LINKING SCHOOL CONSTRUCTION INVESTMENTS TO EQUITY, SMART GROWTH, AND HEALTHY COMMUNITIES

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Linking School Construction Investments to Equity, Smart Growth, and Healthy Communities

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Abstract

It has been asserted that school construction spending is intricately related to goals at the smart growth, regional equity, and healthy communities nexus. In this paper we seek to link patterns of public school construction investment found in *Growth and Disparity: A Decade of U.S. Public School Construction 1995-2004* to equity, smart growth, and healthy community issues.

Building off our previous research that found tremendous growth in public school construction spending nationally, due to: 1) enrollment growth; 2) aging buildings; 3) federal and state mandates; and 4) changes in education, we examine the scale, scope, and distribution of public school facility investment in two case states, California and Florida. California and Florida have had high enrollment growth, have increasingly diverse student bodies, and have been leaders nationally in school construction spending. We show which communities benefited from school facility improvements by neighborhood income and racial composition in these two states, as well as what types of school construction has been invested in.

We posit that the disinvestment seen in school facilities in lower income and minority urban areas is yet another factor continuing to drive families with children from core cities and older suburbs; these families are seeking better schools for their children and the public investment that helps support them. While educators rightly look at patterns of educational program spending, school construction spending is an important and historically overlooked input that has a multitude of influences on school quality, residential patterns, segregation, and land use.

Given the enormous scale of public school construction spending – more than $30 billion annually – significant potential exists for collaboration and policy intervention to ensure that school facility investment contributes to better schools, responsible and equitable growth and development, and healthy communities.

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Introduction

There are about 118,000 public schools in the United States, containing nearly 5.5 billion square feet of building space on over 100,000 acres of land. Nearly $500 billion of capital outlay was spent on this inventory over the period from 1995-2004—with virtually 100 percent from public funds. The management and decisions governing public education infrastructure investment are entirely the result of public policy and budget and spending decisions—almost entirely made at the state and local levels.

This paper builds on the recent analysis of the scale, scope, and distribution of school facility spending by local public school districts nationally in *Growth & Disparity: A Decade of U.S. Public School Construction 1995-2004* (hereafter referred to as, *Growth and Disparity*) published by the Building Educational Success Together (BEST) collaborative (Filardo et al. 2006). Here, we explore how these findings may help explain how school siting, educational facility planning, and public school investment decisions are affecting neighborhoods, the environment, and child health.

The 21st Century School Fund, as lead research for the Building Educational Success Together (BEST) research team, analyzed a unique national database of public school construction expenditures between 1995 and 2004 and found an unprecedented rise in school construction spending as many states and localities made progress improving their public school buildings. However, the *Growth & Disparity* analysis also found a significant disparity in the students and communities receiving these investments; low income students and communities received about half the investment per student of their wealthier counterparts. Considering that in 1995 the General Accounting Office (GAO 1995) found that low income students were much more likely to attend schools with poor or inadequate facilities, the spending patterns during the decade following this finding appear to have done little to alleviate the disparity in school conditions experienced by children from different socioeconomic backgrounds.

To provide deeper analysis of school construction spending patterns, we analyze school district facility spending patterns within the state policy and demographic contexts of two high-growth, high-spending states, California and Florida. Between 1995 and 2004 both states saw about 20 percent public school enrollment growth. Both have increasingly diverse racial/ethnic enrollment and have a mixture of place types, from large urban centers to rural areas. California led the nation in capital outlay by spending more than $65 billion, while Florida spent more than $31 billion over the decade. However, while California led the nation in total public school construction spending, it spent far less on a per pupil basis on school construction than Florida (Filardo et al. 2006). The differences between California and Florida are even greater since the cost of school construction in California is one of the highest in the nation (Vincent and McKoy 2008).

We use the analysis of California and Florida to posit that the disinvestment seen in school facilities in lower income and minority urban areas is yet another factor continuing to drive families with children from core cities and older suburbs; these

families are seeking better schools for their children and the public investment that helps support them. School construction spending is an important and historically overlooked input that has a multitude of influences on school quality, residential patterns, segregation, and land use. Researchers and advocates in the education, smart growth, regional equity, and public health fields are increasingly finding overlapping agendas and common ground related to educational improvement, sustainable transportation, social inclusion, child health, and efficient and environmentally responsible land use and development. (for example see: Glover-Blackwell and Truehaft 2008; Bell and Rubin 2007; Fox and Glover-Blackwell 2004; Proscio 2003). From these perspectives, the trends in inequitable spending and the disinvestment in existing schools and communities are troubling because, we argue, these actions have helped increase neighborhood decline and segregation in older urban areas and fuel suburban growth on the fringes. School consolidation, siting and construction decisions have also resulted in children walking to school as the exception, rather than the rule.

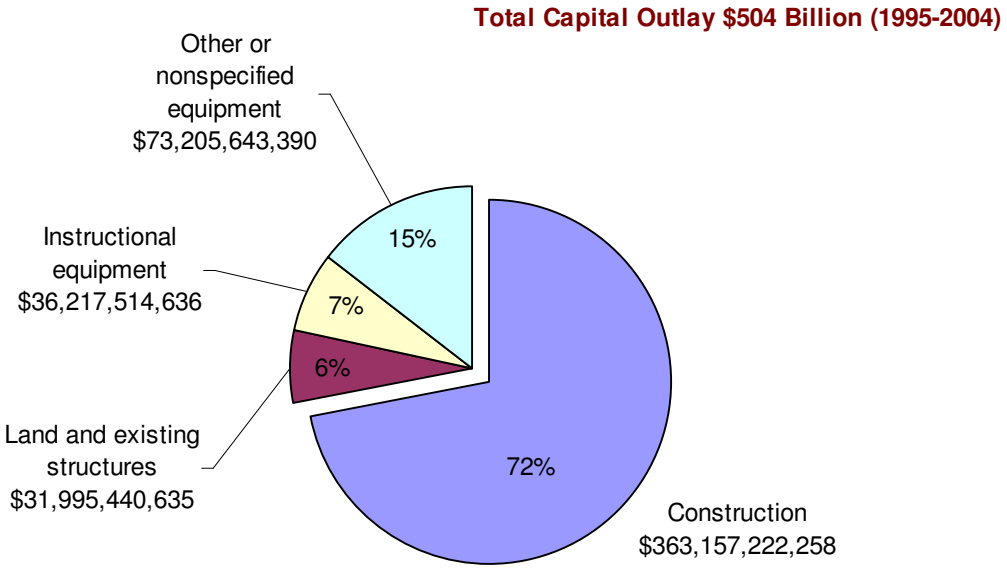
Growth in U.S. Public School Construction, 1995-2004: California and Florida

The Scale of Growth

Recent years have seen tremendous growth in public school construction in the United States. The U.S. Census of Governments data, the only national public record of capital outlay for school construction, show that between the years of 1995 and 2004, that annual school construction expenditures nearly doubled from $20 billion in 1995 to more than $37 billion in 2004. Including construction, land, and equipment, school districts spent $504 billion (in 2005 dollars) on capital outlay during the decade.[1]

[1] Each year the U.S. Census of Governments collects data on capital outlay for each state and school district. Public Elementary-Secondary Education Finance Data Capital Outlay Expenditures include expenditures for construction of fixed assets (construction services), purchasing fixed assets including land and existing buildings and grounds, and equipment (instructional and other/nonspecific).

Figure 1: U.S. Census of Governments Reported Public School Capital Outlay (2005 dollars)



Source: U.S. Census of Governments

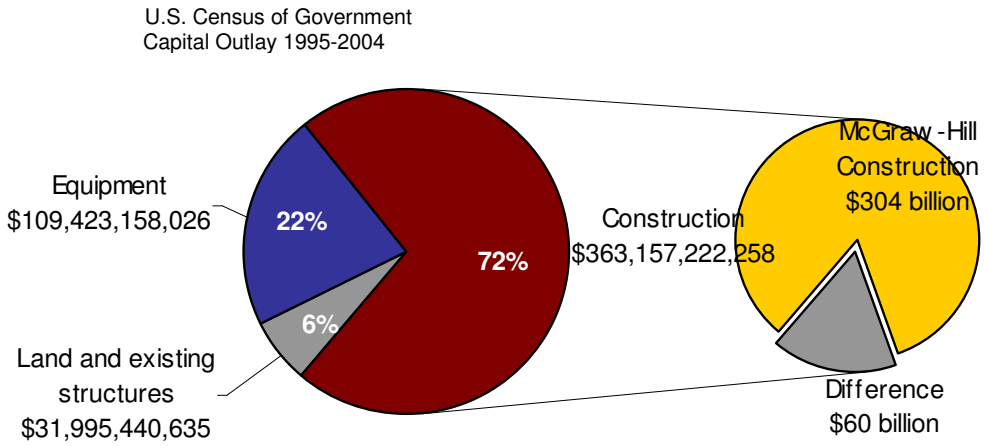
The U.S. Census of Governments data is most useful to understand *total* school district capital spending since it is the only national public record of school construction and related expenditures. However, we use McGraw-Hill Construction data which are collected at the project level, to get greater detail about the location and type of school construction. Daily, hundreds of McGraw-Hill reporters review construction contract awarded by school districts all across the country. These data capture the value of hard construction costs of specific projects at the time a bid is awarded to a contractor along with other information relevant to prospective subcontract bidders such as the type of work, its location, and who has won the bid award.[2]

In the research for *Growth and Disparity*, the 21st Century School Fund cleaned and organized the McGraw-Hill data so it could be used to analyze school construction spending at the school district and zip code levels. We utilize this modified McGraw-Hill data set, which contained approximately 146,000 PK-12 public school projects totaling $304 billion of school construction spending (See Appendix A for a description of this data and method for analysis). Figure 2 shows what proportion of the total capital outlay

[2] McGraw Hill Construction, a segment of McGraw Hill Companies collects detailed project-level data on every building project valued at more than $100,000 undertaken by the nation's school districts. These proprietary McGraw Hill data are collected in real time for the purpose of informing construction industry manufacturers, contractors, and subcontractors of projects that will be under construction, so they can market their goods or services to the project owner and contractor. These "construction start" data reflect the contract value of each project and represent the construction "hard costs": the basic labor and material expenses of the project. The additional "soft costs" – such as site acquisition, architectural, engineering, project management and other fees – are not collected by McGraw-Hill. Hard costs typically account for about 70 percent of a project's total cost.

of school districts is encompassed by the McGraw-Hill school hard construction bid start data.

Figure 2: Comparison of Total Capital Outlay and Hard Construction Bid Start

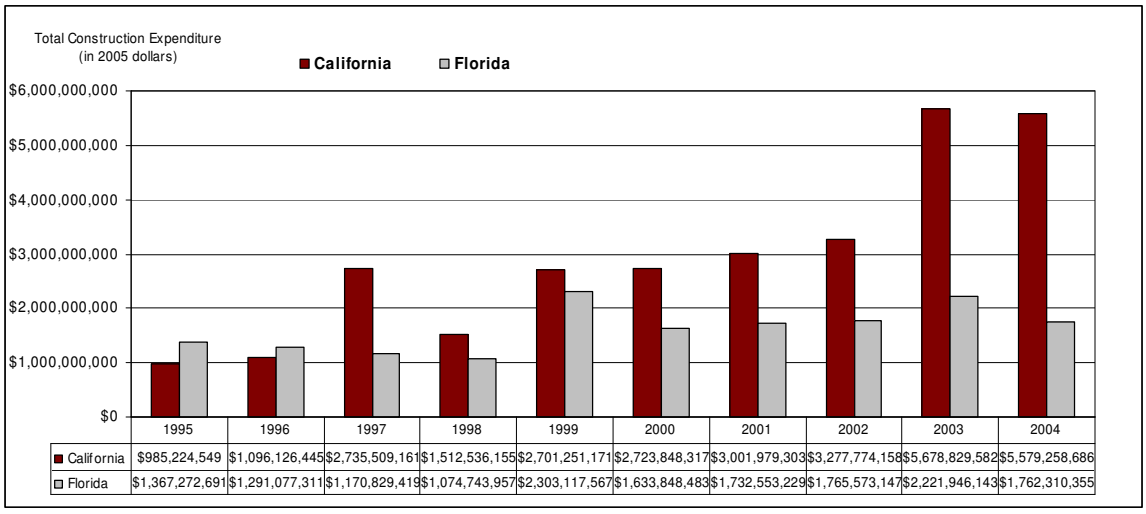


Source: U.S. Census of Governments

The $304 billion is a subset of the $363 billion dollars of capital construction outlay reported by the U.S. Census of Governments. We analyze this McGraw-Hill construction data by type, location, and against geographic measures of income, race, and place type to understand the scope and distribution of school construction spending. Because construction costs can rise during the course of a project, the "construction start" McGraw-Hill data can be used as an estimated measure of actual final project costs, and are highly applicable to assessing local, regional, state, and national trends in construction spending.

California and Florida public school construction expenditures have been increasing, even when adjusted for inflation. However, Florida has had a more stable program for school construction than California's episodic state bond driven program. Such capital funding stability is an important element of a well-managed school construction program. (Filardo 1999).

Figure 3: Comparison of Public School Construction Bid Starts in California and Florida, 1995-2004

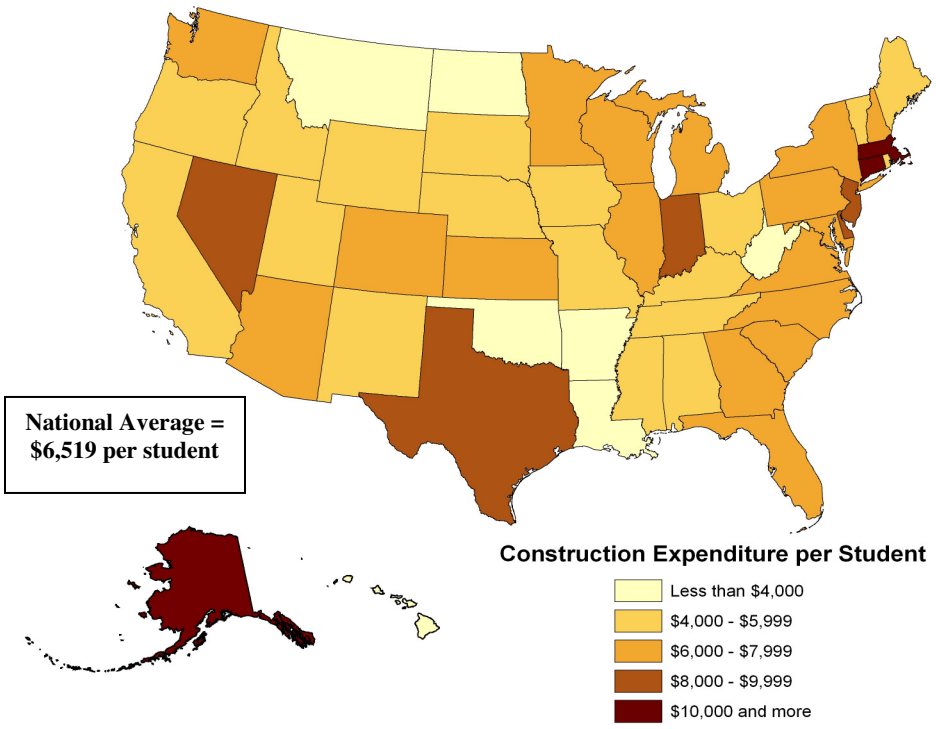


	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
California	$985,224,549	$1,096,126,445	$2,735,509,161	$1,512,536,155	$2,701,251,171	$2,723,848,317	$3,001,979,303	$3,277,774,158	$5,678,829,582	$5,579,258,686
Florida	$1,367,272,691	$1,291,077,311	$1,170,829,419	$1,074,743,957	$2,303,117,567	$1,633,848,483	$1,732,553,229	$1,765,573,147	$2,221,946,143	$1,762,310,355

Source: McGraw-Hill Construction

Looking at school construction expenditures per student between 1995 and 2004 across the nation, Figure 4 shows tremendous disparity by state. California spent $4,919 per student, well below the national average of $6,519 per student, and Florida spent $6,915 per student, slightly more than the national average (Filardo et al. 2006).

Figure 4: Public School Construction Expenditures per Student, by State, 1995-2004



Sources: McGraw-Hill Construction, National Center for Education Statistics

These data are not adjusted for regional differences in the cost of labor and so mask differences in the "real" construction work these dollars buy. For example, the same dollar in Florida buys almost 30 percent more school construction than in California (Vincent and McKoy 2008).[3] Although California led the nation in *total* school construction spending, school districts in the state invested far less *per student* than the national average and due to the high cost of construction, procured fewer improvements for those investments.

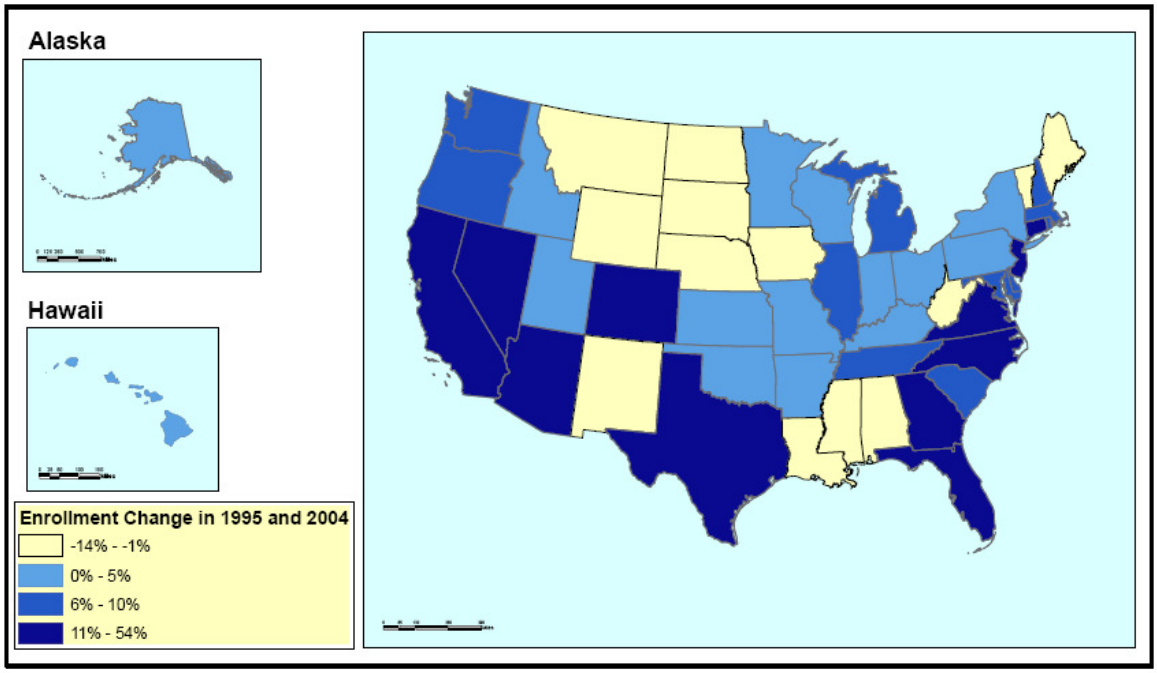
Spending Pressures

The need for public school facilities investment across the country over the last decade – both for new construction and for renovating and expanding existing schools – has largely been driven by four factors: 1) enrollment growth; 2) aging buildings; 3) federal and state mandates and 4) changes in education.

Enrollment Growth

California and Florida, along with other southwestern and southeastern states have experienced tremendous public school enrollment growth since 1995, as shown in Figure 5. Public school enrollment in California increased by 19 percent, while Florida enrollment increased by 23 percent. California and Florida's growth has been driven largely by national domestic migration patterns to south and western regions and by continued strong immigration rates.

Figure 5: Public School Enrollment Change 1995-2004



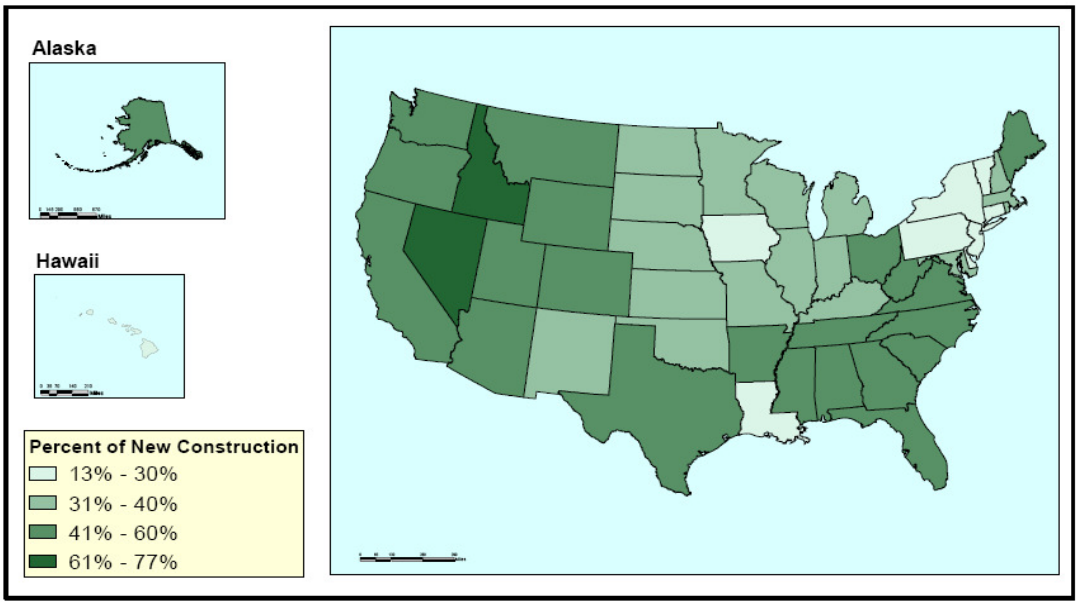
Source: National Center for Education Statistics

[3] Florida labor costs are on average 81 percent of the national average and California is 108 percent of the national average, according to Engineering News Record construction indices, 2003.

California and Florida's growth, in part, has come at the expense of many Midwestern, northern, and northeastern urban regions, particularly those in the "rustbelt." Many of these communities have seen slow or declining population and economic growth and stagnating public investment in public infrastructure (Fox and Truehaft 2005). In these areas, older cities are being abandoned, while suburban and exurban areas continue to grow, mainly as families seek employment, new housing choices they can afford, better schools, public safety, and other public services and infrastructure that local governments in declining cities are hard-pressed to provide.

Like many other western and southeastern states, California and Florida both spent a large share of their school construction expenditures on new school construction (43 percent and 54 percent, respectively), as shown in Figure 6. This is not surprising given the high enrollment growth and intense overcrowding California and Florida experienced since 1995 (Colmenar et al. 2005).

Figure 6: Share of New Construction Bid Starts by State 1995-2004



Aging Buildings

The average age of the nation's public schools is about 40 years. Without necessary ongoing maintenance and capital investment, conditions in existing school facilities deteriorate. Inadequate maintenance spending on school facilities is evident by the fact that American Society of Civil Engineers (ACSE 2005) gave public schools nationally one of the lowest ratings ("D") of all infrastructure. In its national study of the condition of the country's public school buildings, the GAO (1995; 1996) found that California had among the worst school facility conditions.[4] In California, 43 percent of schools reported

[4] Nationally, the GAO found that one-third of all public school buildings in the country—about 25,000, serving nearly 14 million children—were found to be in a serious state of disrepair. Twenty-five million

having one or more inadequate building. In Florida, 31 percent of schools reported having one or more inadequate buildings. Florida was slightly better than the national average of 33 percent, with California being significantly worse. However, in both states, the vast majority (87 percent and 85 percent, respectively) of schools reported the need to upgrade or repair on-site buildings to good overall condition. Thus, while both states had condition disparities in school facilities in 1995, California was found to have worse conditions compared to Florida. Although California and Florida experienced comparable public school enrollment growth over the decade, their schools were not in comparable condition in the mid 1990s. As a result, having more than twice as many students as Florida, California needs a far greater scale of investment in its existing schools.

Federal and State Mandates

There are a number of federal and state mandates that put pressure on school district construction costs and requirements. These mandates address issues of health, safety, and rights of access. Some requirements affect the actual design of a building, while others affect the methods or processes required during construction or renovation.

They key health and safety requirements mandated by federal law are related to asbestos and lead. The federal requirements associated with their management and abatement affect the cost, type, and scope of construction work undertaken by school districts. The Asbestos Hazard Emergency Response Act (AHERA) managed by the Environmental Protection Agency (EPA), which promulgated the Asbestos-Containing Materials in Schools Rule has had widespread impact. This rule requires all private and public non-profit elementary and secondary schools to inspect their schools for asbestos containing building materials (ACBM), develop a plan to manage the asbestos in each school building, notify parents and staff regarding the management plan availability, provide asbestos awareness training to school maintenance and custodial workers, and implement timely actions (repair, encapsulation, enclosure, removal) to deal with dangerous asbestos situations.

Another environmental hazard addressed by the EPA is lead. In any child-occupied facility there must be inspection, risk assessment, and abatement of lead-based paint. Lead-based paint was commonly used on radiators, pipes, windows, and particularly exterior doors, baseboards, and boiler rooms up until the 1970s. It must be abated when it creates dust or is loose and when a building is renovated. Like asbestos, when working on existing buildings, contractors have special requirements for testing, working in areas with lead based paint and disposing of materials that contain lead based paint that increase the cost of a project.

The federal mandates affecting access to public schools and education are Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act (IDEA), and Title IX of the Elementary and Secondary Education Act. The most significant new federal requirement affecting facilities is Title II of the American with Disabilities Act which extends the rights of individuals with disabilities. All public buildings must be

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children attend schools in buildings with at least one unsatisfactory condition. These most decrepit schools serve primarily minority and low-income students.

accessible to persons with handicaps. Existing buildings should all be modified within a timeframe, and buildings undergoing a certain level of improvements must be modified to meet ADA requirements. While most people think of the ADA affecting mobility within a building, it also affects requirements for acoustics and signage associated with hearing or sight-related disabilities.

With the passage of the first Individuals with Disabilities Education Act in 1972 school systems began a transformation to extend schooling to students who were often excluded from public school altogether. Now IDEA requires that any school receiving federal funds must provide a free appropriate public education (FAPE) to children with disabilities in the least restrictive setting with the appropriate instruction and services to advance them socially and academically. The regulations implementing these laws require that students with disabilities receive benefits and services comparable to those given their nondisabled peers. In addition to changes that extend education by disability, Title IX has extended educational programs—particularly athletics and physical education—by gender. Title IX requires that no school receiving federal funds can exclude from participation, deny benefits, or discriminate by gender access to any education program or activity.

Finally, although not occurring at the federal level, as ADA, IDEA and Title IX, some states are extending the age for which education is available by right. In many communities full-day kindergarten is still considered an innovation, but more and more school districts offer not just full day kindergarten, but Pre-kindergarten for 4 year olds, Headstart, and even locally funded pre-school programs for 3 year olds. New Jersey, in particular must provide pre-school to all children from the lowest income school districts, as a part of the settlement of the educational adequacy and equity challenge brought in the *Abbott* court case.[5] The expansion of early childhood education is changing schools dramatically, increasing enrollments and bringing significant modifications to building and grounds design and construction.

There are other state level mandates for school districts that impact the need for school construction and the school construction programs. In California, the Field Act often is identified as the most costly with which to comply. It requires schools to be constructed to meet heightened structural safety standards to withstand earthquakes. In Florida designated public schools have hurricane hardening requirements for windows and roofs that ensure they are secure shelters for the public.

Changes in Education

The need for school construction spending has also been driven by demands on school facilities to support the changing needs of students, teachers, and communities. There are many new practices, programs, and services in public schools, for which design changes are needed. There are a number of educational changes which put pressure on school facilities:

[5] Footnote on *Abbott* here.

- The desire by parents and educators for "small"—small class size and small schools has significant effect on school facility design and is changing the size and amount of space needed for schools.
- Schools built in urban districts at the beginning of the 20th century did not provide cafeterias, since students returned home for lunch. While this practice has long since been changed to provide daily lunch, and often breakfast to students, many of the oldest school buildings do not have adequate cafeteria or food service amenities.
- Technology in administration, operations and instruction is changing school design and construction. There is wide use of video/DVD, computers, and internet in schools for administration, operations, particularly security related and for instruction.
- Significant changes in our economy have transformed career and technical education in secondary schools.
- Many schools are also now being designed or reconfigured for use by members of the community outside of regular school hours.

These trends and others associated with curriculum and pedagogy are seen across the country, and the school design needed to support these educational programs, practices, and services are included in any high quality new school design, and should be included in any school renovation.

Infrastructure Equity

In addition to these internal pressures to improve school facilities, where states have not stepped forward to address these problems, there have been extensive court challenges to the equity and adequacy of funding for school facilities. States that had successful challenges to their school funding formula, which included public school facilities, spent, on average about 25 percent more on school construction than their counterparts (Filardo 2006).

The dramatic increase in school construction spending in California in 2003 illustrated in Figure 3 is largely the result of the heightened understanding of the substandard condition of public school facilities. This awareness was generated, in large part by the landmark educational equity suit, *Eliezer Williams, et al., vs. State of California, et al.*, which was finally settled in 2004. The suit was brought to improve the materials and physical conditions of the state's lowest-performing schools. Plaintiffs argued that the state agencies responsible for providing education to the state's children failed to provide students with equal access to instructional materials, safe and decent school facilities, and qualified teachers (California Department of Education 2006). Part of the argument was that overcrowded schools had moved from two-semester calendars to "multi-track year round" schedules, so these students attended school far fewer days than students in traditional calendar schools. In its settlement, the State of California agreed to allocate $800 million for facility repairs to alleviate the facilities inequities. As a result of this court challenge, recent state bonds have had several equity-oriented elements, including that they are paid back through California's progressive state taxes, payment is spread over future populations, hardship grants from the state are meant to make-up for inability

to raise local funds, and preliminary apportionment has replaced the first-come, first-served approach that disadvantaged urban school districts (Pastor and Reed 2005).

The more stable and higher level of per pupil school construction spending in Florida, as well as the fact that school buildings were not in such poor condition to begin with in 1995, provide a rationale for why Florida has not had school facility conditions litigated in court.

Distribution of School Construction Investment: California and Florida

The data presented thus far illustrate that the last decade has been a period of intense school construction spending in California and Florida as well as nationally. We have also identified the key drivers of school infrastructure spending. In this section, we ask: who has benefited by this enormous public infrastructure spending? What can we learn about how facility investment has affected communities?

Nationally, students from low income families received about half the facility investment compared to their wealthier peers. Additionally, the poorest neighborhoods received less than half the school construction investment per student compared to wealthier neighborhoods. (Filardo et al. 2006). Our analysis of the distribution of school facility spending in California and Florida by neighborhood income and racial composition reveals disparities that largely mirror the national trends found in the *Growth and Disparity* study. Further, our analysis of spending by geographic locale finds that existing areas received much less school construction investment per student compared to rural and suburban areas.

Investment by Neighborhood Income

Because school districts can cover hundreds of square miles and include many types of communities, an analysis of school construction spending at the school district level can mask important variations in spending, particularly in states with county school districts such as Florida. To understand what is happening at the neighborhood and project level in California and Florida, we analyze the McGraw-Hill data by project zip code and Census 2000 median household income at the zip code level. California is divided into 1,052 school districts and 2,490 five-digit zip codes. In Florida, there are 67 county school districts and 1,832 five-digit zip codes.

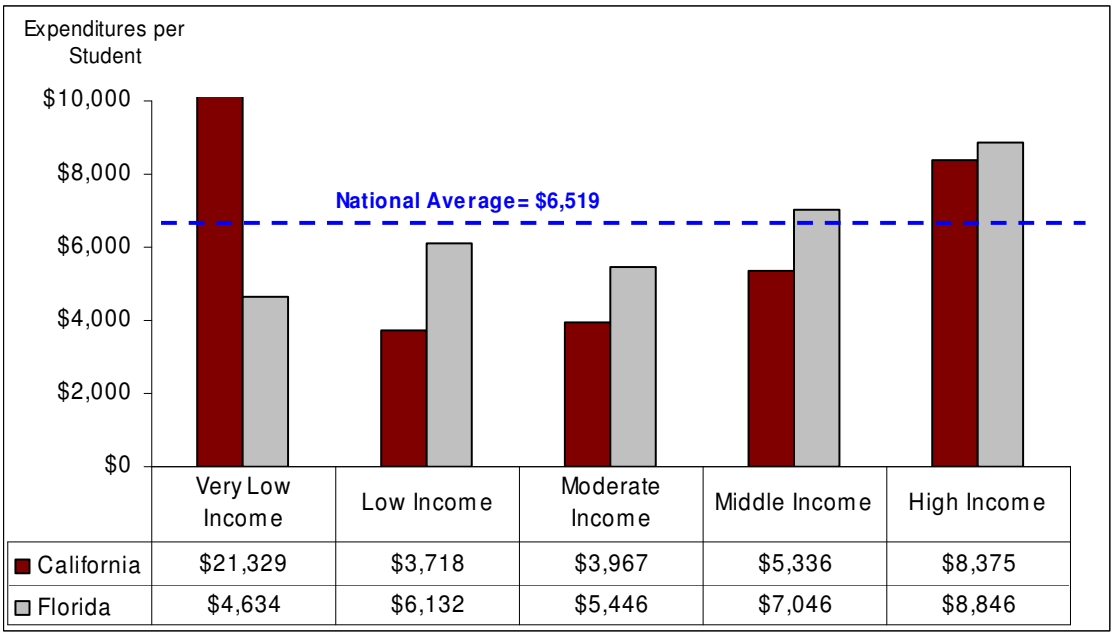
Zip code areas were divided into five categories according to their 2000 Census median household income:

- Very Low Income (Less than $20,000)
- Low Income ($20,000 to $34,999)
- Moderate Income ($35,000 to $59,999)
- Middle Income ($60,000 to $99,999)
- High Income ($100,000 and more)

According to the 2000 Census, just over half of children pre-school through 12th grade in public school in both California (52 percent) and Florida (54 percent) attended schools located in "moderate income" neighborhoods. Very few students attended schools in "high income" neighborhoods (2 percent in California and 0.1 percent in Florida). One quarter of California's students and thirty-seven percent of Florida's students attend schools in "low income" neighborhoods.

Figure 7 shows, except for an unusual distribution in California, that lower investments were made in the lower income neighborhoods, while the highest investments were made in the higher income neighborhoods. The high expenditure per student in the "very low income" zip code in California can largely be explained by one very large and very expensive school – Los Angeles Unified School District's Belmont High School; it is being built in downtown Los Angeles, in a zip code area that has very few residents. The project has been plagued by serious environmental and site related problems. Removing this more than $350 million school brings the investment per student down below $4,000 per student.

Figure 7: Public School Construction in California and Florida by Student and 2000 Census Median Household Income, 1995-2004[6]



	Very Low Income	Low Income	Moderate Income	Middle Income	High Income
California	$21,329	$3,718	$3,967	$5,336	$8,375
Florida	$4,634	$6,132	$5,446	$7,046	$8,846

Sources: McGraw-Hill Construction, U.S. Census 2000; analyzed by zip code

In Florida, schools in "very low income" neighborhoods received about half the expenditure per student ($4,634) as schools in "high income" neighborhoods ($8,728). However, school construction expenditures in Florida, while still following the pattern of lower investment in the lowest income communities, are less disparate than the

[6] The figures are derived by taking the total hard cost start bid amounts for projects awarded between 1995-2004 from the McGraw-Hill data set and analyzing them by 2000 U.S. Census median household income by zip codes, then dividing the total expenditure within a zip code by the number of public school age children in pre-school through 12th grade living within the zip code where the project is located.

expenditures in California. This may in part be explained by the school finance system in California and Florida. Since Florida has county school districts, and only 67 of them, and has had a strong state construction program over an extended period of time, it appears to have done a better job of meeting its responsibilities to allocate construction funds by need. California, on the other hand, has over 1,000 school districts, each of which must come forward with its school construction plan and priorities and compete with each other for state construction funding.

Still, overall, the more affluent a community, the more funds were spent per student on school construction in both California and Florida. This distribution is even more troublesome because most public school students in California (77 percent) and Florida (91 percent) attend schools in districts with "low income" and "moderate income" majorities.

There are two key reasons why the inequities in public school construction investment are so important. The first is that a growing body of empirical evidence finds that poor physical condition and design of school facilities contributes to poorer performance by students and teachers (Schneider 2002; Higgins et al. 2005; Uline and Tschannen-Moran 2008). Thus, low-income students are further disadvantaged when they are in substandard school buildings. In 1995, low income students were much more likely to attend schools with poor conditions (GAO 1995; 1996) and, as we have shown, the schools these students attend received very low investments for maintenance, renovation, and modernization to "catch up" to their more advantaged peers in wealthier zip code areas. Coupled with the other very significant socioeconomic-related disadvantages that low income students already face in performing well in school (Rothstein 2004), the inequity in their school building conditions – which is a function of public investment policy - is an inequity that erects yet another barrier these students must overcome.

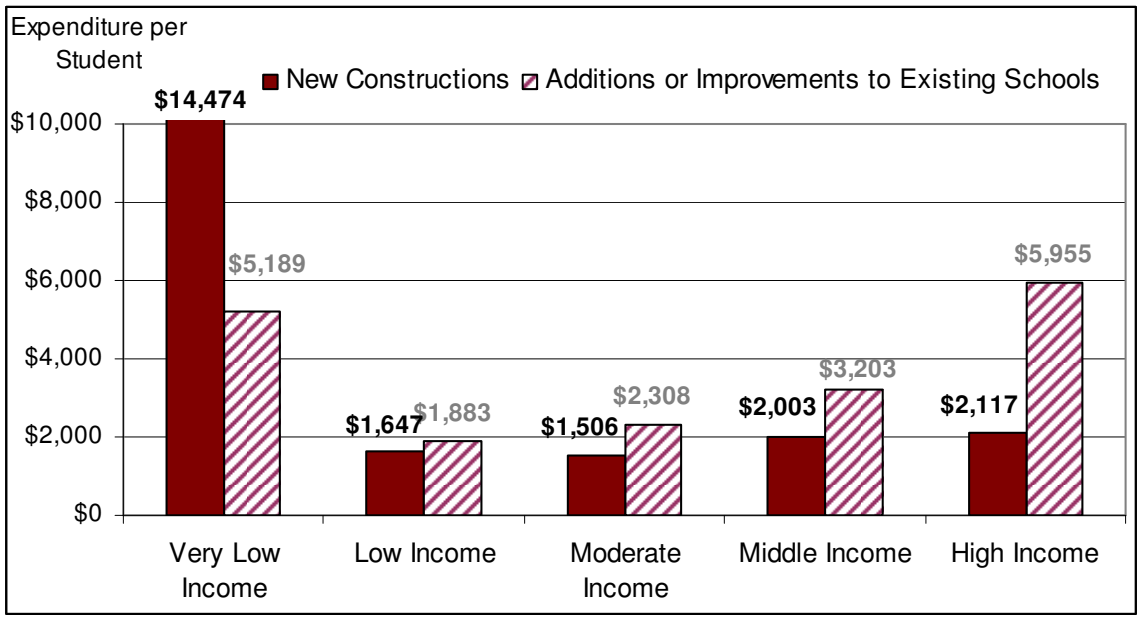
The second reason is that inequities in school construction spending impact neighborhoods, cities, and metropolitan regions. Evidence suggests that the condition and quality of school buildings contribute to neighborhood vitality or decline; poor school building conditions send signals that educational quality is also poor (Weiss 2004). The perceptions of the quality about a given school that parents formulate have tremendous push-pull effects on families within metropolitan regions. Local school quality is frequently cited in survey used to explain how people choose where to live (APA/AICP 2000, Baldassare 2003; Landis 2005), and access to better schools is generally reflected in home prices (Black 1999; Bogart and Cromwell 2000). Perceptions of poor quality educational opportunities for their children drive families from urban centers and first ring suburbs, a pattern that helps fuel surburban fringe growth (McKoy and Vincent 2008).

Investment by Project Type

The McGraw-Hill data places each project in one of three project type categories: new construction, existing building; or addition and existing building. During the period from 1995-2004, California spent 43 percent of its hard construction funds on new construction. Florida spent 54 percent of its construction funds on new construction. In

California, the "high income" neighborhoods received nearly three times the investment per student in existing schools as both "low income" and "moderate income" neighborhoods, as shown in Figure 8. The high expenditure in spending per student on existing schools in "very low income" neighborhoods is largely the result of Los Angeles Unified School District's massive school renovation and modernization program and the impact of the *Williams* case that required maintenance and repair funds to the poorest schools. The high expenditure per student on new construction is again explained by Belmont High School in Los Angeles. Otherwise, spending per student on new construction in California neighborhoods was fairly even.

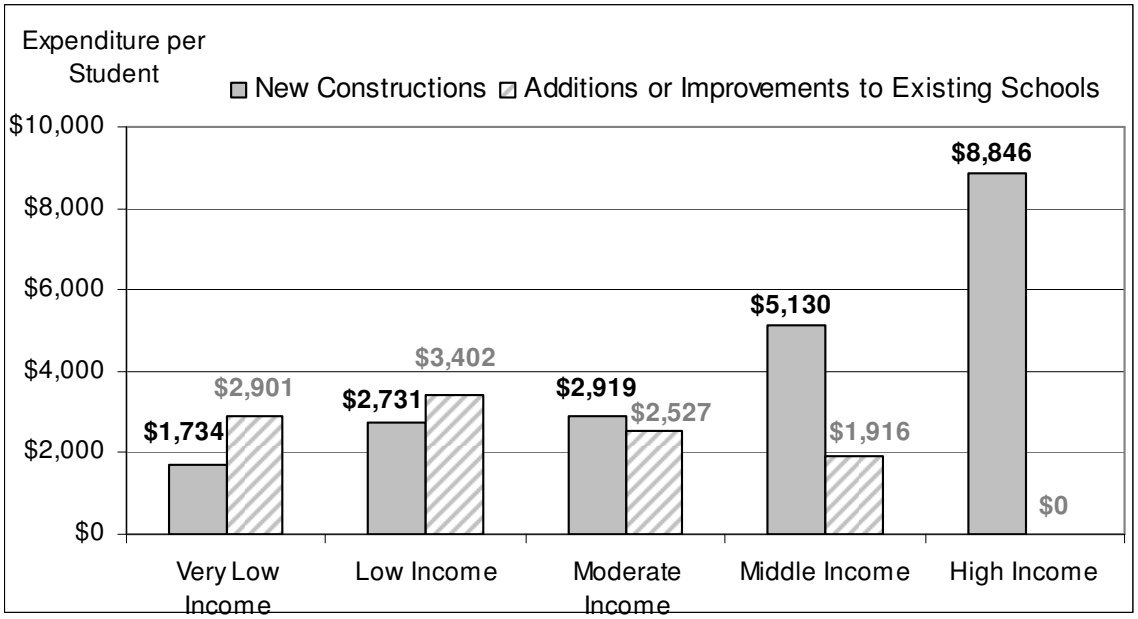
Figure 8: California Public School Construction Spending per Student by Project Type and Median Household Income, 1995-2004



Sources: McGraw-Hill Construction, U.S. Census 2000; analyzed by zip code

Patterns in Florida are somewhat more equitable than in California, at least in terms of spending on existing schools, as shown in Figure 9. "Very low income" and "low income" neighborhoods – likely the places with the oldest school buildings – received the most spending per student. But spending on new construction in Florida was quite different; "high income" neighborhoods received between two and four times more than nearly all other neighborhood types.

Figure 9: Florida Public School Construction Spending per Student by Project Type and Median Household Income, 1995-2004



Sources: McGraw-Hill Construction, U.S. Census 2000; analyzed by zip code

Older existing schools represent over 80 percent of the public school facility inventory, but only about half of each state's school construction expenditures were used to upgrade, renovate, and/or expand these existing assets. The enrollment growth and overcrowding trends suggest there is a real problem with facility conditions in the existing schools, which have had very low investment, relative to their number and need. Even the aggressive school construction spending of the 1995-2004 period left tremendous backlog of deferred maintenance. Los Angeles Unified School District estimates a multi-billion dollar deferred maintenance accumulation spanning the district's 800-plus schools.

To better understand the magnitude of the lack of investment in existing schools, consider the data in Table 1. If the new construction funds are only allocated to the increased enrollment, there remains only $3,066 per student for existing facilities in California and $3,544 per student for existing facilities in Florida. This is only $306 and $354 respectively, per student per year for existing facility funding. These numbers are low, considering that existing facilities are under pressure to accommodate enrollment change, replace aging components and systems in existing buildings, meet federal and state mandates, and support new educational space requirements.

Table 1: Construction Spending Allocated by Student by Construction Project Type

State	New Students (Enrollment Increase, 1995 to 2004)	New Construction Expenditures, 1995-2004	New Construction Expenditure per New Student	Enrollment, 1995	Expenditures on Existing Schools, 1995-2004	Expenditures on Existing Schools per 1995 Enrollment	Annual Average Expenditure on Existing Schools per 1995 Enrollment
CA	1,006,387	$12.6 billion	$12,632	5,407,475	$16.7 billion	$3,066	$306
FL	476,440	$8.8 billion	$18,555	2,111,188	$7.5 billion	$3,544	$354

Sources: McGraw-Hill Construction, National Center for Education Statistics

Rising enrollments have put districts under pressure to build new schools at the expense of maintaining and modifying existing ones. Our analysis of school construction spending reveals a significant aspect of disinvestment in existing schools and their neighborhoods, which runs counter to smart growth, regional equity, and healthy communities goals of re-investing in existing community infrastructure to make them more desirable places to live, work, and play. The income and racial categories we utilized in the disparity analysis above serve as proxy measures for geographic location – with lower income and higher minority neighborhoods tending to be concentrated in urban areas and older suburbs. Looking at neighborhood income, in both California and Florida, lower income neighborhoods received the least investment per student, while the wealthier neighborhoods received the most.

While the disinvestment in existing school infrastructure is one side of the story of how school construction investment patterns impact neighborhoods, cities, and metropolitan regions, the outcomes of enormous spending on building new schools is the other side. The tremendous investment in new school construction has largely funded suburban schools typically surrounded by low density suburban development. In part, new schools are mimicking their surrounding development patterns. But state and local school planning, siting, and design policies are mandating or incentivizing these practices, and in many cases denying school districts alternatives (Beaumont 2003). Since World War II, schools are occupying larger sites and while the number of schools has declined by nearly 70 percent, their average size has grown fivefold (Local Government Commission, n.d). It is not uncommon for new suburban high schools to be on 50-75 acre sites. Typically, sites this large can only be found on undeveloped suburban greenfields located some distance from existing suburban fringes, where land is cheaper and more plentiful.

As some have argued, new schools are encouraging inefficient low-density suburban growth patterns because new suburban school site choices are not adjacent to existing urban infrastructure (Passmore 2002; Salveson and Hervey 2003; Environmental Protection Agency 2003; McClelland and Schneider 2004). In many instances, new suburban school sites have "leapfrogged" out to undeveloped locations and made automobile access the only option. Not only are conventional suburban environments (and the large schools serving them) characterized by inefficiently using land and increasing automobile reliance, but they have meant that students are traveling in busses or being driven to school by parents; they are not walking or biking to schools and this has helped fuel rising obesity rates in children (McDonald 2007; Ewing et al. 2003). Whereas about 50 percent of children walked or bicycled to school in 1969, currently less than 15 percent do. Researchers have uncovered reasons to explain this decline, finding increased distances between home and school, lack of pedestrian infrastructure connecting home and school, and parents' perceptions of safety as key concerns (Environmental Protection Agency 2003; McMillan 2007; Schlossberg et al. 2006; McDonald 2007). Thirty years ago, when more students and families resided in older, denser, and more walkable neighborhoods, nearly 35 percent of children lived within one mile of school. Today only 21 percent live within a mile. More than half lived within two miles, but today, only 35 percent live this close. Estimates report that 20 percent or more

of morning traffic congestion in many metropolitan areas is due to parents driving to and from their children's schools.

The bottom line is that the distribution of an historic decade of public school construction and renovation has disproportionately benefited newer, wealthier neighborhoods, contributing to disinvestment in existing community infrastructure. Many of these existing schools are in the kind of neighborhoods that engender smart growth and healthy community principles – relatively higher densities, access to transit options, and pedestrian infrastructure, which among other things, make walking and bicycling to school more likely.

Investment by Neighborhood Racial Composition

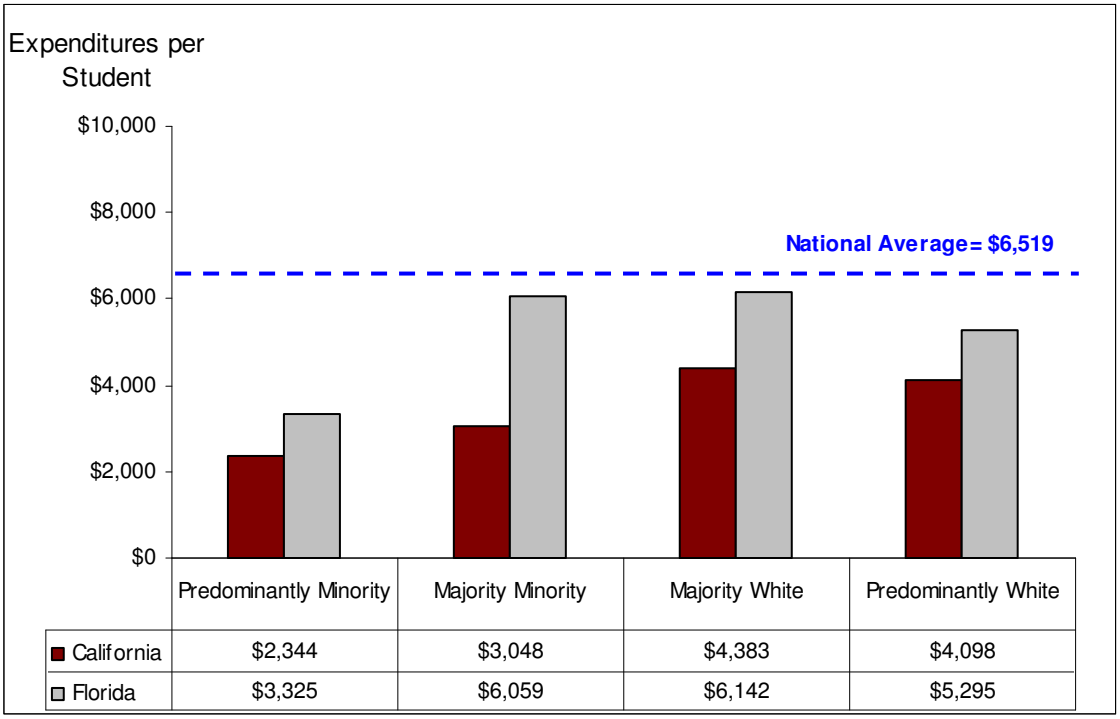
Enrollment in public schools across the country – and particularly in California and Florida – is changing and minority enrollment is increasing. Many of our nation's school districts are racially diverse, a condition made possible by desegregation in the 1950s and immigration, which has accelerated since the 1970s. These enrollment trends mirror the fact that both city and suburban neighborhoods exhibit more diversity – along lines of race, ethnicity, nativity, and income – than is commonly recognized (Turner and Fenderson 2006). But at the same time, a substantial share of neighborhoods remain either exclusive (occupied predominantly by affluent, native-born whites), or isolated (occupied predominantly by lower-income minorities and immigrants). However, many school districts and schools are resegregating at rapid rates across the country, generally reflecting greater segregation than local neighborhoods (Orfield and Lee 2004).

To further understand the types of communities benefiting from school construction investment, we analyzed the McGraw-Hill data by racial composition at the project zip code level using Census 2000 data. We utilized the typologies developed by Turner and Fenderson (2006) to report neighborhood racial and ethnic diversity. Using this typology, zip code areas were divided into four categories according to their racial composition:

- Predominantly minority (population is less than 10 percent non-Hispanic white)
- Majority minority (population is 10 to 50 percent non-Hispanic white)
- Majority white (population is 50 to 90 percent non-Hispanic white)
- Predominantly white (population is more than 90 percent non-Hispanic white)

According to the 2000 U.S. Census, children attending public pre-school through 12th grades in California and Florida attend schools in a variety of neighborhood types. In California, 41 percent of students attend schools in "majority white" neighborhoods and 59 percent attend schools in "majority minority" neighborhoods. In Florida, 70 percent of students attend schools in "majority white" neighborhoods, while 30 percent attend schools in "majority minority" neighborhoods. Only one percent of students in California attend schools in neighborhoods that are "predominantly white," while 12 percent of students in Florida do.

Figure 10: Public School Construction Spending per Student by Neighborhood Racial composition, California and Florida, 1995-2004



	Predominantly Minority	Majority Minority	Majority White	Predominantly White
California	$2,344	$3,048	$4,383	$4,098
Florida	$3,325	$6,059	$6,142	$5,295

Sources: McGraw-Hill Construction, 2000 U.S. Census, analyzed by zip code

As shown in Figure 10, the highest average expenditures occurred in California and Florida neighborhoods that were "majority white" with per pupil spending at $4,383 and $6,142 respectively. The lowest spending was in "predominantly minority" neighborhoods with per pupil spending at $2,344 and $3,325 respectively. It is interesting to see that in both California and Florida, the zip code areas that were predominantly white were funded at lower levels than schools in majority white zip code areas – and in the case of Florida, they were also funded at lower levels than majority minority neighborhoods.

Interestingly, our analysis reveals that construction spending disparity by race is less than the disparity by neighborhood income. This suggests that a substantial number of minority children are affluent enough or attend schools in neighborhoods with enough affluent children to benefit from a higher level of investment than would be likely in more economically isolated and poor neighborhoods. The drop in investment in the "predominantly white" zip codes most likely reflects a higher-than-average use of private schools among affluent whites, which may explain patterns of disinvestment even in very high income communities. It also may reflect better ongoing maintenance and spending from operating budgets, which reduces the amount needed on expensive major maintenance projects.

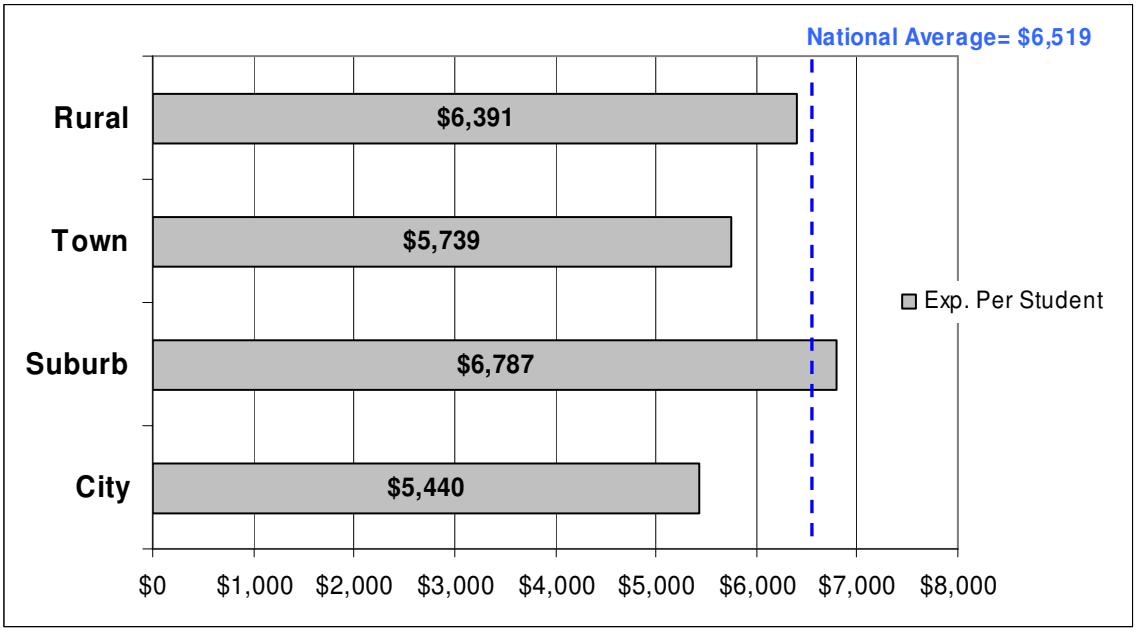
Investment by Locale

As part of the original data analysis by the research team, the school construction projects were linked to school districts and the school districts were identified by their "urban-centric local" codes assigned by the National Center for Education Statistics (NCES). This analysis suggests that existing urban neighborhoods within metropolitan areas have received far less school construction investment per student than growing outer suburbs. To understand investment by geographic place type, school districts were divided into four categories according to the NCES local code typologies:

- City (Territory inside an urbanized area and inside a principal city)
- Suburb (Territory outside a principal city and inside an urbanized area)
- Town (Territory inside an urban cluster but outside an urbanized area)
- Rural (Census-defined rural territory that is outside an urbanized area and outside an urban cluster)

However, because the locale code is at the district level, it masks variations within school districts. This is problematic for Florida with its vast county school districts, where one district can encompass a large city, suburbs, small towns, and even rural areas. Still, we present the findings on a national level to illustrate that existing areas (cities and towns) received less school construction investment per student compared to rural and (presumably growing) suburban areas, as shown in Figure 11.

Figure 11: National Distribution of Public School Construction by Locale, 1995-2004



Sources: National Center for Education Statistics, McGraw-Hill Construction

Families moving to the suburbs are both forcing and following public investment in the services, amenities, and conditions they desire in their public schools. While we do not mean to suggest that school construction investment is the most important driver of

family residential choice by any means, we believe that this pattern of investment nationally is also the case in California and Florida. The higher investment in suburban communities creates incentives for families to live in the new suburbs, not in core cities and older neighborhoods. The disparity in spending and the disinvestment in existing neighborhoods—in cities and towns—works to erode both school and neighborhood quality in many older neighborhoods, triggering the flight of families that can afford to leave and hampering opportunities for those who stay.

Historically, public schools were located within neighborhoods and in the heart of communities. In rural communities, one-room school houses dotted the countryside, so they would be accessible to families living in isolated rural areas. One-room school houses were consolidated at a rapid pace when children could be bused to schools beginning in the 1940s. We believe the relatively high level of expenditure in the rural areas represents a second wave of consolidation as the schools from the 1950s and 1960s need upgrading. Rural school consolidations typically mean even greater distances between home and school because there are fewer schools serving the area's children.

In cities, public schools were located in neighborhoods and on transportation corridors so students could walk or take public transportation to schools. Advances in transportation changed urban growth patterns, including the relationship of the school to community. Families moved out of cities to rapidly growing suburbs in droves—first white families, then once fair housing laws were put in place and enforced, African-American and Hispanic families, too, began leaving cities as soon as they were able. In 1950 there were 212,420 public schools in the U.S. and about 25 million students. In 2006-2007 there were 118,000 public schools and about 48 million students. This means the average school enrollment size between 1950 and 2006 more than tripled, from about 120 students to about 400 students.

Contemporary school building practices, have received increasing attention from those in the smart growth and public health fields. The phrase "school sprawl" has been used to describe site sizes and location choices for new schools that contribute to low density suburban growth (Steward 1999; McMahon 2002). This practice is believed to undermine smart growth goals of infill development, efficient use of land, open space preservation, and reducing automobile reliance. Studies have found evidence of these patterns in Maine (Maine State Planning Office 1997), South Carolina (Kouri 1999), and Michigan (McClelland and Schneider 2004). Coupled with the overall low density development and limited pedestrian infrastructure in so many newer surburban neighborhoods, the so-called sprawl schools are believed to work against smart growth goals and the creation of healthy communities due to the decline in walking and bicycling to school, which has been linked to the rising obesity rates in school-age children (McDonald 2007; Vincent 2006).

Linking School Construction Investments to Equity, Smart Growth and Healthy Communities

From a smart growth, regional equity, and healthy communities perspective, the trends in inequitable spending and the disinvestment in existing schools and communities are troubling because these actions have helped increase neighborhood decline and segregation in older urban areas and helped fuel the rapid, lower-density growth seen on the fringes of most metropolitan areas in the country. School consolidation, siting, and construction decisions have also resulted in children walking to school as the exception, rather than the rule.

While these spending patterns create barriers to teaching and learning for low income minority children, they also have important impacts on neighborhoods, cities, and metropolitan regions, as they affect residential patterns, segregation, economic development, and land use development. The significantly reduced spending in existing schools, particularly in low income communities is also a disinvestment in existing neighborhoods. The failure to modernize and adapt existing public school infrastructure to meet current educational space or health and safety requirements or to revitalize the basic physical conditions in schools is yet another factor that drives families with children from core cities and older suburbs and towns. These families are seeking better schools for their children and the public investment that helps support them. The flight of middle and working class families from cities, particularly the older cities, has left low income families, who are likely to be politically weak constituents, with school facilities in the worst condition.

While much has been written about the role of public policies in the creation of inequality (e.g., see Carr and Kutty 2008), public school construction spending has had little such investigation. A significant barrier to accountability for investing equitably in school facilities is a lack of publicly accessible information on the physical conditions, qualities and facility spending of their schools. California, like the vast majority of states, does not collect this information, and so has no system in place for assessing existing facilities and prioritizing schools with the greatest need – a troubling fact given the low school facility condition ratings found by both the GAO in the mid 1990s and the ACSE in 2005.

In contrast, Florida, may have among the best state level facility data systems in the country for monitoring and measuring school facility conditions and spending. It has developed the Florida Inventory of School Housing (FISH), where data are reported by local school districts and available publicly online. Our finding that Florida has had more equitable school construction spending per student than California, suggests that these data support policies and spending that reduces disparities. A basic information system on facilities also enables intergovernmental planning, as is required by the Florida requirement for interlocal agreements and the stepped up mandate for “concurrency”.

But information, monitoring and even good planning will not, on their own, generate the public will or capacity to address the public education infrastructure problems in our K-12 public school systems. As Baum (2004) argues, the smart growth movement must

look towards improving urban school quality (and we would add, joining with the regional equity and healthy communities movements), which means adequately investing capital dollars to maintain and upgrade older schools in existing neighborhoods. In general, regions across the country need investment in existing infrastructure to advance the goals of smart growth, regional equity, and healthy communities. Public school construction is one important and strategic investment all communities make and should be done in accordance with the principles of these increasingly inter-related movements.

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Appendix: Methodology

To analyze school construction investment, across the country, BEST (Building Educational Success Together) developed a unique dataset on new public school construction projects undertaken in all 50 states and the District of Columbia between 1995 and 2004. Because there is no comprehensive public data on public school construction spending, BEST utilized raw data provided by McGraw-Hill Construction, a segment of McGraw Hill Companies, which collects detailed project-level data on every building project valued at more than $100,000 undertaken by the nation's school districts. BEST analyzed the McGraw-Hill data and linked it to other datasets for its recent report, *Growth & Disparity: A Decade of U.S. Public School Construction 1995-2004* (Filardo et al. 2006), and it represents the most robust dataset available on public school construction at the project level. These "construction start" data reflect the contract value, or accepted bid price, of each project and represent the construction hard costs: the basic labor and material expenses of the project. The additional change orders and soft costs – such as site acquisition, architectural, engineering, and project management – are not collected by McGraw-Hill. Hard costs typically account for about 70 percent of a project's total cost, although this can vary by project and locale. Therefore, it is important to note that in this study we analyze the hard construction costs for new schools as a measure of final costs.

McGraw Hill Construction data has been used in other studies of school construction. However, their scope and usefulness must be understood and they must be used appropriately. These proprietary McGraw Hill data are collected in real time for the purpose of informing construction industry manufacturers, contractors, and subcontractors of projects that will be under construction, so they can market their goods or services to the project owner and contractor. These "construction start" data reflect the contract value of each project and only represent the construction "hard costs." Because they exclude soft costs (and site costs), they do not represent the full project cost. Because construction costs can rise during the course of a project, the "construction start" McGraw-Hill data can be used *only as an estimated* measure of actual final project costs, and are highly applicable to assessing local, regional, state, and national *relationships and trends* in construction spending, as we have done in this report. These data do not lend themselves to measuring what it actually costs to build a school, as has been attempted recently in California by Macias Consulting Group (2008).

The McGraw Hill Construction data contain detailed cost and characteristic data for thousands of new school construction projects nationwide, which enables comparison within states and across states. We link these data at the project level to census data and school district data from the National Center for Education Statistics to analyze the scale, scope, and distribution of spending.