

**School Siting and Walkability:
Experience and Policy Implications in California¹**

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Abstract

The relationship between K-12 school siting, transportation, and land-use patterns is garnering increased attention from the planning and public health fields, as well as policymakers. Essentially, new schools are sited in locations far from where students live that lack pedestrian-oriented street characteristics, which contributes to low-density development (“sprawl”) and inhibits students from walking or bicycling to school (i.e., “Active School Commuting” or ASC). In California, the relationship between school siting, transportation, and land use is an especially salient issue for state policymakers. Goals on improving school siting outcomes to promote child and community health, efficient land-use development, and reduce greenhouse gas emissions have been integrated into recent state laws. However, it is unclear what policy fixes are needed to catalyze integration of local planning efforts around school siting. The relationships between school siting and location, urban form, and walkability are insufficiently examined to guide policy and program efforts—be they in California or other states. In particular, two knowledge gaps exist: the proportion of new school sites that are considered walkable, and what state-level policy changes might combat these so-called “sprawl schools” and promote ASC. To fill these gaps and guide policymakers, this paper: summarizes the research literature on school siting and healthy communities, paying particular attention to ASC findings; measures the walkability of new

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schools sites in six high-growth California counties; and describes recent policy activity by California state agencies to improve ASC vis-à-vis improving local school siting decisions. We conclude with recommendations for planners and policymakers—especially those in California—to grapple with the relationships between school siting and healthy community outcomes and how to structure appropriate state policies or reforms.

Introduction

The relationship between K-12 school siting, transportation, and land-use patterns is garnering increased attention from the planning and public health fields, as well as policymakers. Essentially, new schools are sited in locations far from where students live that lack pedestrian-oriented street characteristics, which contributes to low-density development (“sprawl”) and inhibits students from walking or bicycling to school (i.e., “Active School Commuting” or ASC) (Beaumont and Pianca 2002).

In California, the relationship between school siting, transportation, and land use is an especially salient issue for state policymakers. The 2003 Davis Administration’s Governor’s Environmental Goals and Policy Report states, “The location of new schools . . . has an important influence on land use, but siting decisions are not always made in cooperation with local land use planning agencies. This is one of the most volatile and troublesome problems in California land use planning” (Governor’s Office of Planning and Research 2003). Further, the Brown Administration’s 2015 draft Governor’s Environmental Goals and Policy Report acknowledges that better school environments promote better academic achievement outcomes, and goes on say that “As the State prioritizes efficient, infill development, K-12 schools will be integrated into planning” (https://www.opr.ca.gov/docs/EGPR_Nov_2015.pdf). However, it is unclear what policy fixes are needed to catalyze integration. A local articulation of the scope of this issue is illustrated by a 2015 letter from the Contra Costa County Board of Supervisors to Senators Block and Liu of the Education Subcommittee, which states, “This gap in responsibility and lack of acknowledgement of a problem has resulted in schools being developed that are inconsistent with state and local policies relative to safe routes to school, public health, climate change principles and orderly land development. Careful attention should be paid to ensure that this gap does not ultimately compromise any mechanism that is put in place to address issues with school siting and safety” (Gioia 2015). A 2017 letter from the same county supervisors, this time to Senator O’Donnell of the Assembly Education Committee, states, “Currently, school siting practices are in direct conflict with numerous state policies and goals including safe routes to school, complete streets, Health in All Policies, greenhouse gas reduction efforts, etc. There is no debate on this point” (Glover 2017).

The relationships between school siting and location, urban form, and walkability are insufficiently examined to guide policy and program efforts—be they in California or other states. In particular, two knowledge gaps exist: the proportion of new school sites that are considered walkable, and what state-level policy changes might combat these so-called “sprawl schools” (Gurwitt 2004, Passmore 2002) and promote ASC. To fill these gaps and guide policymakers, this paper: summarizes the research literature on school siting and healthy communities, paying particular attention to ASC findings; measures the walkability of new schools sites in six high-growth California counties; and describes recent policy activity by California state agencies to improve ASC vis-à-vis improving local school siting decisions. We conclude with recommendations for planners and policymakers—especially those in California—to grapple with the rela-

tionships between school siting and healthy community outcomes and how to structure appropriate state policies or reforms.

School Siting and Walkable Communities

Nationally, the past few decades have seen a trend toward building larger new schools and siting them on greenfields that often leapfrog existing development (Gurwitt 2004, U.S. Environmental Protection Agency 2003). Critics charge that this style of school siting encourages sprawl (Michigan Land Use Institute 2004; McMahon 2000, Langdon 2000, Beaumont and Pianca, 2003, Passmore 2002, Salvesson and Hervey, 2003), increases travel costs and vehicle miles traveled (VMT) (United States Environmental Protection Agency 2003, Kouri 1999), and deters the “shared use” of school facilities (Vincent 2006; Filardo et al. 2010). One author even went so far as to describe school districts as “advanced scouts for sprawl” (Steward 1999).

These school siting outcomes can have a negative impact on community and individual health. More sedentary time spent in cars increases risk of overweight and obesity (McCormack and Virk 2014) and reduces time for leisure physical activity, social relationships, civic engagement, and other health promoting behaviors (Ewing et al. 2003, Ding et al. 2014, Renalds et al. 2010). VMT contributes to greenhouse gas (GHG) emissions, air pollution, and climate change (California Air Resources Board 2014, Luber et al., 2014), threatening human health in numerous ways including increasing health inequities (Gould and Rudolph 2015). Schools located in greenfields (previously undeveloped land, outside the neighborhoods where students live), make ASC difficult (U.S. Environmental Protection Agency 2015). ASC is especially appealing for low-income students, who otherwise can have a difficult time finding reliable transportation to their assigned or chosen school.

School facilities planning is controlled by local school districts, often without coordination with local land-use and transportation planning agencies. City planners lament the difficulty of changing the status quo of “siloed” schools and argue that schools should better incorporate “smart growth” concepts (e.g., location efficiency, multimodal transportation options, etc.) for more efficient community patterns and community gathering places (Council of Educational Facility Planners International and the U.S. Environmental Protection Agency 2004, Kuhlman 2010, Torma 2004, McDonald 2010). But a structural disconnect exists between local municipalities and local school districts, which hinders interagency planning on school siting (Donnelly 2003, Vincent 2006); These local governments are autonomous entities with separate governing bodies, and few states have laws requiring that they coordinate on land-use and capital planning (Beaumont and Pianca 2002, McKoy et al. 2008, McDonald 2010, Norton 2007, Vincent 2006). In response to these concerns, the U.S. Environmental Protection Agency developed *Voluntary School Siting Guidelines* (2011), and a Smart School Siting Tool (2015), which focus on minimizing unhealthy sites, comparing alternative sites, and promoting ASC opportunities.

The national trend towards large, auto-centric schools at the distant edges of the communities they serve has, in part, aided the sharp decline of ASC (Chillón et al. 2011, Kober 2004, McMillan 2009, Centers for Disease Control and Prevention 2010). Today, children are far less likely to walk or bicycle to school than in past decades. In 1969, nearly half (48 percent) of K-8th grade children walked or bicycled to school; by 2009, only 13 percent did so—about a 70 percent drop (McDonald 2007, National Center for Safe Routes to School 2011). The same pattern of travel is

seen even for children who live within one mile of their school (Federal Highway Administration 2003, Ewing et al. 2004). The growth of Safe Routes to School programs and funding is in direct response to these trends (Chillón et al. 2011, McDonald et al. 2014b). In California, 54 percent of students are driven each day, even though 62 percent live within a bike-able two miles of their school (Safe Routes to School National Partnership 2008).

A central concern with declining ASC is its reduction in physical activity for schoolchildren and contribution to worsening childhood obesity trends (Sallis and Glanz 2006, Story et al. 2006; Muller 1999, French et al. 2001, Kaczynski and Henderson 2007, Brownson et al. 2001). About two-thirds of children in the U.S. get less than the recommended amounts of physical activity (Centers for Disease Control and Prevention 2010). Obesity rates have more than doubled in children and tripled in adolescents in the past 30 years (Ogden et al. 2012, National Center for Health Statistics 2012). In California, one in nine children is overweight or obese, with rates varying across cities from a low of 11 percent in Manhattan Beach to a high of 53 percent in Huntington Park (California Department of Public Health 2013). The health benefits of regular physical activity for children are well documented, including positive impacts on child cognitive function and academic performance (Strong et al. 2005, Must et al. 2009, Durant et al. 2009, Raspberry et al. 2011, Singh et al. 2012, Trudeau and Shephard 2010). Increasing ASC is seen as one strategy to promote childhood physical activity and overall health (Watson and Dannenberg 2008).

Studies have found that many factors influence the likelihood that children will walk and/or bicycle to school, including distance from home to school (Dellinger and Staybtib 2002, Ewing et al. 2004, McMillan 2003, McDonald 2008), presence or lack of pedestrian infrastructure (Boarnet et al. 2005), parent perceptions of safety and heavy traffic (Timperio et al. 2004), and aspects of the urban form (McDonald 2008; Ewing et al. 2004). Demographic correlates of active commute to school have found higher ASC among schools with greater representation of Hispanic students, lower ASC in schools with a higher proportion of white students (Braza et al. 2004), higher rates of ASC among males as compared with females, and among students with lower socioeconomic status (Davison et al. 2008; Babey et al. 2009).

In addition to this lack of coordination between local planning agencies and local school districts, researchers have identified numerous other drivers of school siting decision. The majority of new school construction in recent decades has been invested in suburban areas (Vincent and Filardo 2011), which tend to be highly automobile-oriented and are experiencing rising land costs (Beaumont and Pianca 2003; Miles et al. 2011, McDonald et al. 2014a). Minimum acreage guidelines, in particular, have been a prominent concern; they vary by state, but historically provide generous allowances for athletic facilities, parking, staging areas for buses, buffer zones, and security features (McDonald 2010, McDonald et al. 2014a).

There is also an opportunity for states to model collaboration across planning and education sectors, among others, and ensure state-level land-use policies facilitate walkability. California's state departments have been working together to provide resources encouraging collaborative local decision-making around school siting, and community transportation and land-use planning. California, state departments, and a number of local governments, have embraced a policy platform built on the idea of "healthy communities" (for example, see California Executive Order S-04-10 (http://sgc.ca.gov/pdf/Executive_Order_S_04_10.pdf) and the Let's Get Healthy CA Task Force, Executive Order B-19-12 (<http://www.chhs.ca.gov/LGHC/Let%27s%20Get%20Healthy%20California%20Task%20Force%20Final%20Report.pdf>)). This platform focuses strongly on land-use and built environment policies that consider health, equity, and environmen-

tal sustainability in decision making (for example, see the 2015-16 Senate Bill 1000, Land use: general plans: safety and environmental justice, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1000). Tasked with implementing state-level recommendations that support this platform, the California Health in All Policies (HiAP) Task Force convenes a membership of 22 state agencies offices, and departments to pursue collaborative actions in support of healthy, equitable, and sustainable communities (Health in All Policies Task Force, 2013). This approach seeks to transform government by providing a forum for decision makers across sectors to collaborate in identifying solutions to address some the most urgent challenges faced by society—growing racial and economic segregation and inequities, educational attainment, climate change, obesity, and other chronic disease epidemics—all of which cannot be solved by one single entity working alone, but require creative and collaborative solutions.

As California implements a Health in All Policies approach in support of ASC, knowledge of school siting processes, impacts, and outcomes is needed to structure state policies. Knowing more about outcomes on the ground will help planners and policymakers—especially those in California—grapple with the relationships between school siting and healthy community outcomes and how to structure appropriate state policies or reforms.

Measuring Walkability of New School Sites in California How walkable are new school sites?; And, how does the walkability of these news schools compare to the locales in which they are situated? We assess walkability based on a set of metrics established through prior research.

Spatial analysis of urban form can examine traffic volume, road classification, availability of sidewalks, commercial intensity, block size, land-use barriers, street width, and presence of street trees (McMillan 2003, McMillan 2005, U.S. Environmental Protection Agency 2003, Handy et al. 2002, Pikora et al. 2002, Lee and Moudon 2004, Timperio et al. 2004). Grid patterns and intersection density emerged as the strongest indicators of walkability in multiple studies (Southworth and Ben-Joseph 1997, Ewing and Cervero 2010, Cervero and Kockelman 1997). The first and oft-cited study on school location and student travel found that density and land-use mix were insignificant built environment aspects influencing mode of travel to school (Ewing et al. 2004), and subsequent studies found similar results (e.g., Schlossberg et al. 2006, Falb et al. 2007, McDonald 2008). Through GIS-based spatial analysis and surveys, these researchers found that the smaller block lengths and high street connectivity generated by higher intersection density reduces impedances to pedestrian access and creates more walkable environments. In line with these findings, the U.S. Green Building Council, the organization behind the Leadership in Energy and Environmental Design (LEED) designations, includes a measure of intersection density in its Neighborhood Development standard as an indicator of connectivity, and indirectly, walkability (U.S. Green Building Council 2009).

Methods and Data

Our approach draws on the work of Falb et al. (2007), Schlossberg (2002), and Schlossberg et al. (2005) to develop a methodology for measuring children’s walk- and bike-ability to and from school. Our analysis measures intersection densities in a series of distance-based travel sheds around school sites to assess walkability. This analysis allows us to test walkability immediately surrounding schools and compare to the larger community in which they are located.

First, we obtained address data on approved new K-12 public school sites from the California Department of Education, School Facilities and Transportation Services Division (CDE, SFTSD).

Data were available for January 2003 through June 2011. The data contained records for 622 newly approved school sites across the state, averaging slightly less than 100 schools per year.

Next, we chose six high enrollment growth counties for the years 2003–2011 (from five percent in Contra Costa County to 33 percent in Riverside County) that represented different geographic regions of California. Together, these counties had 253 approved new school sites: Contra Costa County (26 approved sites), Fresno County (21 approved sites), Riverside County (88 approved sites), Sacramento County (17 approved sites), San Bernardino County (76 approved), and San Joaquin County (25 approved sites). We omitted schools that were not traditional elementary schools, middle schools, or high schools. Our sample schools were then geocoded into a shapefile using ArcMap GIS (version 10.1). Each school location was manually checked against aerial maps (Bing and Google Maps) and corrected if needed to ensure accuracy of point location. School sites that were not yet open and enrolling students were also excluded. This process generated a sample of 94 new schools and prepared the school sites for geospatial analysis. Figure 1 shows key characteristics in the six case states, as well as the total number of CDE-approved new school sites (2003-2011) for each county.

After mapping of the sample school sites, we established travel sheds in distances of one-quarter mile to 10 miles around each school site using ArcMap's Network Analyst tool. A travel shed ("service area" in ArcMap's parlance, ArcGIS Proximity Analysis <http://resources.arcgis.com/en/help/main/10.1/index.html#//018p00000007000000>) is the region someone could reach by traveling along specified right of ways from a given location. The decision to use travel sheds instead of buffered "as the crow flies" distances was a conservative one, based on the fact that people cannot travel in straight lines, so actual travel routes are always longer (Nichols 2010). For example, a casual study of grocery stores near the school sites found a home located only 4,500 feet from a store, with an actual travel distance exceeding three and a half miles, or 18,480 feet. Such differences cause considerable increases in time, cost, and effort for those with limited means and mobility, or for those with young children (Clift 1994). After distance, traffic-related dangers are the second-most common reason cited by parents for prohibiting a child from walking to school (Centers for Disease Control and Prevention 2005), so we excluded all roads classified by the MAF/TIGER Feature Classification Codes (MTFCC) as having limited access, such as freeways and entrance/exit ramps. The travel shed analysis also explicitly allowed turn movements that pedestrians, but not vehicles, may make, such as U-turns and traveling the wrong way on one-way streets.

Using the travel sheds generated on this selection of accessible roads, we next applied ArcMap's Intersection Analysis tool to create a shapefile of reasonably accessible intersections. We spatially joined these data to each travel shed shapefile, producing a count of intersections per travel-shed polygon. Figure 2 shows an example travel shed, with pedestrian-accessible intersections highlighted. We used ArcMap's field calculator to estimate/determine the area in square miles for each travel shed, as well as density of intersections per square mile. Indexed by School Site ID, the attribute tables for each travel shed were exported to Microsoft Excel and merged to create a single table with intersection density by travel shed distance for each school.

While the literature identifies intersection density as a reasonable quantifiable measure of walkability (Southworth and Ben-Joseph 1997), it does not provide solid guidance on thresholds for how many intersections per mile might be considered highly walkable, highly unwalkable, and everything in between, especially with regard to children's travel to schools. To overcome this gap, we drew from research and example developments to establish thresholds of walkability around K-12 schools, creating a five-point scale of walkability for school sites.

Figure 1. Key Statistics for Each Case County

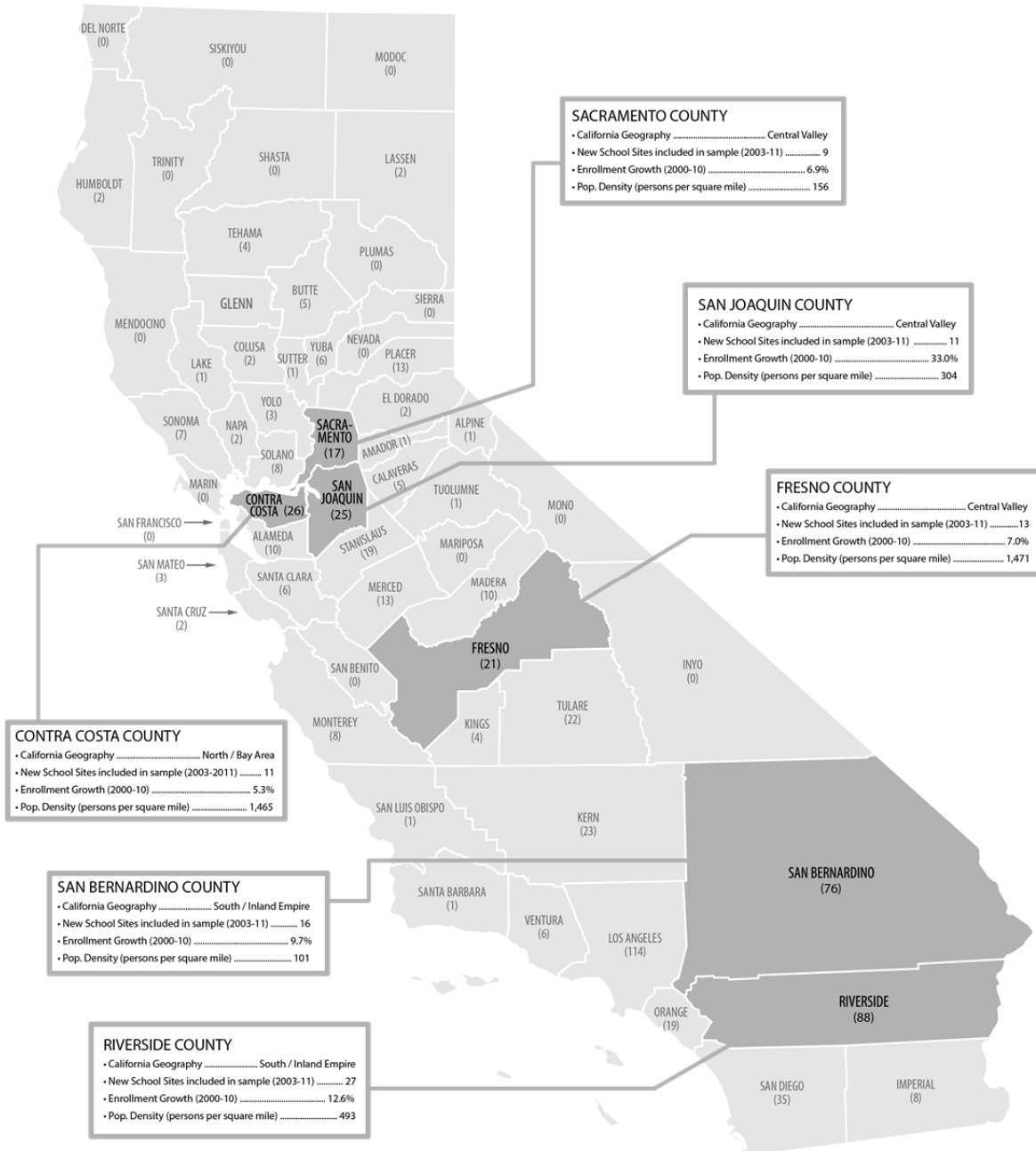
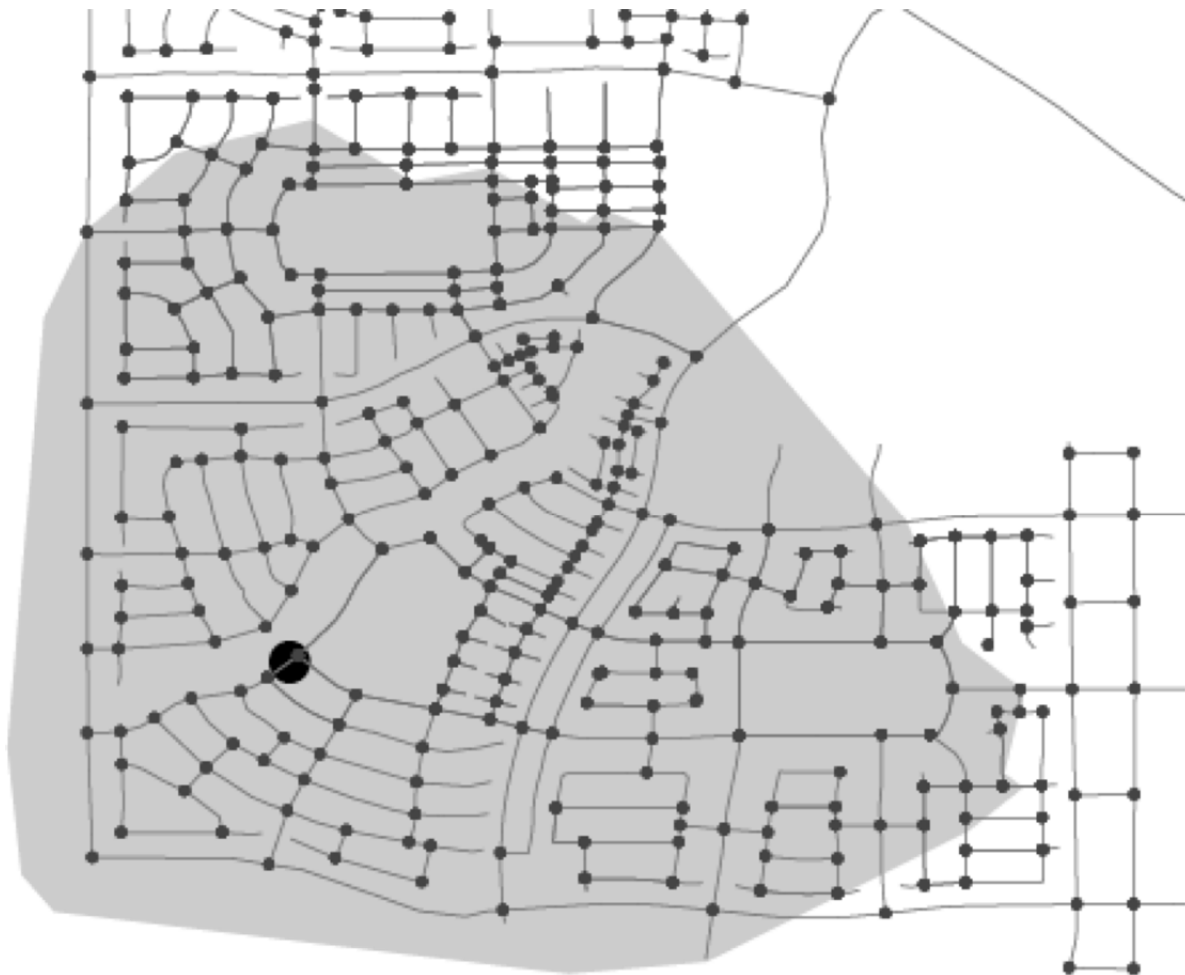


Figure 2. Example Travel Shed and Intersections



Drawing on criteria in Leadership in Energy and Environmental Design in Neighborhood Design (LEED-ND), we set 90 intersections per square mile as *bare minimum* for walkability. As Stevens and Brown (2011) argue, many of the developments awarded LEED-ND status are typically low density suburban. In our opinion, a more realistic minimum threshold of walkability is likely closer to 120 int./sq. mi. (such as seen in the Richmond District of San Francisco). We looked to California's more urban neighborhoods to develop our understanding of what should qualify for higher degrees of walkability. Our proposed walkability thresholds are listed in Table 1.

Table 1. Walkability Thresholds

Label	Minimum Intersections per Square Mile	Maximum Intersections per Square Mile
Unwalkable	0	36
Minimally Walkable	37	92
Basically Walkable	93	122
Moderately Walkable	123	212
Highly Walkable	193	521

Next, we identified five California neighborhoods that represent each category. As seen in Figure 3, these neighborhoods illustrate the place types made possible at each level. Indio substitutes for the minimum threshold of the LEED standard. These cities allow us to contextualize each intersection density threshold, providing a larger environment for comparison. These thresholds enable us to compare and contrast differences in the intersection density in concentric travel sheds for each school, comparing the walkability of the school’s immediate vicinity to the larger community.

Results

Seventy-five percent (n=71) of the schools in our sample (N=94) are in one-square mile areas that are at least as “moderately walkable” (at least 123 intersections per square mile). Twenty-three schools failed to meet this threshold. No schools exceeded our standard for “highly walkable.” Overall, our data suggest that most new schools in California appear to have been sited in moderately walkable areas that have at least 123 intersections per square mile.

Walkability scores varied by school type (i.e., elementary, middle, and high schools). The box plots in Figure 4 show the distribution of walkability scores for these three types in our sample. The gray boxes span the middle 50 percent of scores; the top and bottom lines indicate the maximum and minimums; and the thicker middle line shows the mean. Middle schools have slightly higher mean intersection density (218) compared to elementary schools (186) and high schools (190). This finding runs counter to the conventional assumption that “elementary schools are more easily located within neighborhoods than are middle and high schools, even in low density developments” (McDonald 2010, 12). Looking more closely at the profile of school sites in our six study counties, we find that many of the most walkable schools are in San Joaquin County, while many of the least walkable are in Riverside County. Figure 5 shows the findings for each of the six studied California counties.

Next, we measure the walkability of school sites compared to their larger community. Figure 6 shows the average intersection density by distance from the school (.25 miles to 10 miles) for each school type. We find that average intersection density decreases further from the schools, meaning that most schools are in more walkable areas than their larger communities. This decline is steeper for elementary and middle schools than high schools.

Figure 3. Example California Neighborhoods in a Range of Intersection Densities

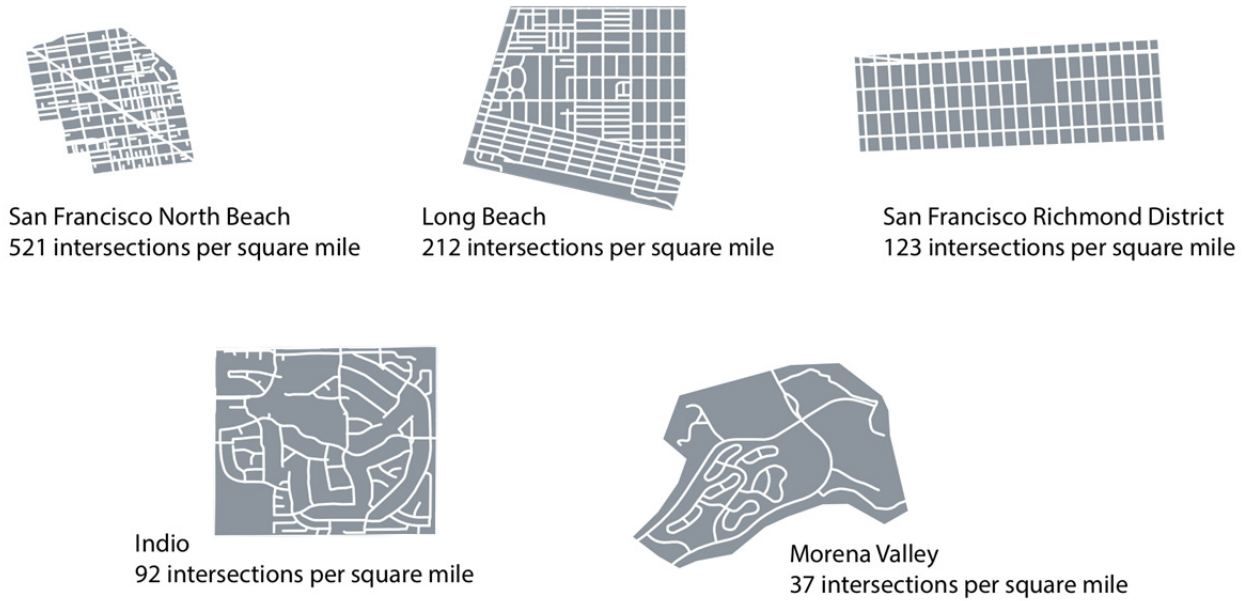


Figure 4. Walkability Scores for the Sample School Sites, Box Plot

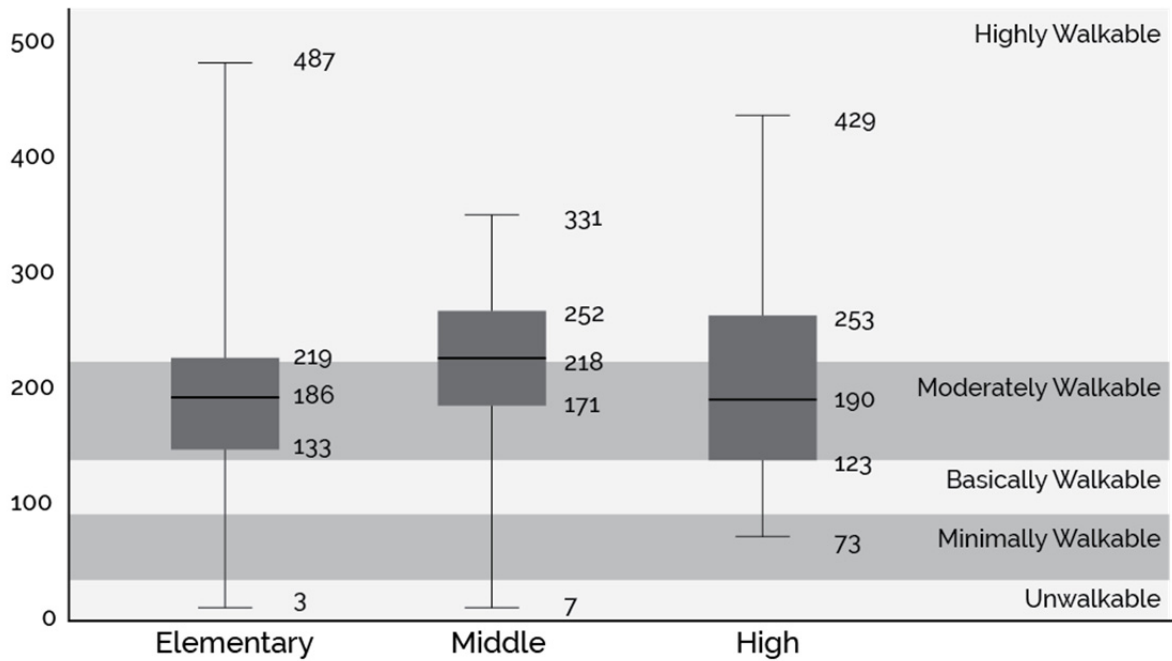


Figure 5. Walkability Scores for the Sample School Sites, by County

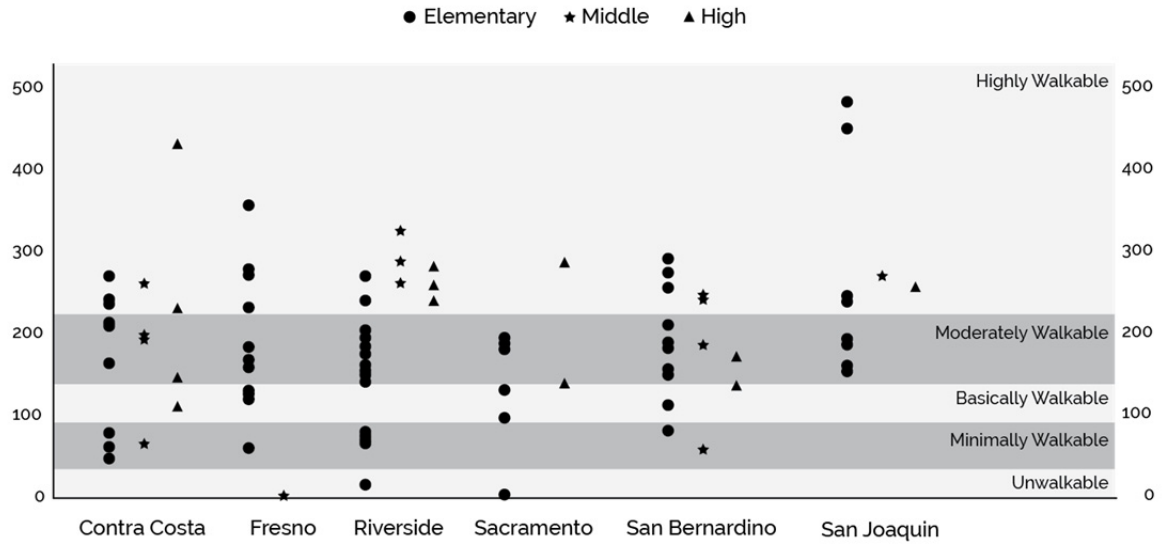


Figure 6. Average Intersection Density by Distance, School Type

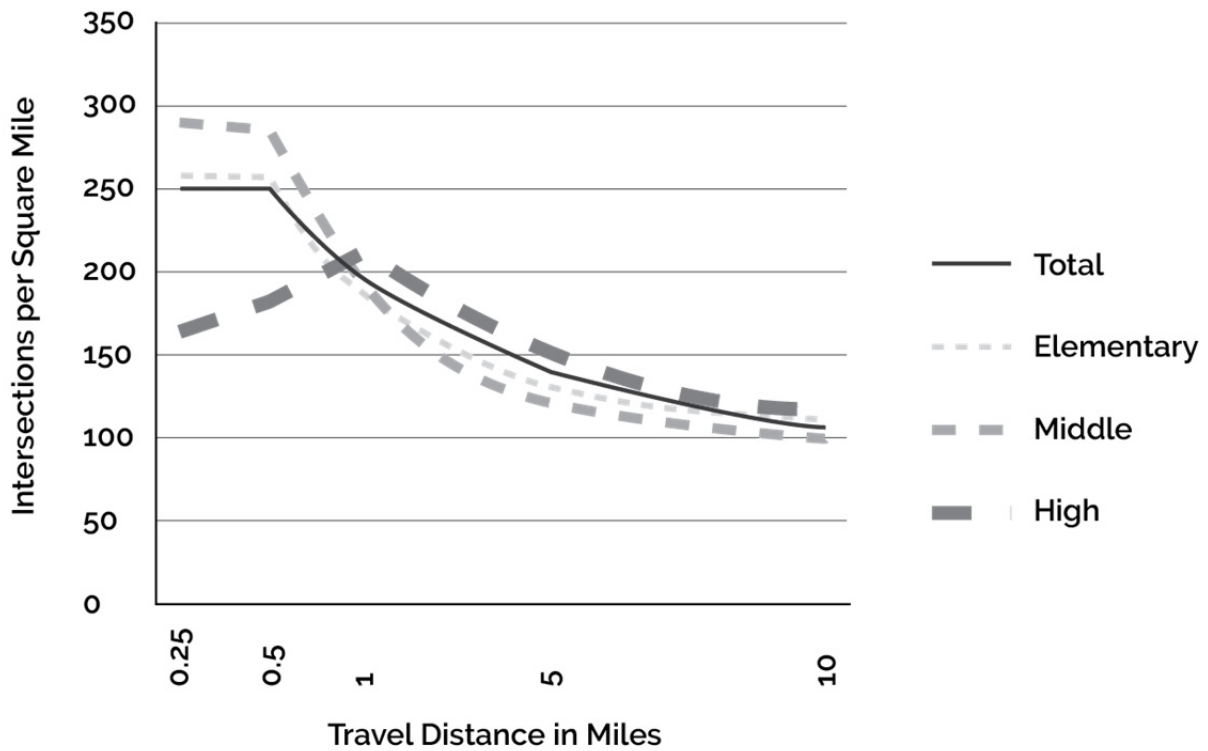


Table 2. Relative Intersection Density by Distance from School by School Type

School Type	Schools With More Intersections Within ½-Mile Travel Shed than 10-Mile Travel Shed
Elementary	93%
Middle	85%
High	79%
Total	89%

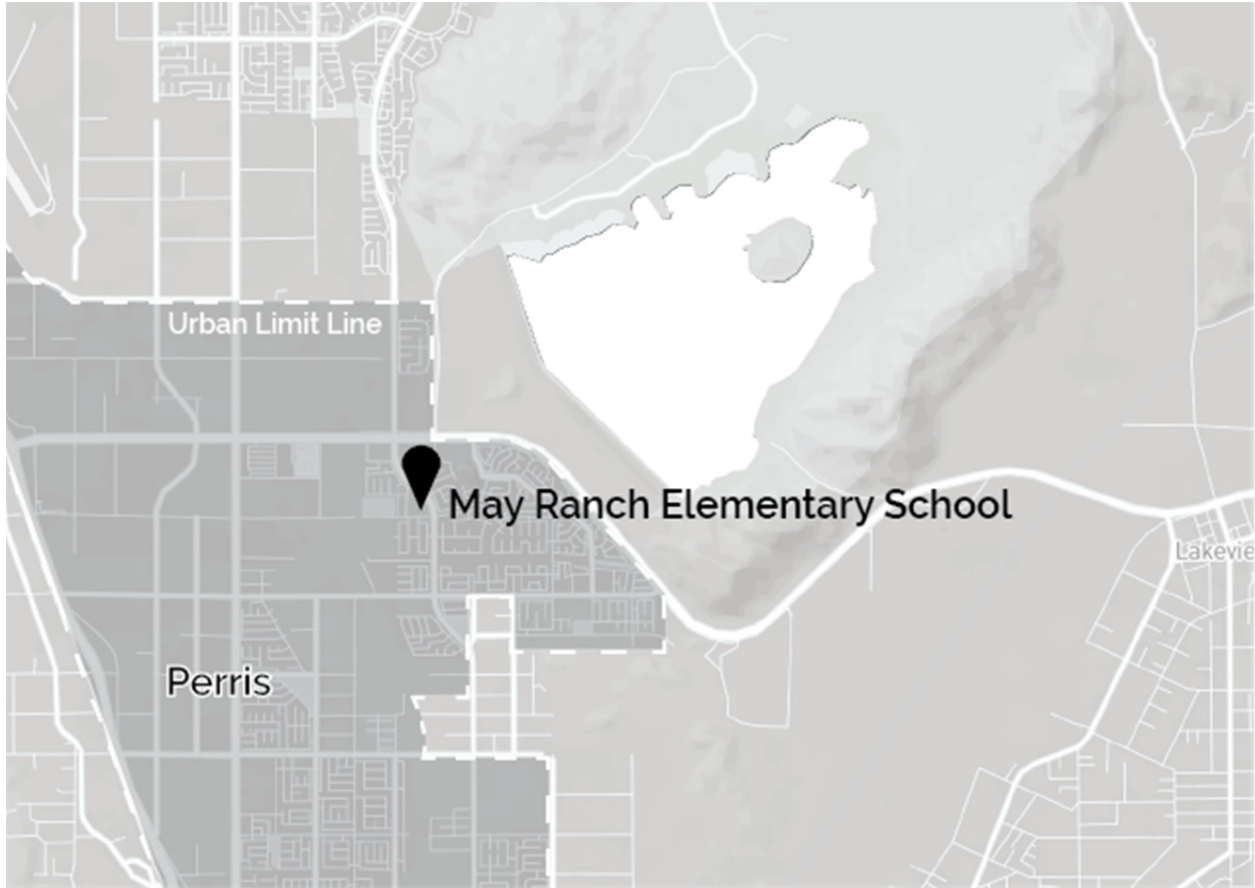
Of our sample of 94 schools, 84 (89 percent) are in half-mile travel sheds that have a higher intersection density than their 10-mile travel shed. These percentages are shown by school type in Table 2.

These findings indicate that even if population growth and new school construction are taking place in suburban and generally less walkable areas, it appears that schools are being sited in ways that make them at least equally walkable as the communities they serve. The majority of schools in our sample (93 percent of elementary; 85 percent of middle; and 79 percent of high) are clustered in more walkable neighborhoods (1/2-mile travel shed) than their larger surrounding areas (10-mile travel shed).

Aerial images of two sites in our sample reveal differences in land pattern outcomes and walkability associated with school siting. Figures 7 and 8 show very different school siting outcomes, both in Riverside County. Both images show the closest municipality’s urban limit line. May Ranch Elementary School has 253 intersections within a one-mile travel shed, while Lisa J. Mails Elementary School has 18. May Ranch Elementary School is located within the urban limit line of Perry and amidst a neighborhood development, as shown in Figure 7. This section of Riverside County shows a conspicuously relatively concentrated development pattern for the area. Most of the smaller streets (which indicate density) are within the urban limit line. The urban limit line may have influence on development decisions for both school siting and residential development. Lisa J. Mails Elementary School shows a different outcome. The school is located outside the urban limit line set by the city, as shown in Figure 8.

The regulatory heft of urban limit lines varies by jurisdiction, but generally, they are intended to signal what areas should be developed more compactly and which areas should be left relatively undisturbed. Lisa J. Mails Elementary School is located just outside its nearest urban limit line, indicating that, for whatever reason, its planners determined the line wasn’t a factor in the school’s siting. Instead, the school is on the far side of a whole neighborhood development outside the line. We are left to assume that proximity to this new school will drive demand for further development nearby, and that the urban limit line is an insufficient tool to concentrate development in a more sustainable and compact manner.

Figure 7. May Ranch Elementary School, Riverside County



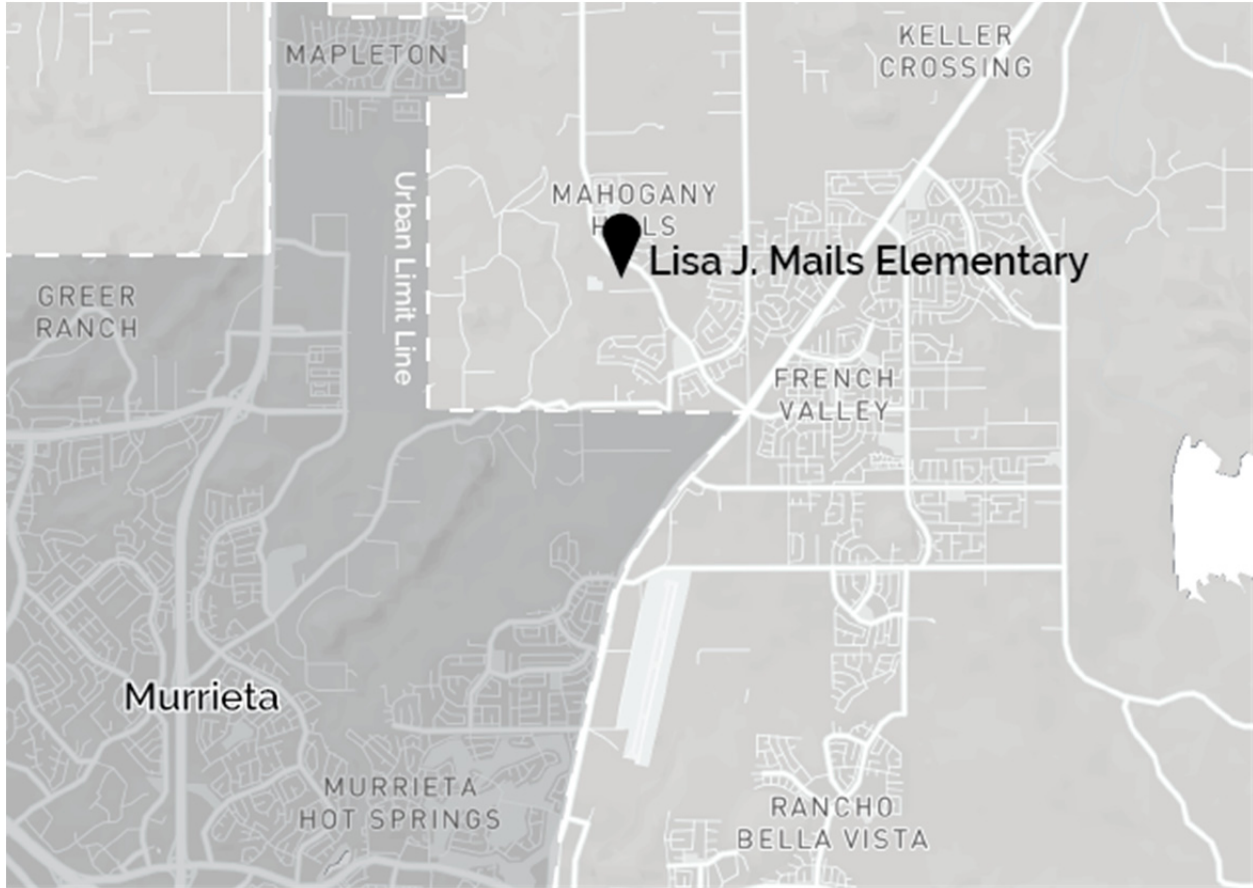
Improving School Walkability Analysis

Improved metrics and research methods are needed to better understand school walkability in relation to school site choices. Assessing walkability for new school sites is not as straightforward an endeavor as it may seem. Because walkability is a subjective measure of how friendly a place is perceived to be for walking, there is no universally accepted quantitative measure.

Similarly, because walkability is subjective, there is no universal standard for what constitutes an acceptable level of walkability. What passes for a dense and urban neighborhood in unincorporated Riverside County would not be considered walkable by a BART (Bay Area Rapid Transit) station in Contra Costa County. For now, these metrics must vary by context.

While intersection density is supported in the literature as a leading indicator of walkability (Southworth and Ben-Joseph 1997, Ewing and Cervero 2010, Cervero and Kockelman 1997), better research is needed to apply thresholds to school walkability analysis. Intersection density is a measure of street connectivity; it tends to be most telling for automobile connectivity. We do not take into account pedestrian or bicycle paths or trails that may exist and impact children's or parents walking choices. Also, beyond excluding major arterials (which we assume are the most unwalkable routes), our analysis does little to prioritize streets with lower automobile volumes or

Figure 8: Lisa J. Mails Elementary School, Riverside County



adequate pedestrian infrastructure. Also, while intersections make drivers travel more cautiously, the more intersections a child must cross, the more opportunities for them to be put in conflict with cars (Macpherson and Pless 1988).

The use of concentric travel sheds in our method are an abstraction of travel distance. They are more accurate than “as the crow flies” calculations, but do not consider actual school_enrollment boundaries or zoning, and may have overlapped, omitted, or otherwise misrepresented real student travel behavior. Thus, the data include a span with multiple options to demonstrate the gradual decrease in intersection density at longer distances. Note that intersection density appears to decline more rapidly beyond one mile from a new school.

The research challenge is that gathering these data—particularly for a larger sample of schools—can be difficult because few jurisdictions compile and report in an easily aggregated format even though these factors would have made the analysis more considerate of children’s pedestrian experience and public agency geography. The takeaway here is that higher intersection densities are more walkable and evaluations are more meaningful with local context, which is why this analysis focuses on comparative walkability.

A final implication for improving school walkability analysis is to study land development change over time near school sites. Our analysis looks at a snapshot in time around new schools.

But of course, land development is dynamic. The public knowledge of a planned new school site may influence or trigger residential development in the surrounding area, so schools approved in the earlier years of the study window might be expected to have new development in the intervening years, potentially driving up walkability over time. This phenomenon should be factored into future analysis.

Informing State Policy in California

Next, we point to state policy efforts occurring in California aimed at enabling improved cross-sector work to happen to link school siting outcomes with healthy communities' objectives. Our intent is to highlight these efforts as works in progress that should be further understood and evaluated for impact. We begin with a brief framing of the policy challenges that shape the state's role on new school siting, which is a locally driven process.

Challenges

Strong Local Control and Siloed Planning. California has established a system of strong local control, particularly with regard to school facilities. One result is a “siloed planning” approach separating school districts from other local governments. As is the case in most states, California school districts are autonomous jurisdictions that operate under a distinct set of state policies and regulations, which differ significantly from those that guide municipal practice. They operate with unique practices, languages, and organizational cultures. School district geographic boundaries may differ from municipal and/or a metropolitan region's boundaries. Planning time horizons typically differ between school districts, municipalities, and regional agencies. School districts typically create 5- to 10-year capital plans, while municipal and/or regional plans often look 20 or more years into the future. Development timelines and budgetary processes differ for school and housing, transportation, and other infrastructure development. This can interfere with securing approvals for joint planning, design, or development of facilities or programs and other operational procedures. School districts and municipalities or planning organizations rarely share data systems that would support shared knowledge about a wide range of community and educational indicators. State education reporting rules and school boards tend to drive school district data collection, while municipal and regional agencies maintain their own data, often reflecting what is collected through the U.S. Census. Most often, the local entities have not developed the relationships and capacity to collaborate as a normal course of action for mutually beneficial outcomes on items such as school siting (McKoy et al. 2008).

Gaps in State Policy. This “silo planning” phenomenon is a function of state policy, or, more accurately, the lack of state policy that would create incentives for collaboration, support cross-agency accountability, or mandate that planning and educational entities work together. In California, there are very few requirements, or incentives, for these local entities to coordinate (Vincent 2012, McKoy et al. 2008). As a result, local government collaboration on school siting often does not happen, as articulated by a school district planner at a 2010 statewide forum on school siting, “We strived to get a city planner on our district master plan committee, but had no luck and the city's general plan committee has no school district representatives on it. They literally fax me the form about school capacity and I fax it back. That's the planning process! There is no integration of planning” (quoted from Center for Cities & Schools 2010).

California's local planning codes require very little coordination or communication between local governments and school districts. Examples from state law illustrate the policy situation. *California Government Code* §65352.2 states, "It is the intent of the Legislature in enacting this section to foster improved communication and coordination between cities, counties, and school districts related to planning for school siting." As such, these entities must notify each other of plan changes/amendments and provide time for comment and, if requested, a meeting. However, the entity is not required to adjust plans based on these external comments. Similarly, a California school district shall give written notice to the local planning agency having jurisdiction to review the proposed school site or addition to an existing school site and request a written report from the local planning agency of the investigations and recommendations for each proposed site with respect to conformity with the adopted general plan (*Public Resources Code* §21151.2 and *Government Code* §65402). State code also says that the local city/county shall be notified and consulted on site selection if the site is general planned and zoned agriculture (*Education Code* §17215.5). Again, no action is required based on the nature of the comments received. A third example further illustrates the disconnect upheld in state statute: municipal general plans put together by California cities must include a "land use element that designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education . . ." (*Government Code* §65302). Local governments have the option of including an education element in their general plan. In 2011, only 40 cities and counties (out of 494) had an education element in their plan (Governor's Office of Planning and Research 2011).

This reality of school districts and cities having no land-use planning and/or siting accountability to each other is fairly common in many states across the country. For example, a school facility planner in Maryland interviewed by McDonald (2010, 10) articulates this reality: "[w]e're kind of stuck with the pattern of land development that the community has already approved. So if it is a very suburban site with not a lot of walking, there's not much we can do." It would be appropriate to suggest that these facilities planners be given a voice in the broader infrastructure planning conversation, and be equipped with tools and training to oversee even more walkable school facilities. Though collaboration between planners, public health researchers, and educational facilities coordinators is generally limited, these results suggest that future efforts between these complementary and critical partners will be rewarded.

Policy Opportunities to Address Challenges

State agency leaders in California are undergoing efforts to overcome these challenges and connect the planning and policy mechanisms noted above together in ways that support healthy school siting decisions at the local level. The question is, how can state leaders either mandate, encourage, and/or incentivize local collaborative planning on school siting? We point to existing opportunities that might be leveraged.

Health in All Policies Task Force. The Health in All Policies Task Force was established to support collaboration across sectors at the state level in service of health, equity, and environmental sustainability. One of the task force's aspirational goals is for every California resident to have the option to safely use active transportation (walk, bicycle, or take public transit) to school, work, and essential destinations (California's Health in All Policies Task Force Fact Sheet 2014). While ASC is primarily a function of local implementation, there are a number of ways the state is supporting progress. In 2012, the California Department of Education (CDE), the governor's

Office of Planning and Research (OPR), and the California Strategic Growth Council (SGC) formed the Land Use Schools and Health work group as a forum for advancing collaborative policy efforts on the topic. More recently, LUSH has also had participation from the California Department of Food and Agriculture (CDFA), Division of the State Architect (DSA), the California Department of Public Health, and the California Department of Transportation (CALTRANS). The HiAP Task Force facilitates the work group in identifying policy solutions that serve state transportation, education, equity, and land-use (including conservation and agriculture) goals, and also furthers state goals for promoting “healthy communities,” which include ensuring communities and school sites are more walkable (California Health in All Policies Task Force 2014). Other work group outcomes include, OPR publishing school siting recommendations in the 2017 guidelines cities and counties use in developing land-use policy documents; CDE issued guidance for schools on sustainable development (see <http://www.cde.ca.gov/ls/fa/bp/documents/bestprcticesustain.pdf>); and CDE partnered with OPR to host input sessions across the state to inform an update to the state’s school siting regulations. These outcomes embody the Health in All Policies approach in state decision making and exemplify how state entities can work together to weave health, equity, and environmental sustainability into policies across sectors. Progress on these and other activities in California related to school siting is incremental, but LUSH appears to be providing a new vehicle for state agency collaboration on this topic.

Conclusion

Challenge: Among schools, local governments, and regional agencies, the success of each in responding to regional growth and demographic trends depends on the success of the others. Cross-sector stakeholders have a growing awareness of the interrelated dynamics among educational outcomes, health, and community growth and prosperity for California. Local interagency and interjurisdictional collaboration can likely realize co-benefits that lead to healthy, sustainable communities with improved educational opportunities. Clarity in state policies, guidance, and funding priorities would likely improve collaborative local planning for better outcomes in health, education, and sustainability, which, in turn, maximize investments across sectors. There is much room for future research to help guide policy decisions on school siting. The methods used in this study should be widely applicable. Intersection density can be easily calculated using publically available GIS data from the U.S. Census and a computer running ArcMap. Ideally, improved measures of pedestrian infrastructure of streets would be included. Communities with comprehensive trail networks would benefit from expanding their data collection, and those with transit and bike networks should consider incorporating those modes for older students. Further, researchers should compare local siting outcomes with data on rates of walking to school among children. Researchers should also conduct case studies of local school siting processes—how are different siting outcomes across cases related to the planning processes and public agencies involved? Similarly, as state policies, regulations, and/or incentives such as those identified in this paper in California get put in place, are these changing school siting outcomes on the ground? If not, why not? Findings from cases studies would be valuable to understanding effective role of state agencies and state policies that aim to link school siting and healthy community outcomes.

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