findings in districts' SARCs and Local Control and Accountability Plans.[24] The FIT is based on a one-time visual inspection and omits several key aspects of facility conditions (e.g., air quality, energy efficiency, technology needs, ADA compliance, seismic safety), meaning that the state's school facility needs may be greater than what is reported.[25]

## California districts rely heavily on local property tax revenue to fund school facility projects, with state matching funds playing a smaller role

In California, approximately 84% of facility funding comes from local funding sources, placing most of the responsibility for addressing school facility needs on districts.[26] Since meeting these facility needs largely depends on districts' ability to raise local property tax revenue, alongside the availability of SFP funds, wide differences in assessed property values across communities directly shape how much facility funding districts can generate. This system produces uneven facility investment capacity across districts, as one study found that 38% of California school districts lack sufficient taxable property wealth to raise enough local bond dollars for five years of basic capital needs.[27] Districts serving larger shares of low-income students and students of color have lower assessed value per pupil, limiting their ability to raise funding for school facilities.[28] A California State Auditor's analysis found that the highest-property-value districts have the greatest overall per-student resources for modernization, largely because they can raise substantially more locally, while state funding is relatively similar across districts.[29]

The consequences of uneven facility investment are visible across the state. In some districts, students learn in newly constructed schools with modern heating, ventilation, and air conditioning (HVAC) systems, safe drinking water, and well-equipped classrooms. In other districts, students attend schools where classrooms regularly overheat, ventilation systems fail to adequately filter wildfire smoke, or roofs leak when it rains. The districts with more inadequate school facilities also tend to serve more high-need students.[30] This visible, uneven access to quality school facilities is a direct consequence of differences in local revenue-raising capacity and access to state support.

California's primary state funding stream for school facilities is the SFP, established under the Leroy F. Greene School Facilities Act of 1998 and overseen by the State Allocation Board.[31] Under the SFP, the state generally provides grants intended to cover 50% of eligible new construction costs and 60% of eligible modernization costs, with financial hardship assistance available to districts unable to meet the local match.[32] Proposition 2 added a sliding scale that can increase the state share by up to five percentage points for districts that meet specified criteria.[33] Districts are responsible for raising the remaining share through GO bonds or other local financing tools, such as developer fees, parcel taxes, and special tax assessments issued to ad hoc tax districts known as Mello-Roos special tax bonds.[34] Navigating the SFP and accessing state funds requires significant local capacity, such as facility planners, bond consultants, architects, and compliance staff, which smaller and lower-income districts often lack.[35]

State funding is provided through statewide GO bonds approved intermittently rather than on a predictable, ongoing schedule. Voters have passed major facility bonds in 1998, 2002, 2004, 2006, 2016, and most recently in 2024 (Proposition 2).[36] Since these state bonds are spaced years apart, periods without state funding can create delays and backlogs in project approvals. For example, even after voters approved Proposition 2 in 2024, less than half of its K–12 funding may be available for new projects because roughly $4.8 billion must first cover outstanding SFP projects.[37] Compounding this, 205 districts passed local bonds in 2024, dramatically increasing demand for state funds at a moment when much of the new bond authority is already obligated.[38] These delays disproportionately affect districts with limited bonding capacity, which cannot move forward on construction or modernization projects without a state match.

Research indicates that state funding patterns differ by project type. One study found that higher-wealth districts receive more state modernization funding, while lower-wealth districts receive more support through new construction and hardship funding, which helps make total state funding more even overall.[39] Proposition 2 introduced changes designed to improve access to state funds, including expanding access to financial hardship funding and dedicating a portion of funds to small districts.[40] However, most facility investments in California continue to come from local sources, and state funding remains limited relative to overall need.

### District Profile: Thermalito Union Elementary School District

Thermalito Union Elementary School District (TUESD) is a rural transitional kindergarten through grade 8 district located in Butte County. The district has an enrollment of around 1,600 students, 88% of whom are unduplicated pupils.[41] The district's facility pressures are driven by the challenge of upgrading aging campuses, many of which were built in the mid-to-late 1900s, and accommodating newer programs (e.g., expanded learning and preschool growth).[42]

District leaders describe their past facility needs as a mix of highly visible modernization work and core infrastructure upgrades.[43] On the visible side, campuses needed updates to finishes (e.g., paint, flooring, cabinetry, lighting) and learning environments, and spaces needed to be better equipped for modern instructional technology. Aging electrical and plumbing systems needed major upgrades, including addressing fragile clay piping, too few outlets, and inadequate power sources for modern learning.

District leaders emphasize that facility funding is the area where local context is most constraining, as limited local property wealth restricts bonding capacity. The district has passed two GO bond measures in the past 10 years, both relatively small in dollar amount compared to neighboring wealthier districts.

Measure Z was passed with 60% of the vote in 2018 for $4.5 million and was used to modernize Poplar Elementary by reworking the multipurpose room, remodeling the office, adding restrooms, and building a new courtyard. However, even with those improvements, the bond was not large enough to replace all portable classrooms on the campus.[44] Measure D was passed with 57% of the vote in 2024 for $6.8 million and is being used to modernize Sierra Avenue Elementary with a focus on replacing aging portables and improving safety and access. The plan includes replacing seven portable classrooms with nine new modular classrooms, adding a parent parking lot, and making additional security enhancements.[45]

Even with relatively modest bond totals, TUESD has used bonds as a catalyst to draw down additional resources and bolster local dollars. Leaders estimate that approximately $10 million in voter-approved bond support helped enable roughly $30 million in total facility improvements over the past decade when combined with state matches and other grants. However, for smaller districts with less administrative capacity, processes for accessing state dollars can be complex, and district leaders have noted that larger districts are much more successful in navigating access to state matching.

*"When school facilities look and feel better, the community takes greater pride in them. That pride turns into engagement, and we have seen it translate into stronger support, including voter approval of school bonds."*

—CODY WALKER, SUPERINTENDENT, TUESD

The district's bond-funded upgrades have a tangible, day-to-day impact on both student learning and staff working conditions. Modernized spaces and infrastructure have supported stronger student learning and make staff more excited to come to work.[46] In classrooms and common spaces, staff report especially strong reactions to lighting changes and to improvements that keep rooms consistently comfortable, like upgraded HVAC and thermostats. Families and community members see new paint, landscaping, and overall upkeep as a signal that the district cares about its schools and students. When facilities look and feel better, the community takes more pride in the schools and is more involved in school life, which also supports continued local willingness to approve future bonds.

The next section reviews a growing body of rigorous research, including several studies conducted in California, showing that school facility investments lead to significant improvements in student outcomes, especially in lower-income districts and when investments address core facility infrastructure. This evidence reinforces the importance of understanding not only whether and when facility spending improves student outcomes, but also which types of investments matter most and for whom.

# Research on the Effects of School Facility Investments on Student Outcomes

In recent years, high-quality research has cut through decades of debate to show money matters for student outcomes. In the most recent comprehensive review of the school finance literature, researchers find that the "overwhelming bulk of studies … show that infusions of additional money into schools lead to improved student academic achievement and outcomes later in life."[47] Research also consistently shows that greater investment yields the largest benefits for students in high-need communities. For example, the authors of a comprehensive review of school finance literature concluded that "spending more on schools and communities that have previously been deprived of resources yields greater returns on investment … the difference in return on investment may be as high as 20-fold."[48] While important questions remain, including how much funding is "enough" and what type of spending yields the greatest return on investment, the strength of recent research has cast substantial doubt on earlier claims that school funding and student outcomes are unrelated.[49]

A similar shift is now occurring in a narrower but increasingly important area of school finance research: the relationship between school facility quality and student outcomes. Historically, studies on school facilities have been limited because researchers lacked the data and analytical tools needed to isolate the causal effects of facility spending. Now, as researchers recognize how "the quality and conditions of school facilities are significant aspects of educational quality impacting students, teachers, and staff," the evidence base has grown.[50] Recent studies are employing better data and stronger research designs to examine facility investments across states and districts to build a strong evidence base on the academic benefits of improving school facility conditions.

## Research on the relationship between school capital investments and student outcomes has been relatively mixed historically

Past studies from other states attempting to pinpoint whether investments in school facilities improve student outcomes have often produced mixed or inconclusive results. For example, researchers analyzing local school bond measures from 1997 to 2010 in Texas concluded that while facility investments may produce benefits (e.g., improved teacher morale), they do not lead to meaningful improvements in student academic outcomes.[51] Similarly, a study of capital bond referenda in Wisconsin from 1996 to 2015 found that increases in operational spending associated with bond passage had a positive effect on student test scores. However, increases in capital spending did not affect student test scores.[52]

A study on local bond measures from 1996 to 2009 in Michigan found positive, but delayed effects on student outcomes. The researchers concluded that "capital investments are unlikely to have short-term effects on achievement but could have long-term effects." They speculate that the delayed effects result from the time it takes to complete capital projects — up to four years.[53] In Ohio, two studies on the state-financed capital subsidy program yielded different results. One analysis (1997 to 2013) found that test scores rose immediately after acceptance into the program, but enrollments declined, with these patterns reversing when construction slowed and projects reached completion.[54] Another study of the Ohio capital subsidy program (1998 to 2014) found that test scores dropped during the construction period, while enrollment increased.[55]

## A recent multistate study has helped clarify the mixed findings on the impact of facility spending from state-specific studies

The most comprehensive evidence to date comes from a national study examining closely contested school bond elections across 29 states from 1990 to 2017 that isolated the causal effects of facility spending.[56] The national scope of this study was the first of its kind and addressed the limited statistical power that constrained earlier state-level studies. The study distinguished how districts use facility dollars by project type, not just whether capital spending increased as a result of bond passage. By applying text analysis to bond proposals, the authors classify the types of projects funded, making it possible to assess which investments appear most likely to increase academic outcomes.[57]

The findings indicated that passing a bond led to large and sustained increases in capital spending. Districts that passed a bond saw capital spending rise by $1,500 per pupil over several years. The increases in capital outlay were followed by gradual improvements in academic outcomes. The authors found no detectable effects on test scores in the first four years following bond passage, which is consistent with the time required to plan and complete some school facility projects. Achievement gains emerged five to six years after bond passage and continued to grow over time; they were substantially larger in districts with lower levels of facility investment before bond passage.[58]

Finally, this study suggests that the type of facility project matters, with different kinds of investments producing different results. Investments that improved basic infrastructure, including HVAC systems, plumbing, roofs, classroom space, and the removal of environmental hazards, produced the largest academic gains. These projects tended to generate relatively modest increases in housing prices. In contrast, spending on athletic facilities, transportation infrastructure, or land acquisition yielded larger increases in housing prices but little improvement in academic outcomes. These differences show that facility investments most valued by homeowners are not always the same as those that improve learning the most.

## The few studies conducted in California generally find that increases in facility funding are associated with improved student outcomes

One state where results are notably less mixed is California. A small but influential set of studies in California provides strong evidence that school facility investments improve student outcomes, particularly over time and in districts serving higher-need students. These studies take advantage of California's reliance on local school bond elections, where bond revenues must be spent on capital projects, creating clear shifts in facility funding that are not tied to year-to-year changes in operating budgets.[59]

A foundational, widely cited causal study in the literature on capital investments examined close school bond elections in California between 1987 and 2006. The authors found that passing a school bond led to large and immediate increases in local capital spending but did not influence other types of district expenditures. While the study found delayed evidence of test score gains roughly six years after bond passage, that evidence was not strong enough to link facility investments to higher test scores.[60]

Subsequent California research found stronger evidence of academic benefits for students. A study examining school bond elections across California from 1999 to 2013 highlighted how increases in capital spending led to improvements in test scores for students, with effects again emerging six years after bond passage. These delayed gains are consistent with the long timelines associated with planning and completing major facility projects. The positive effects were concentrated among students from low socioeconomic backgrounds. Effects also appeared larger in lower-income and smaller districts.[61]

Additional evidence comes from large-scale school construction and modernization efforts in the Los Angeles Unified School District (LAUSD). Studies examining LAUSD's rebuilding initiative from 2002 to 2008, which invested roughly $19.5 billion to construct more than 130 new schools to relieve severe overcrowding, found clear academic gains for students attending newly built schools after an initial transition period.[62] Gains were equivalent to roughly 35 additional days of learning per year on average, with substantially larger gains, approximately 65 instructional days per year, for students who left the most severely overcrowded campuses.[63]

Building on this evidence base, this study uses district data from SY09–10 through SY18–19 and a design that leverages closely contested local GO bond elections to estimate how bond authorization influences capital spending and student outcomes in districts over time. Because districts vary so widely in their ability to invest in school infrastructure — and because funding is often determined by local wealth and district capacity — the state serves as a natural setting to examine whether facility investments produce meaningful improvements in student outcomes. In addition to estimating year-by-year effects, the study summarizes what districts propose to fund with bond measures, offering descriptive insight into project types even when sample sizes are not large enough to support separate analyses by category. These contributions aim to help policymakers and district leaders better understand how local GO bonds in California translate into real capital investments, and whether those investments yield meaningful benefits for students.

# Methodological Approach

This study estimates the effects of school bond authorization in California on district capital spending and student outcomes using a dynamic regression discontinuity event-study design (RDD). Because local school bonds must receive 55% voter approval to pass, causal identification comes from comparing districts whose bond measures fall just above versus just below the 55% threshold in close elections. Districts on either side of the 55% cutoff are expected to be similar in observed and unobserved characteristics when the vote margin is small, so postelection differences in student outcomes can be attributed to bond authorization rather than preexisting differences or statewide trends.

The analysis follows districts from three years before to six years after each bond election to (1) test for comparable preelection trajectories and (2) trace how effects evolve after authorization. This dynamic structure is needed because facility investments take time to plan and complete, so the effects on student outcomes are expected to emerge gradually rather than immediately.

## Data Sources

This study combines statewide election records with district-level education and finance data. Local bond elections come from the California Elections Data Archive (CEDA), which provides downloadable ballot measure data going back to 1995.[64] We pulled all available years of data (1995 to 2024) and then focused on collecting analytic data on local GO bonds with education-related measure codes. To support analysis by bond purpose, we created a bond type categorization based on keywords in the ballot question text, aligned with the project categories used in a 2024 study (Appendix A).[65]

To describe district context and analyze student outcomes over time, we drew from multiple sources. Student achievement measures come from the Stanford Education Data Archive (SEDA), which provides standardized school and district test scores in mathematics and English language arts (ELA) from 2009 to 2019 (SY08-09 to SY18-19).[66] We used the administrative district, long-format, cohort-scale file and restricted the analytic panel to 2010 through 2019 (SY09-10 to SY18-19). California had no statewide assessment results in 2014 due to the transition to a new state testing system, so that year is missing from the SEDA outcomes. District demographics, enrollment, and district type characteristics from SY09-10 to SY23-24 come from the California Ed-Data Comparison Tool.[67]

Finally, we incorporated fiscal measures and geography using additional administrative datasets. District capital outlay expenditures come from the California Department of Education's Standardized Account Code Structure files.[68] Geographic locale classifications are based on National Center for Education Statistics Education Demographic and Geographic Estimates (NCES EDGE) geocodes, which we use for urbanicity and locale categorization, and we supplement these with a custom California region crosswalk that maps districts to California Census regions.[69] We also use the California Public Schools and Districts Data File to align County-District-School codes and NCES identifiers across sources before constructing the final dataset.[70]

## Sample Construction

The analytic sample for the RDD analyses consists of 71 close bond elections held by California school districts between SY09–10 and SY18–19. We define "close" elections as those decided within plus-or-minus five percentage points of the 55% approval threshold. We also assess robustness by estimating models using narrower and wider definitions of close elections (Appendix A).

Some districts appear more than once in the sample because they held multiple close bond elections. Each election is treated as a separate case and followed over time, allowing us to examine how outcomes change after each bond vote. This approach is commonly used in studies of school bond elections and allows districts to be included each time they hold a close vote, rather than limiting the analysis to a single election.[71]

To ensure a fair comparison, districts that narrowly failed a bond election are included as comparison districts only if they did not pass another bond in the following six years. Without this restriction, some comparison districts could later pass a bond and start upgrading their school buildings. Those upgrades could make the two groups more similar, making it harder to measure the effects of passing a bond.[72]

## Analytic Strategy

Our analytic strategy compares outcomes in districts that held very close bond elections, centered on the 55% pass threshold, using the close-election sample defined above. Districts with vote shares just above the 55% threshold are included in the treatment group because they received bond authorization, while those just below 55% are in the control group. To capture how effects evolve over time, we employ the dynamic event-study design described above, which allows us to test whether districts that narrowly passed and narrowly failed were on similar trajectories three years before the election, and to examine whether capital spending and student outcomes diverged in the six years following bond authorization.

All models include bond-election, or cohort fixed effects, which account for all stable election-specific differences, and year fixed effects, which control for statewide shocks and policy changes affecting all districts in a school year. Standard errors are clustered at the district level to account for the fact that districts appear multiple times in the data and outcomes within the same district are likely to be correlated over time. Outcomes include (1) per-pupil capital outlay (inflation-adjusted and transformed to account for zero spending years), (2) district-level test scores in mathematics and ELA, pooled and averaged across grades three through eight, (3) attendance rates, and (4) school enrollment (Appendix A). We also conduct extensive diagnostic and robustness checks to assess the validity of the design (Appendix A).

# Key Findings

This section begins with a descriptive overview of California local GO bond elections, followed by RDD analyses examining the effects of bond authorization on capital spending and student outcomes. Findings from the descriptive analyses and RDD paint a clearer picture of what types of districts have accessed local GO bond funding to support facility improvements. They provide strong evidence that those capital investments have a meaningful, positive effect on student outcomes.

## *Descriptive Overview of California Local GO Bond Elections*

The RDD analyses utilize a panel dataset of California districts from SY09-10 to SY18-19. However, given the availability of data for school years after SY18-19, the descriptive analyses presented in this section span a longer range, from SY09-10 to SY23-24. Given the larger dataset, these findings can also provide additional background or takeaways that the smaller sample size used in the RDD analysis cannot.

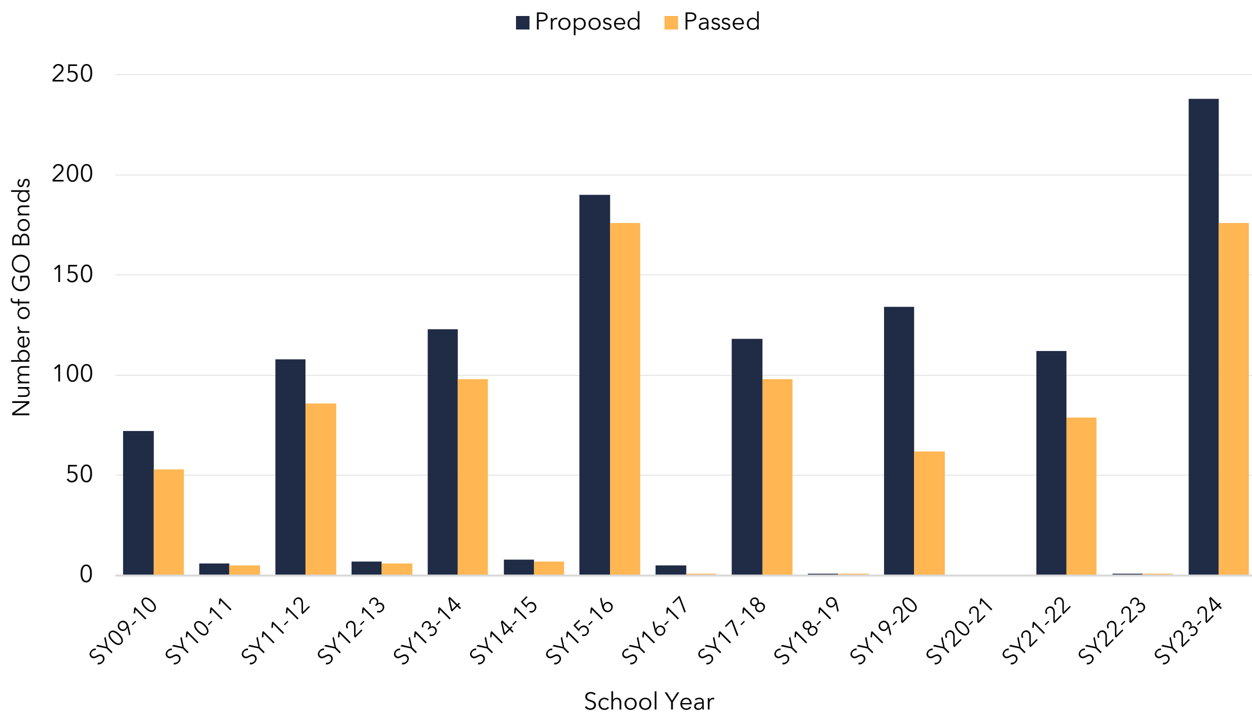
These findings are meant to provide context on the types of districts that propose and pass GO bonds and highlight differences in districts' access to local facility funding. Descriptive patterns show that California's GO bond system is both a major driver of school facility funding and an uneven one, with local capital investment rising and falling with election cycles and state policy windows rather than only with student need. When analyzing GO bond passage shares by district characteristics, large, city, and unified districts seem to translate voter support into a disproportionate share of total dollars, while rural, town, and smaller districts generate far less funding even when they pursue bonds.

For policymakers, this underscores why state facility programs and hardship supports matter, because they can help offset gaps in local tax base and bond capacity and reduce variations in school conditions. For district leaders, the findings clarify what voters are most likely to fund and approve, like core health, safety, infrastructure, and learning space projects, and why transparency about project mix and local fiscal capacity is central to understanding both the benefits and the fairness of bond-based funding.

## Fifteen years of GO bonds show predictable cycles and big spike years

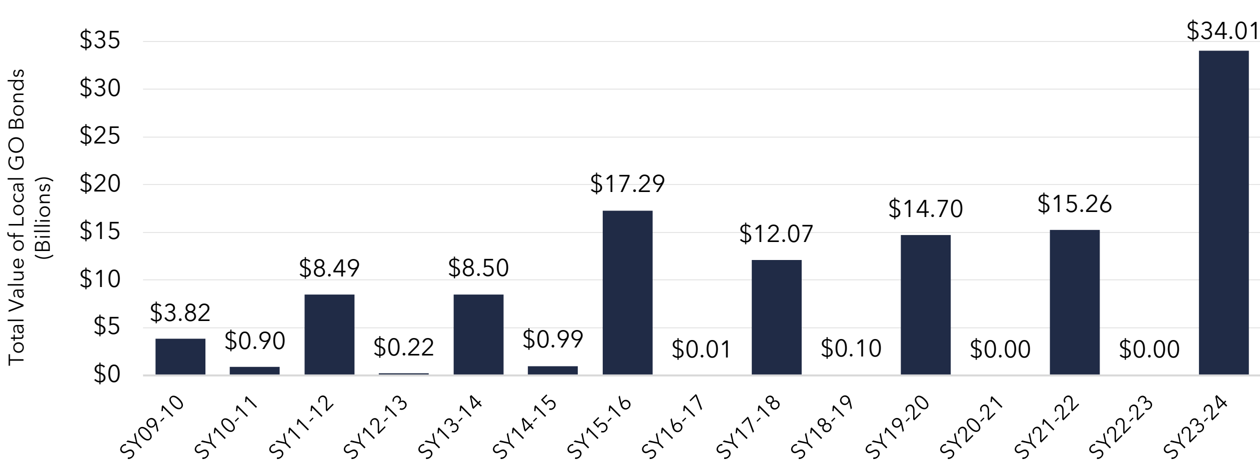
In total, 1,123 GO bonds were proposed and 849 were passed by 547 districts in the 15 years between SY09-10 and SY23-24 — a 76% passage rate.[73] This means that over this time period, 57% of all school districts in California passed one or more GO bonds, 24% passed more than one bond, and 4% approved multiple bonds in the same year.[74] The number of bonds proposed and passed followed a consistent pattern aligned with California's election cycle (Figure 3).

**FIGURE 3. LOCAL GO BONDS PROPOSED AND PASSED OVER TIME, CALIFORNIA, SY09-10 TO SY23-24**




The state saw over $116 billion in local GO bond funding passed over the 15-year period studied, with peak amounts aligning with the bond proposal and passage surges in SY15-16 and SY23-24 (Figure 4). In 2016, the passage of Proposition 51, the first statewide school bond since 2006, provided $7 billion in funding to the SFP and likely contributed to the surge in local bond measures proposed and passed that year.[75] The passage of Proposition 2 in 2024 authorized $8.5 billion in state GO bonds for public school facilities and expanded eligibility for financial hardship grants for small and disadvantaged school districts, likely increasing the feasibility of local projects and driving additional local GO bond proposals.[76]

**FIGURE 4. TOTAL VALUE OF LOCAL GO BONDS PASSED OVER TIME, CALIFORNIA, SY09-10 TO SY23-24**



Across all the districts that passed a GO bond during this time period, 18 districts have passed $1 billion or more in total GO bonds, with the highest amounts passed in Los Angeles Unified School District ($16 billion), San Diego Unified School District ($6.7 billion), and Long Beach Unified School District ($3.2 billion).[77]

## Geography shapes both bond passage rates and bond capacity

Over the 15 years analyzed, districts in a handful of counties passed most GO bonds. Overall, Los Angeles County passed 11% of all GO bonds, followed by Sonoma at 6%, San Mateo at 5.4%, and Fresno and Santa Clara each at 5%. When analyzing GO bond passage rates by county, all but eight counties had above a 50% passage rate when a GO bond was proposed.[78]

Analysis of GO bond passage by Census region finds differences between a region's share of students statewide, the makeup of GO bonds passed, and the percentage of the total GO bond funding that was generated (Figure 5).[79] For instance, districts in Los Angeles County passed 11% of all GO bonds but generated 29% of all funding. This is compared to the Central Coast, Southern San Joaquin Valley, and North Coast, each of which accounted for 12% of all measures passed but generated 6% or less of GO bond dollars.

**FIGURE 5. DISPROPORTIONALITY BETWEEN LOCAL GO BOND PASSAGE SHARE AND DOLLAR SHARE BY CALIFORNIA CENSUS REGIONS, SY09-10 TO SY23-24**

| | Statewide District Share | Statewide Student Share | GO Bond Passage Share | Share of GO Bond Dollars ▼ |
|---|---|---|---|---|
| Los Angeles County | 8% | 24% | 11% | 29% |
| Bay Area | 12% | 15% | 20% | 27% |
| San Diego-Imperial | 6% | 9% | 7% | 10% |
| Inland Empire | 6% | 14% | 6% | 9% |
| Central Coast | 10% | 6% | 12% | 6% |
| Southern San Joaquin Valley | 15% | 8% | 12% | 5% |
| Superior California | 19% | 8% | 10% | 5% |
| Orange County | 3% | 8% | 3% | 4% |
| Northern San Joaquin Valley | 9% | 6% | 7% | 3% |
| North Coast | 11% | 2% | 12% | 3% |

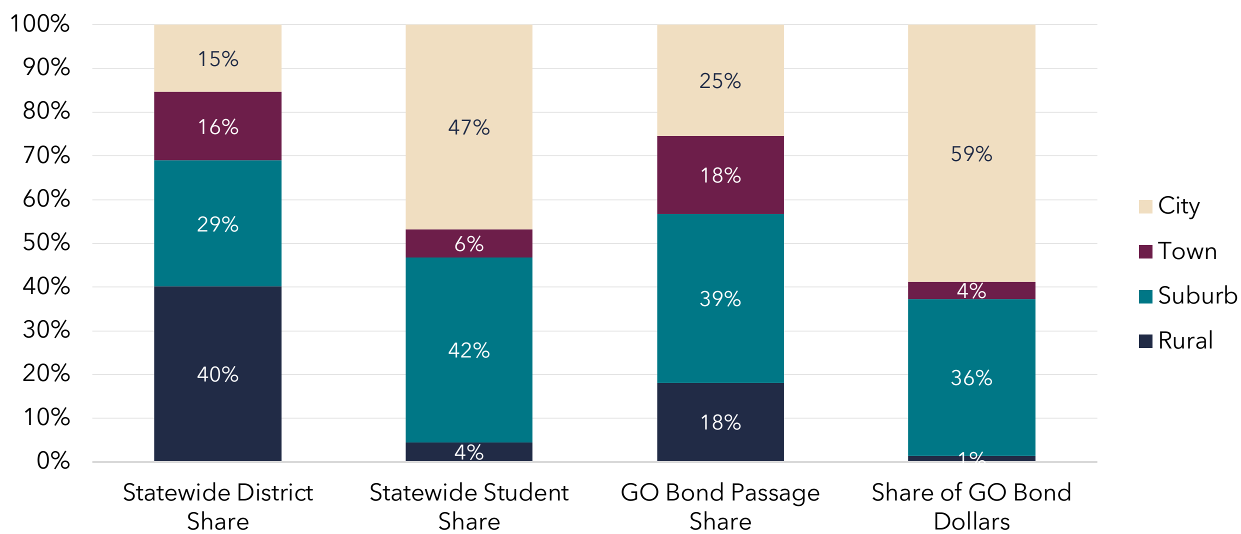
Created with Datawrapper

When statewide student share is considered, differences remain but are concentrated in specific regions. Los Angeles County generated 29% of GO bond dollars while serving 24% of students, which is slightly above proportional, while the Bay Area generated 27% of dollars while serving 15% of students, indicating a much larger funding advantage relative to enrollment. Several regions are underrepresented relative to student share, including the Inland Empire, which served 14% of students but accounted for 9% of dollars, and Orange County, which served 8% of students but accounted for 4% of dollars.

## District type and geography may drive differences in bond funding outcomes

Suburban- and city-located districts accounted for the majority of passed GO bond measures between SY09-10 and SY23-24, with suburban districts accounting for 39% and city districts for 25% (Figure 6). However, the distribution of dollars generated was more concentrated, as city districts accounted for 59% of total GO bond dollars despite fewer passed measures. In contrast, rural and town districts each accounted for 18% of passed measures, but generated just 1% and 4% of total dollars, respectively. Relative to statewide student enrollment, city districts generated a slightly higher share of bond dollars (59%) than their share of students (47%), while rural and town districts generated a lower share of dollars than their student shares.

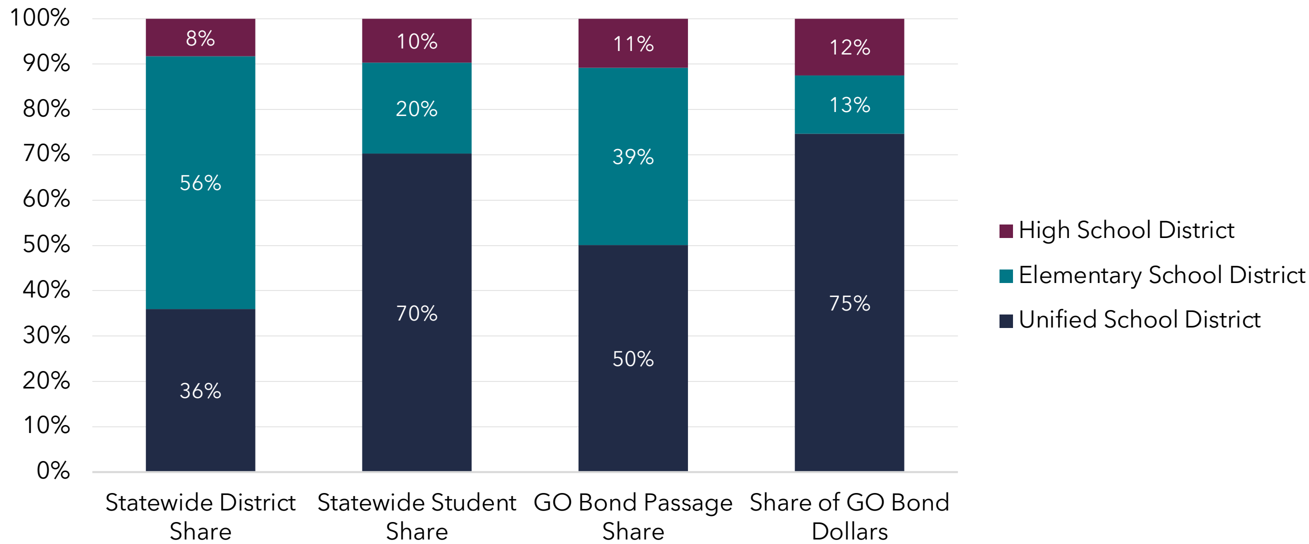
**FIGURE 6. SHARE OF DISTRICTS, STUDENTS, AND LOCAL GO BOND OUTCOMES BY GEOGRAPHIC LOCALE, CALIFORNIA, SY09-10 TO SY23-24**[80]




City-located school districts also benefited from high bond passage rates. When a GO bond was proposed between SY09-10 and SY23-24 in a city-located district, it passed 92% of the time. This is compared to 79% for suburb-located districts, 69% for town-located districts, and 61% for rural-located districts.

Analysis by district type shows that unified school districts generated a disproportionate share of GO bond dollars (75%) relative to their share of districts (36%), and their share of dollars was also slightly higher than their share of students (70%). In contrast, elementary school districts generated disproportionately few dollars (13%), even though they composed most districts (56%) and accounted for 39% of passed measures (Figure 7).

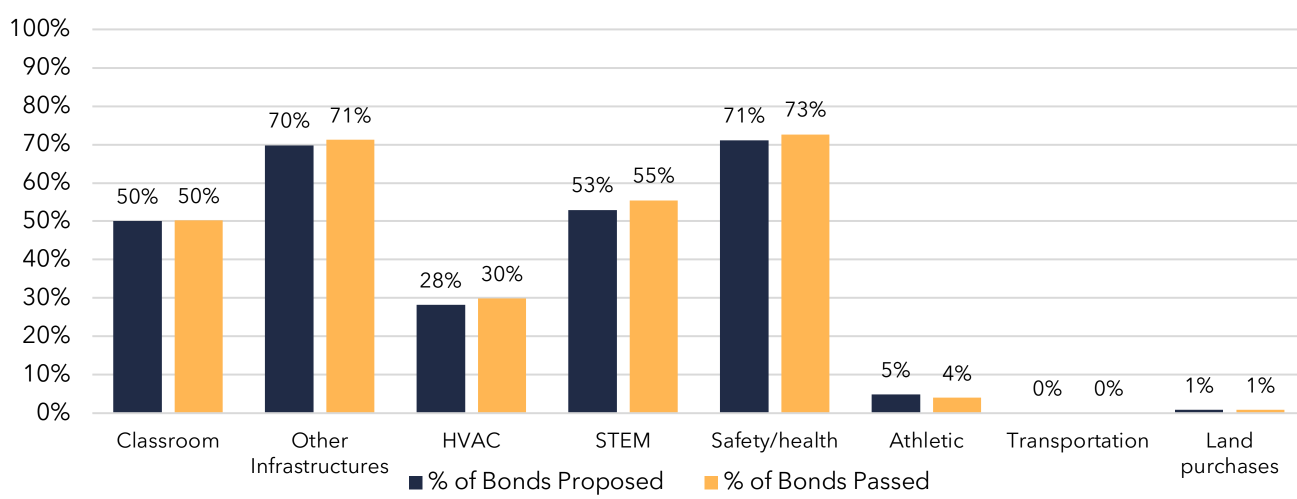
**FIGURE 7. SHARE OF DISTRICTS, STUDENTS, AND LOCAL GO BOND OUTCOMES BY DISTRICT TYPE, CALIFORNIA, SY09-10 TO SY23-24**




## California GO bonds mostly fund the facility basics that research links to stronger student outcomes

Researchers have found that increased school capital spending from bond passage can affect student outcomes, but these outcomes vary by project type, with HVAC projects producing the greatest gains in student achievement.[81] Though the current study is unable to replicate these causal estimates due to too few districts per project type, descriptive analyses paint a picture of the different bond types proposed and passed in California between SY09-10 and SY23-24. This study employs the same bond type categorization used in past research (Table A1 in Appendix A).[82]

**FIGURE 8. SHARE OF LOCAL GO BONDS PROPOSED AND PASSED BY TYPE, CALIFORNIA, SY09-10 TO SY23-24**



Safety/health, other infrastructures, STEM, and classroom bonds accounted for the majority of proposed and passed bonds during the period analyzed in this study (Figure 8). In fact, almost two-thirds of all bond measures passed in the state included some language on safety/health projects. These findings show that the projects that California voters have most frequently been asked to fund, and most often approved, align with the types of investments prior research links to stronger student outcomes.[83]

When analyzing passage rates by bond type, most had a passage rate of around 75-80%. HVAC (80%) and STEM (79%) project types had the highest passage rates, while athletic project types had the lowest (63%).

### District Profile: San Benito High School District

San Benito High School District (SBHSD) serves grades 9-12 in the city of Hollister in San Benito County. The district enrolls approximately 3,400 students and has been experiencing enrollment growth in recent years. The district serves a student population that is 65% unduplicated.[84] Over the past decade, the district's facility needs have centered around foundational upgrades, like HVAC, classroom modernization, or safety improvements. Additionally, since the district has a one-to-one device policy, priorities have included updating existing technology infrastructure.

The district's modernization progress has been driven primarily by local GO bonds. Measure G was passed in 2014 with 56% of the vote and provided $42.5 million, enabling campus-wide modernization work including districtwide air conditioning/HVAC, LED lighting, and major technology infrastructure upgrades. Measure U was passed in 2016 with 64% of the vote and provided $60 million to continue modernization and new construction investments.[85]

Together, Measures G and U enabled the district to capitalize on state matching funds and state budget allocations, adding an additional $41 million to facility updates through the SFP. Leaders emphasize that maximizing state funding required unusually strong local project management capacity, including a long-running weekly coordination routine with facility consultants to stay near the front of the line for matching funds.[86] Bond-funded projects included a new career and technical education building, a new visual and performing arts building, a countywide aquatic center on campus, a new stadium and softball stadium, a science and robotics building, a new student union and cafeteria, and major sustainability investments such as solar energy projects.[87]

> *"I'm really proud of our facility program. It's been really the highlight of my career to create a high school environment that is not only environmentally sustainable and producing really good results from an environmental standpoint, but also offers state-of-the-art, innovative experiences for students."*
>
> —DR. SHAWN TENNENBAUM, SUPERINTENDENT, SBHSD

These upgrades have visible impacts on students, educators, and the broader community. On a daily basis, air conditioning, better lighting, and modernized classrooms improve comfort and functionality for both students and staff, replacing conditions that previously included extreme heat without air conditioning.[88] Beyond the campus, facility investments broaden community access and support, including community use of the aquatic center and upgraded athletic fields. The superintendent described a shift toward greater pride and belonging with campus improvements, alongside trends like improved attendance and graduation outcomes and a stronger overall school climate.[89]

However, even with the visible changes resulting from facility upgrades, SBHSD's attempt at passing two bond measures in 2024 to build a second high school fell short of the 55% pass requirement. After the passage of the 2014 and 2016 measures and an onslaught of overlapping bond initiatives from the high school district, elementary district, and community college district in 2024, the community experienced voter fatigue and was more resistant to new measures. The community also shifted politically toward slow-growth sentiments, which created resistance to the district's purchase of farmland to build a new high school and ultimately caused Measures L and M to fail.[90]

## Results from the dynamic regression discontinuity study

This section presents the study's main findings, beginning with the characteristics of the districts that make up the analytic sample and then turning to causal estimates of how bond authorization affects capital spending and student outcomes over time. The results show how bond elections lead to increases in capital spending and, several years later, to measurable gains in student achievement, particularly in low-income districts.

### The analytic sample for the dynamic regression discontinuity analysis is broadly representative of the districts that propose school bonds in California

Before turning to results from the dynamic event-study, we first zoom in on the 71 close bond elections that form the analytic sample. Some districts held multiple close bond elections during the study period, so these 71 elections represent 66 unique school districts.

These 66 districts are broadly representative of California on several key characteristics, including geographic region and student demographics. Across California's 10 regions, the difference between the analytic sample and the way districts are spread across the state exceeds three percentage points in only one region. The largest difference is in Superior California (i.e., the far northeastern region of the state), which accounts for 14% of the analytic sample compared to 19% statewide. District demographics are similarly close to statewide averages. The enrollment-weighted percentages of students eligible for free or reduced-price lunch (FRPL) and the racial/ethnic composition of students in the analytic sample differ from statewide averages by no more than six percentage points.

Representation is weaker for size and geographic locale, which is not unexpected given the reliance on bond elections for this study. Extra-small and tiny districts are underrepresented in the analytic sample, while medium and small districts are overrepresented. Rural districts are also underrepresented (24% of the analytic sample) compared to the state (40%), while suburban districts are overrepresented (44% of the analytic sample compared to 29% statewide). This pattern reflects the differences in bond activity across district size and locales highlighted in the descriptive analysis above.

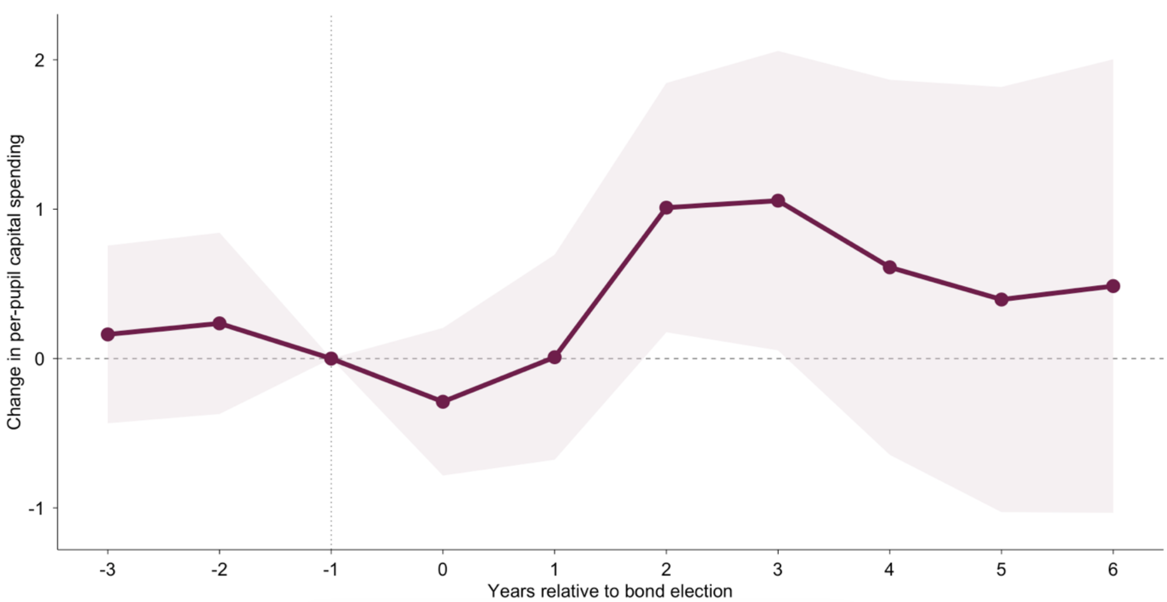
The findings indicate these 66 districts are broadly representative of California districts that propose school bond measures, suggesting that the patterns observed in the causal analyses described below are not driven by an unusual subset of districts (Appendix B).

## District per-pupil capital spending rises following a short delay after bond passage

Consistent with national studies and prior research in California, bond authorization produces a delayed but large increase in district capital spending, with timing that matches the realities of school facility projects (Figure 9). In the event-study estimates, increases in capital spending emerge after a delay, with the clearest jump appearing two and three years after a successful election. These years correspond to the period when construction costs are most likely to translate into recorded expenditures.[91] Per-pupil capital spending rises sharply following bond passage, by roughly 180% in year two and nearly 200% in year three, relative to districts that narrowly failed.

This pattern, where capital spending rises a few years after a successful bond election, reflects the nature of the "treatment" in this research context. School facility projects require time for planning, approval, and construction, so increases in capital spending occur with a delay. As a result, any effects of these facility improvements on students would be expected to emerge only in the years after we see increases in capital spending stemming from successful bond elections.

**FIGURE 9. CHANGES IN AVERAGE DISTRICT PER-PUPIL CAPITAL SPENDING FOLLOWING SUCCESSFUL LOCAL GO BOND ELECTIONS, CALIFORNIA**




***Notes***: *This figure shows changes in inflation-adjusted per-pupil capital spending for districts that narrowly passed a bond relative to those that narrowly failed, compared to the year before the election. Effects are shown on a log scale, so differences can be read as approximate percentage changes in spending. Points represent estimated effects, and shaded bands show 95% confidence intervals. Results are based on close bond elections and include election and year fixed effects, with standard errors clustered at the district level.*

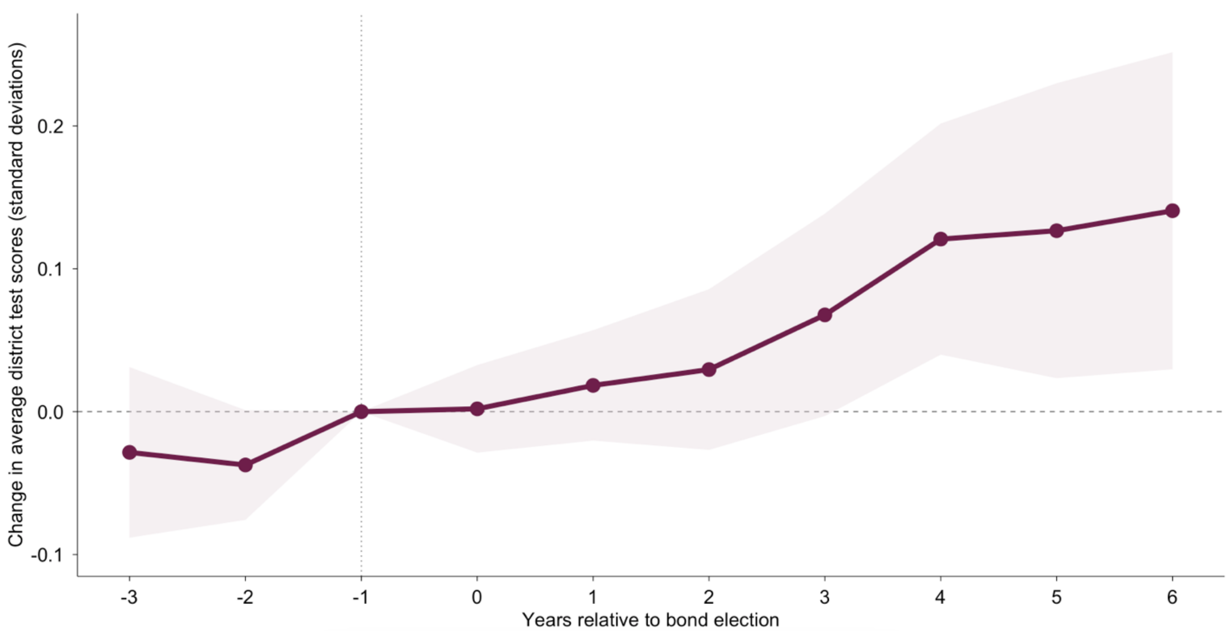
## Gains in average district test scores emerge four to six years after bond authorization

The dynamic event-study estimates of average test scores align with the delayed capital spending that follows districts' successful bond measures. There are no noticeable effects in the initial years after bond authorization, but test scores begin to rise four years later. This delayed effect on student achievement is consistent with the time it takes for capital spending to translate into tangible facility improvements.

In our main analysis, which focuses on pooled test scores across grades and subjects to create a single measure of district achievement, bond authorization is associated with increases of roughly 0.12 to 0.14 standard deviations (Figure 10). Using established effect-size benchmarks from the literature, these changes are comparable to roughly three to four additional months of learning, or about 60 to 70 additional instructional days, in districts that narrowly passed a bond relative to those that did not (Appendix B).[92]

When we run separate analyses for mathematics and ELA, we find that these overall gains are driven more by increases in mathematics scores. The effects on mathematics are both larger and statistically significant, though both changes in mathematics and ELA test scores follow the same positive trajectory. In other words, ELA test scores do show noticeable increases in years four, five, and six after bond passage, but the estimates are less precise and do not reach statistical significance (Table B2 in Appendix B).

**FIGURE 10. CHANGES IN DISTRICT TEST SCORES FOLLOWING LOCAL GO BOND PASSAGE, CALIFORNIA**




***Notes**: This figure shows changes in average district test scores in mathematics and ELA (pooled across grades 3–8) for districts that narrowly passed a bond relative to those that narrowly failed, compared to the year before the election. Effects are shown in standard deviation units, so differences can be read as changes in average achievement relative to the statewide distribution. Points represent estimated effects, and shaded bands show 95% confidence intervals. Results are based on close bond elections and include election and year fixed effects, with standard errors clustered at the district level.*

### District Profile: Riverside Unified School District

Riverside Unified School District (RUSD) is a large K-12 district serving almost 39,000 students in California's Inland Empire. RUSD is the 14th largest district in the state.[93] The district serves a high-need student population, with around 75% unduplicated pupils.[94] RUSD leaders have situated their facility needs within a challenging state funding environment where, because Proposition 2 was not able to fully fund the SFP, underfunding and slow reimbursements (often taking two to three years) limit the pace for project completion.[95]

The district has faced mild enrollment declines, which have begun to impact facility planning. Declining enrollment affects not only classroom utilization but also district revenues that support facility work, as fewer students mean fewer Local Control Funding Formula dollars. While the district still has some remaining bond dollars from a 2016 measure, leaders describe those funds as largely depleted and insufficient to address the full scope of ongoing needs.[96] Near-term priorities include major capital projects and ongoing campus condition and safety priorities.

> *"When we use these funds appropriately and strategically, we can create spaces that inspire and make a difference in the lives of our communities."*
> —ORIN WILLIAMS, ASST. SUPT. FACILITIES, PLANNING, & DEVELOPMENT, RUSD

The district's only recent GO bond, Measure O, was passed in 2016 with 70% of the vote and provided $392 million to enable portable classroom replacement, as well as updates to roofs, plumbing and electrical systems, safety measures, and STEM technology.[97]

Newer classrooms help to support improved student outcomes, though COVID-era disruptions make it difficult to directly attribute student outcomes to facility investments alone. The district's bond-funded work has also been associated with improved perceptions of campus quality and stronger day-to-day experiences for staff and families. Recent culture and climate survey results show a notable jump in facility ratings, including a 10-percentage-point increase in staff ratings of school facilities compared with the previous year's ratings.[98] District leaders tie these shifts to the completion of visible projects, such as the new Casa Blanca school, outdoor-area improvements, additional shade structures, safety projects, and extensive campus painting.[99]

## Bond passage did not result in significant changes to district enrollment or attendance

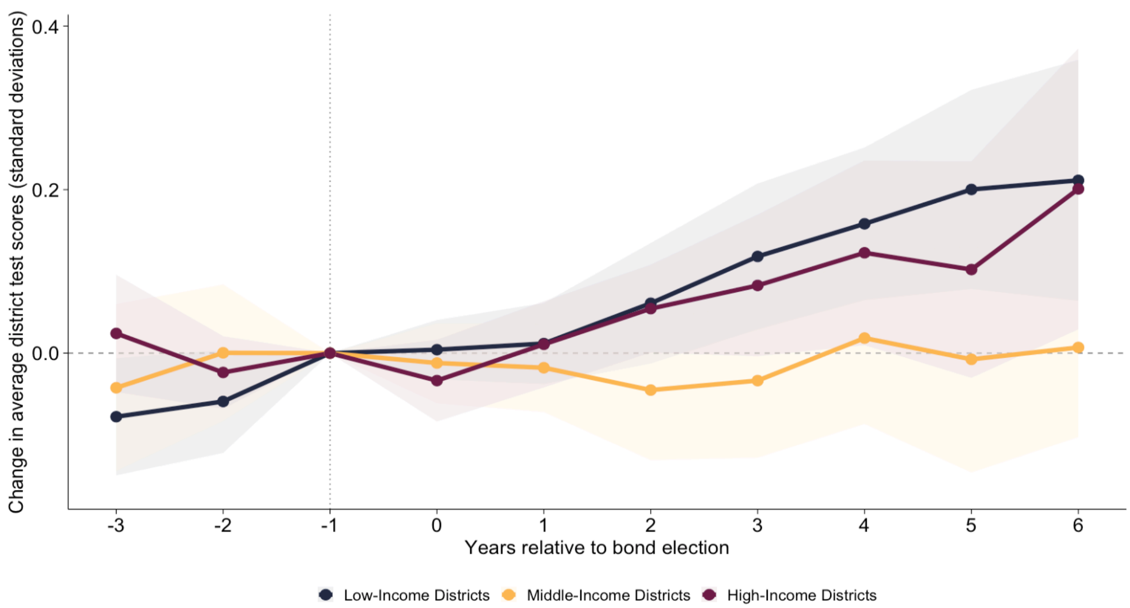
To assess whether bond passage resulted in changes to the composition of students a district served, and whether such changes could explain the achievement effects above, we analyzed the effect of bond passage on enrollment and student attendance. The event-study estimates showed no evidence of significant shifts in attendance. We do see some evidence of increases in student enrollment, though none of the estimates reached statistical significance (Table B2 in Appendix B).

These largely inconclusive findings help rule out other plausible explanations for the achievement gains observed above. The absence of significant changes in attendance and the lack of statistically significant enrollment shifts suggest that later test score improvements are unlikely to be driven by changes in the student population following bond passage. Instead, the combination of strong and delayed capital spending alongside stable enrollment and attendance is consistent with the interpretation that achievement gains reflect gradual improvements in the learning environment. This finding also aligns with prior research showing mixed and often context-specific enrollment responses to capital funding.[100]

## Average district test score gains are the strongest in low-income districts

We also analyzed whether the academic effects of bond passage differed by district socioeconomic status (Figure 11). High-poverty districts, defined as those serving higher shares of students eligible for FRPL, experienced the largest test score gains following bond passage. In these districts, achievement increased by 0.12 standard deviations in year three and grew to 0.21 standard deviations by year six, corresponding to approximately 58 and 103 instructional days of learning, respectively. Estimated effects in middle- and higher-income districts are also positive but smaller than those observed in high-poverty districts. As expected, estimates by income group are less precise than those from the main model due to small sample sizes across income groups, though the timing and direction of effects remain consistent with the main findings. These results align with prior studies in California and nationally that find school facility investments generate larger, delayed achievement gains in socioeconomically disadvantaged districts.[101]

**FIGURE 11. CHANGES IN DISTRICT TEST SCORES FOLLOWING SUCCESSFUL LOCAL BOND ELECTIONS BY DISTRICT INCOME LEVEL, CALIFORNIA**




***Notes**: This figure shows changes in average district test scores in mathematics and ELA (pooled across grades 3–8) following bond passage for low-, middle-, and high-income districts. Districts are grouped into income terciles based on their preelection share of students eligible for free or reduced-price lunch. Estimates compare districts that narrowly passed a bond to those that narrowly failed, relative to the year before the election. Effects are shown in standard deviation units, so differences can be read as changes in average achievement relative to the statewide distribution. Points represent estimated effects, and shaded bands show 95% confidence intervals. Results are based on close bond elections and include election and year fixed effects, with standard errors clustered at the district level.*

# Discussion and Policy Considerations

The results from this study show that local GO bonds are a critical but uneven driver of school facility investments across California. Districts have relied heavily on local GO bonds to fund repairs, modernization, and new construction, and overall passage rates are relatively high. Yet bond activity follows predictable election cycles and state policy windows rather than a steady alignment with districts' facility needs. When state bond funding becomes available, local bond proposals surge. However, when state funding dries up, districts face long periods of uncertainty and deferred investment.

The descriptive patterns that emerged from this study also reveal stark geographic and structural differences in the amount of capital funding districts can generate from GO bond passage. Larger districts, those in urban areas, and unified districts tend to secure substantially greater bond revenues, while smaller, rural, and elementary districts raise more limited amounts, even when voters approve similar measures. These differences appear to stem less from local support for schools and more from underlying fiscal capacity and administrative resources, meaning that students' access to well-resourced school facilities often depends on the characteristics of the district and region in which they live.

Importantly, the types of projects California voters most often approve align with the kinds of investments that prior research links to stronger student outcomes.[102] Districts appear to be prioritizing the basic infrastructure that produces safe, functional, and supportive learning environments, and these priorities seem to result in higher passage rates and increases in average district test scores.

These descriptive patterns help explain the study's main findings showing that successful bond elections translate into sizable increases in capital investment and, over time, into improved student outcomes. Facility spending does not rise immediately after a bond passes but instead increases several years later as projects move through planning and construction, with gains in student achievement emerging after substantial capital spending occurs. These academic improvements are largest in districts serving higher concentrations of low-income students, suggesting that school facility investments are a critical tool for improving educational opportunities in under-resourced communities. The lack of corresponding changes in attendance or enrollment further suggests that these gains are driven by improvements to the physical learning environment rather than shifts in who attends district schools.

Collectively, the findings point to both the strengths and the constraints of California's reliance on local bond elections to finance school facilities. Although bonds can generate substantial funding and are associated with meaningful long-term academic benefits, they also create uneven access to capital resources and expose districts to differences in local fiscal capacity, election timing, and administrative capacity. The section that follows draws on these results to outline policy considerations for state and local leaders.

## 1. Modernize how California tracks school facility conditions

As other researchers have pointed out, California lacks a publicly available, comprehensive dataset on school facility conditions.[103] As a result, state policymakers lack a clear picture of where the deficient school facilities are located and where state funds are needed the most. The FIT provides useful information and a foundation to build from, but a more comprehensive data collection system could be established with additional metrics, such as structural safety, HVAC performance (e.g., air quality), energy efficiency, compliance with the Americans with Disabilities Act, and the overall quality of the learning environment.[104] Complete, timely, and accessible data on school facility conditions would help the state identify the districts and schools with the greatest facility needs, providing the information policymakers need to better plan for state investments in the decades ahead.

Data on school facility conditions could also serve several other purposes. For example, providing better data on school facility conditions to parents and the broader public could strengthen transparency and help hold district leaders accountable for ensuring all students learn in quality facilities. Recognition by parents and voters of school facility needs could also lead to greater support for local GO bonds and put pressure on the state to expand school facility funding. Better data on facility conditions would also allow researchers to assess whether and how increased capital spending translates into changes in the learning environment, and to develop a clearer picture of what those facility changes look like.

## 2. Ensure state support is more predictable and sufficient

The persistent backlog of unmet facility needs across California demonstrates that demand for state support far exceeds the available funding. The lack of adequate facility funding means some students are being taught in aging buildings with health and safety deficiencies, which can disrupt instruction and hinder student learning. This study adds to an already strong evidence base showing that investments in school facilities are an effective use of public resources as they lead to improvements in student outcomes. The evidence suggests that expanding state facility funding is not only justified but necessary to ensure that all California students learn in environments that support academic success.

In addition to providing adequate funding, the state should avoid relying on infrequent statewide bond measures. Long gaps between state bonds, such as eight years between 2016 and 2024, have contributed to massive project backlogs, followed by periods of intense competition for limited funds when a bond is finally approved. Districts cannot plan multiyear construction or modernization projects when they do not know if or when state matching funds will be available. Instead, the state should establish a more regular, predictable mechanism for distributing facility funding, such as a predictable bond schedule tied to statewide election cycles, an ongoing funding program that replenishes over time, or another stable revenue stream dedicated to school facilities. California can look to other states as examples — 38 states have some form of appropriations, and 19 have designated state revenue sources for school construction expenditures.[105] A predictable flow of state support could allow districts to plan strategically and prevent situations where new bond authority is immediately consumed by prior commitments.

## 3. Reduce administrative barriers and improve access

If state funding for facilities were adequate, wide differences in facility funding and conditions would not be as pronounced as they are today. Currently, districts with higher property wealth raise substantially more facility funding than those with smaller tax bases.[106] Descriptive findings from this study also showed that small districts and those in rural areas are far less likely to propose a local GO bond, face lower passage rates when bonds are proposed, and generate substantially less funding even when authorization is successful.

If the goal is to reduce reliance on local wealth and administrative capacity to fund basic school facilities, policymakers have several options to improve access to state funding for school facilities. The State Allocation Board (SAB) within the Office of Public School Construction (OPSC) offers supplemental grants for remote school districts (Excessive Cost Hardship Grant) to augment new construction and modernization grants, for small school districts to help cover the cost of submitting applications for funding (Project Assistance Grant), and for small school districts conducting small-sized projects.[107] New technical assistance from the federally funded Supporting America's School Infrastructure program and Proposition 2's Supporting Priority School Districts program will support certain eligible districts, but implementation guidance and regulations are still being finalized.[108] Proposition 2 also adds process protections for small districts, including a preliminary apportionment to support design and planning and a reservation of state bond authority for the remaining balance, helping to protect access to funding while districts work through the full application process.[109]

Even with these new supports, capacity constraints can still limit districts' ability to access state matching dollars and successfully implement projects.[110] Technical support could be housed within OPSC or at the County Office of Education level with dedicated professional staff supporting districts with applying for funds, managing projects, and navigating reporting requirements. Policymakers could also structure the process of accessing SFP funds so that districts compete with others of similar size and resources for state facility funds, rather than against all districts with ranging administrative capacities.

## 4. Prioritize projects most likely to improve student learning

Local policymakers and district leaders should consider prioritizing facility investments that most directly improve student health and learning when designing bond packages. Core infrastructure projects shape the day-to-day conditions under which students and staff work, and a growing body of research shows that investments in core infrastructure are associated with delayed but meaningful gains in student achievement, particularly in schools serving higher-need students.[111]

Importantly, the study's descriptive findings indicate that California's bond system may already be directing substantial resources toward these high-impact investments. For example, most bond measures in this study included safety and health, infrastructure, classroom, or STEM-related projects. Bond types tied to core infrastructure like HVAC exhibit some of the highest passage rates. In other words, the propensity of California districts to use facility funding for the types of projects linked to better student outcomes may help explain why this study found strong, positive gains in average district test scores following bond passage.

## 5. Invest in continued research on the effects of facility investments

State policymakers and education stakeholders also have a role to play in supporting future research that examines the educational and broader community effects of facility investments. For example, this study provides strong evidence that school facility investments lead to meaningful improvements in student outcomes, but like much of the existing literature, we do not directly study why these positive changes occur. The delayed timing of achievement gains following bond passage is consistent with improvements in learning environments after construction is completed, yet the changes that lead to those improvements remain difficult to measure with administrative data. The district profiles featured in this study offer some initial qualitative insights into how facility investments may affect students and staff, such as increased community pride and belonging, more innovative learning opportunities, and higher attendance. However, these profiles represent only a handful of perspectives. Future studies with more expansive and systematic qualitative designs could help explain *how* and *why* facility improvements translate into better educational experiences and outcomes.

Additional research could also improve the field's understanding of how different types of facility investments generate broader community effects. For example, athletic facilities, transportation infrastructure, and land acquisition tend to be associated with gains in housing prices rather than with improvements in student outcomes.[112] More work is needed to examine how different types of projects contribute not only to student academic gains but also to longer-term neighborhood changes or demographic shifts. Future studies could also explore how the unprecedented wave of facility-related investments made during and after the COVID-19 pandemic, particularly those focused on ventilation, air filtration, and health infrastructure, has affected student attendance, health, and learning. This type of research would help policymakers move beyond knowing that facility investments matter to understanding which investments deliver the greatest educational and community benefits, under what conditions, and at what cost.

# Conclusion

This study adds to a growing evidence base showing that school facility investments are a critical lever for improving student outcomes, especially when resources reach districts that have historically had less ability to invest. These findings also strengthen the case for treating facilities as an ongoing statewide responsibility, rather than a periodic investment. To do so, California will need better information about where facilities are in the poorest condition, a more predictable and adequate stream of state support, and policies that make access to facility funding less dependent on local wealth and capacity. These changes would help ensure that all students, regardless of where they live, have access to safe, modern, and supportive school facilities.

# Appendix A. Methodological Overview

This appendix provides additional detail on this study's data, research design, and analytic strategy for readers who want a deeper understanding of our methodological approach.

## A1. Scheme for classifying project types in district bond measures

**TABLE A1. BIASI, LAFORTUNE, AND SCHÖNHOLZER BOND CATEGORY CLASSIFICATION**[113]

| Category | Bond Text Contains |
|---|---|
| Classroom | Text contains "building", "Building", "classroom", "Classroom", "school fa", "School fa" AND "construct", "Construct", "overcrow", "Overcrow", "const.", "renov", "Renov", "repa", "Repla", "repla", "Repa", "modern", "Modern", "improv", "Improv", "upgrad", "Upgrad", "refurb", "Refurb" |
| Other infrastructures | Text contains "plumbing", "Plumbing", "sewa", "Sewa", "sewi", "Sewi", "flush", "Flush", "Restroom", "restroom", "roof", "ROOF", "Roof", "furni", "Furni", "FURNI", "window", "Window", "Door", "door" |
| HVAC | Text contains "HVAC", "hvac", "Hvac", "Cool", "cool", "COOL", "Heat", "HEAT", "heat", "air co", "Air co", "air-co", "Air-co", "vent", "Vent" |
| STEM | Text contains "Lab", "lab", "career tech", "Career tech", "Career Tech", "Career tech", "Career Tech", "vocat", "Vocat", "STEM", "Comput", "comput", "COMPUT" |
| Safety/health | Text contains "Safe", "safe", "SAFE", "Security", "security", "surveil", "Surveil", "Alarm", "alarm", "fire", "FIRE", "Asbes", "asbes", "ASBES" |
| Athletic | Text contains "thlet", "THLET", "gym", "Gym", "GYM", "tadiu", "TADIU", "Sport", "sport", "SPORT", "field", "Field" |
| Transportation | Text contains "bus", "BUS", "Bus", "Vehicle", "vehicle", "VEHICLE", "transpo", "Transpo", "TRANSPO" |
| Land purchases | Text contains "land", "Land", "site", "Site" AND "acqui", "Acqui", "purch", "Purch" |

## A2. Calculating attendance rate

Attendance rate was calculated by taking the district's total average daily attendance and dividing it by the district's total Census enrollment. This calculation has been utilized in previous California research.[114]

## A3. Dynamic regression discontinuity design

The study employed a dynamic regression discontinuity design (RDD), which is a common approach in past research on school facility bond investments. California school bonds must receive 55% voter approval to pass. Districts that receive just over 55% are allowed to raise bond funds, while districts that fall just short are not. When elections are decided by very small margins, districts on either side of the cutoff tend to be very similar. By comparing districts just above and below the 55% threshold, the RDD helps isolate changes that occur because a bond was authorized, rather than differences driven by long-standing district characteristics or statewide trends. The dynamic component allows outcomes to be tracked for multiple years before and after the election, which is essential because facility investments take time to plan and complete.

### *Estimating the effects of bond authorization over time*

The main estimates in this study should be interpreted as intent-to-treat (ITT) effects. In other words, they capture the effect of authorizing a school bond, not the effect of completing a specific construction project. Passing a bond does not guarantee that all planned projects are completed immediately — or at all. Some districts may delay projects, scale them back, or combine bond funding with other sources. By focusing on bond authorization rather than realized construction, the estimates reflect the real-world policy lever available to voters and policymakers (i.e., whether a district is granted the authority to raise funds for facility investments). Consistent with this interpretation, the main model results show large and delayed increases in district capital spending following bond authorization, confirming that bond passage meaningfully changes districts' ability to invest in facilities, even if the results do not isolate the effect of individual projects.

### *Election fixed effects and the local comparison*

Rather than modeling outcomes as smooth functions of vote share across the full range of election results (i.e., polynomial specification), our analysis focuses on comparisons among districts with very similar vote outcomes, within a narrow window around the cutoff (±5 percentage points). This approach was also employed to improve interpretability for general audiences, as estimated effects reflect straightforward comparisons between districts that narrowly passed and narrowly failed a bond. As a result, the estimates should be interpreted as the local average effect for districts holding close bond elections. The models also include bond-election (cohort) fixed effects, which absorb all stable characteristics of each election, such as district size, local wealth, or community characteristics. These fixed effects mean identification comes from within-election comparisons between districts that narrowly passed and narrowly failed.

### *Stacked cohort design*

Some districts held more than one close bond election during the study period. Rather than limiting the analysis to a single election per district, the study uses a stacked cohort approach, where each close election is treated as a separate event and followed over time. This approach increases statistical power and is standard in studies of school bond elections. Since districts may appear multiple times in the data, standard errors are clustered at the district level to account for this structure.

### *Clean comparisons and 'forbidden' cases*

To preserve a clean comparison between treated and control districts, the study excludes comparison districts that later passed another bond within six years of a failed election. Without this restriction, some control districts would eventually receive facility funding, making treated and control districts more similar over time and biasing estimates. This exclusion ensures that differences observed in later years can reasonably be attributed to the original bond authorization.

## A4. Diagnostic tests and robustness checks

We also conducted a series of diagnostic and robustness checks to further strengthen the validity of the findings generated from the main model. The results from these checks largely confirmed the main model findings, and thus only those results are presented in the main body of the study for simplicity.

### *Demographic controls*

We estimate additional models that include district-level demographic controls to assess whether results are sensitive to changes in observed student composition. These controls include measures such as the share of students eligible for free or reduced-price lunch and racial/ethnic composition, measured at the district level. Including these controls does not meaningfully change the timing, direction, or magnitude of the estimated effects on capital spending or student outcomes. This stability provides additional reassurance that the results are not driven by gradual demographic shifts correlated with bond passage, but rather by changes associated with bond authorization and subsequent facility investments.

### *Bandwidth sensitivity*

We reestimated the main pooled test-score model using alternative bandwidths of ±2, ±3, and ±10 percentage points around the 55% cutoff. Across all specifications, achievement gains emerge four to six years after bond passage and remain positive. Estimates using narrower bandwidths are larger but less precise due to smaller sample sizes, while estimates using wider bandwidths are smaller in magnitude, which is expected when comparisons move farther from the cutoff. The ±5 percentage point bandwidth used in the main analysis represents a balanced choice, producing stable and statistically significant estimates.

### *Preelection trend checks*

A central assumption of the RDD is that districts just above and below the cutoff were on similar trajectories prior to the bond election. The dynamic event-study structure allows this assumption to be tested directly. Estimates for the years leading up to the election show no systematic differences between districts that narrowly passed and narrowly failed, providing reassurance that postelection changes are not driven by preexisting trends in average district test scores.

### *Alternative reference years*

The main models use the year immediately prior to a district's bond election as the reference period. To assess sensitivity to this choice, we also reestimated the models using alternative reference years, including two years before the election and one year after the election. The timing, direction, and magnitude of the estimated effects remain consistent across these specifications, indicating that the findings are not sensitive to how the baseline period is defined. We also examined the distribution of vote margins around the 55% cutoff and found no evidence of systematic sorting or manipulation near the threshold.

### *Multiple elections per district*

Since districts can appear more than once in the analytic sample, the analysis includes diagnostic checks to ensure results are not driven by a small number of districts with repeated elections. The main model includes an analytic sample of 71 bond elections across 66 unique districts. To ensure the results are not biased because of this, we tested alternative specifications that limit the sample to 66 bond elections — only one per district. The results did not alter the timing, direction, or magnitude of the estimated effects, confirming the findings are not sensitive to repeated observation.

# Appendix B. Key Findings Details

## B1. Descriptive overview of the analytic sample for the RDD analyses

**TABLE B1. DESCRIPTIVE OVERVIEW OF THE ANALYTIC SAMPLE FOR THE RDD ANALYSES**

| Section | Variable | California | Analytic Sample | Difference |
|---|---|---|---|---|
| Census region | Bay Area | 12.3% | 13.6% | 1.30% |
| | Central Coast | 10.3% | 13.6% | 3.30% |
| | Inland Empire | 5.8% | 9.1% | 3.30% |
| | Los Angeles County | 8.3% | 7.6% | -0.70% |
| | North Coast | 11.2% | 9.1% | -2.10% |
| | Northern San Joaquin Valley | 9.8% | 7.6% | -2.20% |
| | Orange County | 2.8% | 3.0% | 0.20% |
| | San Diego-Imperial | 6.0% | 7.6% | 1.60% |
| | Southern San Joaquin Valley | 14.3% | 15.2% | 0.90% |
| | Superior California | 19.1% | 13.6% | -5.50% |
| Geographic locale | City | 16.6% | 10.6% | -6.00% |
| | Rural | 39.1% | 24.2% | -14.90% |
| | Suburb | 28.3% | 43.9% | 15.60% |
| | Town | 16.0% | 21.2% | 5.20% |
| District size | Extra Large (25K+) | 3.6% | 1.5% | -2.10% |
| | Large (15K–24.9K) | 5.3% | 9.1% | 3.80% |
| | Medium (5K–14.9K) | 17.1% | 30.3% | 13.20% |
| | Small (1K–4.9K) | 30.9% | 40.9% | 10.00% |
| | Extra Small (100–999) | 31.4% | 18.2% | -13.20% |
| | Tiny (<100) | 11.5% | 0.0% | -11.50% |
| Student demographics | FRL % | 62.7% | 56.1% | -6.60% |
| | Asian % | 12.3% | 6.1% | -6.20% |
| | Black or African American % | 4.8% | 5.5% | 0.70% |
| | Hispanic % | 56.0% | 53.3% | -2.70% |
| | White % | 19.8% | 26.6% | 6.80% |

***Notes**: Demographic percentages for the 66 districts are enrollment-weighted averages while Census region, geographic locale, and district size are reported as district shares. **Source**: California statewide percentages for geographic locale and size come from school- and district-level files in the Common Core of Data, generated through the National Center for Education Statistics' ElSi Table Generator.*

## B2. Instructional day calculation

To aid interpretation, we translate estimated effect sizes into instructional days of learning. We follow the approach used by Policy Analysis for California Education (PACE) in a 2012 policy brief examining achievement gains from school facility upgrades in Los Angeles Unified School District, which likewise reports effects in standard deviation units.[115] Both the PACE study and our analysis rely on widely cited benchmarks for typical annual achievement growth in test scores. Averaging these benchmarks across grades and subjects yields an estimate of 0.368 standard deviations of achievement growth per academic year. We convert effect sizes into instructional days by dividing the estimated effect by 0.368 and multiplying by 180 instructional days per school year. For example, the estimated year four effect in our main model of 0.1208 standard deviations corresponds to approximately 59 instructional days of learning (0.121 / 0.368 × 180 = 59.2).

## B3. Changes in outcomes in the years following bond authorization

**TABLE B2. CHANGES IN CAPITAL OUTLAY, DISTRICT TEST SCORES, AND OTHER OUTCOMES IN THE YEARS FOLLOWING BOND AUTHORIZATION**

| Years since authorization | Capital outlay | Pooled (ELA and Math) | Pooled (w/ Controls) | Math | ELA | Attendance | Enrollment | Low FRL | Mid FRL | High FRL |
|---|---|---|---|---|---|---|---|---|---|---|
| -3 | 0.152<br>(0.296) | -0.028<br>(0.030) | -0.023<br>(0.029) | -0.031<br>(0.039) | -0.027<br>(0.032) | -0.026<br>(0.017) | 0.039<br>(0.026) | -0.078*<br>(0.036) | -0.042<br>(0.052) | 0.024<br>(0.036) |
| -2 | 0.194<br>(0.283) | -0.037<br>(0.019) | -0.040<br>(0.021) | -0.034<br>(0.030) | -0.040*<br>(0.017) | -0.004<br>(0.006) | -0.021<br>(0.027) | -0.059<br>(0.032) | 0.0004<br>(0.043) | -0.024<br>(0.023) |
| 0 | -0.283<br>(0.251) | 0.002<br>(0.015) | 0.002<br>(0.015) | 0.006<br>(0.021) | -0.002<br>(0.015) | 0.002<br>(0.004) | -0.003<br>(0.012) | 0.004<br>(0.018) | -0.012<br>(0.025) | -0.034<br>(0.025) |
| 1 | 0.040<br>(0.336) | 0.018<br>(0.019) | 0.018<br>(0.019) | 0.032<br>(0.025) | 0.003<br>(0.019) | -0.001<br>(0.006) | 0.016<br>(0.015) | 0.012<br>(0.025) | -0.018<br>(0.028) | 0.011<br>(0.027) |
| 2 | 1.031*<br>(0.411) | 0.029<br>(0.028) | 0.027<br>(0.028) | 0.046<br>(0.036) | 0.011<br>(0.029) | 0.002<br>(0.008) | 0.021<br>(0.021) | 0.061<br>(0.037) | -0.045<br>(0.044) | 0.054*<br>(0.027) |
| 3 | 1.084*<br>(0.493) | 0.068<br>(0.035) | 0.064<br>(0.035) | 0.091<br>(0.048) | 0.042<br>(0.035) | -0.011<br>(0.011) | 0.045<br>(0.031) | 0.118**<br>(0.045) | -0.034<br>(0.048) | 0.083<br>(0.044) |
| 4 | 0.645<br>(0.623) | 0.121**<br>(0.040) | 0.113**<br>(0.039) | 0.150**<br>(0.055) | 0.088<br>(0.045) | -0.020<br>(0.015) | 0.075<br>(0.051) | 0.158***<br>(0.047) | 0.018<br>(0.054) | 0.123*<br>(0.058) |
| 5 | 0.438<br>(0.696) | 0.127*<br>(0.052) | 0.122*<br>(0.050) | 0.173*<br>(0.078) | 0.077<br>(0.047) | -0.018<br>(0.015) | 0.110<br>(0.087) | 0.200**<br>(0.062) | -0.008<br>(0.071) | 0.102<br>(0.067) |
| 6 | 0.536<br>(0.741) | 0.141*<br>(0.056) | 0.129*<br>(0.053) | 0.207*<br>(0.091) | 0.072<br>(0.055) | -0.017<br>(0.016) | 0.132<br>(0.115) | 0.211**<br>(0.075) | 0.007<br>(0.056) | 0.201*<br>(0.088) |
| Adj. $R^2$ | 0.329 | 0.899 | 0.900 | 0.903 | 0.942 | 0.960 | 0.990 | | 0.901 | |
| N | 442 | 900 | 892 | 448 | 452 | 448 | 448 | | 768 | |

***Notes***: *This table reports event-study estimates comparing districts where local GO bonds narrowly passed to districts where bonds narrowly failed under California's 55% voter approval threshold. Coefficients are estimated relative to the year immediately preceding the bond election (event time −1), which is omitted as the reference period. All models include election-cohort fixed effects and calendar year fixed effects. Standard errors are clustered at the district level. Capital outlay is measured as log(1 + capital outlay per pupil). Test score outcomes are standardized at the district-year level; pooled estimates combine mathematics and ELA outcomes. Attendance is measured as the district's Average Daily Attendance Rate divided by the district's Census enrollment, and enrollment outcomes are reported in logarithms. Demographic composition outcomes include the share of students eligible for free or reduced-price lunch and the share of white students. Low, Mid, and High FRL columns report event-study estimates from models that interact bond passage with baseline district poverty. FRL groups are defined using preelection FRL share and held fixed over time. Estimates for Mid and High FRL districts are calculated as the sum of the main bond-pass coefficient and the corresponding interaction term. Significance levels are denoted by *** p < 0.001, ** p < 0.01, * and p < 0.05*

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The California School Facilities Research Institute (CSFRI) is a 501(c)(3) that was established in 2016 to conduct and publish validated research to raise Californians' awareness of the positive impact quality school facilities have on student academic achievement and community success.

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[78] Note: Three counties failed to pass any proposed GO bonds in the period—Amador (2/2 failed measures), Calaveras (3/3 failed measures), and Sierra (1/1 failed measure).

[79] California Census, "Regions." Note: Share of students and districts in this report reflects an average of student enrollment and number of districts over SY09–10 to SY23–24, rather than a single school year.

[80] Note: This analysis excludes three proposed bond measures from which NCES GEOCODES could not categorize the district's locale.

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