Student Transit Programs and Other Modes-to-School in California

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A Research Report from the Pacific Southwest Region University Transportation Center

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16. Abstract

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Abstract

The school bus remains an important part of providing children a ride to school in the United States. In most of the country, nearly four in ten students rely on the school bus. But in California, less than ten percent of students take the school bus, with parental chauffeuring making up most of the difference. Scholars and policymakers alike have looked to public transit as a means of bridging this gap, but research about the feasibility and observed use of this option for K-12 students is limited. Is transit a solution for California public school students' access to education? To understand this broader question, we consider two research questions: How do the transportation service options for students and families — both traditional school bus and public transit fare pass programs — vary between school district areas in California? And how do student travel behaviors for school trips vary across socio-demographic and school district characteristics? We find that while 70 percent of school districts provide school bus service, only 31 percent of students are eligible for school bus use. Subsidized student transit pass programs (free or discounted) are widespread across the state. California students in rural areas and small towns, as well as students who are Black or Latino, rely more on the school bus than others. The per-day median time cost of students to shift from the school bus to public transit would be 44 minutes for elementary, 62 minutes for middle school, and 76 minutes for high school. Findings can help state and local school transportation officials consider the most efficient and appropriate means of travel for the students they serve.

Student Transit Programs and Other Modes-to-School in California

Executive Summary

Traveling to and from school is something that a quarter of California 13 million households must plan for on a daily basis during the academic year. Almost each weekday from late August until early June, about 7 million Californians ages 5 through 18 make their way from their doorsteps to the doors of their school — but they do so in a way that looks *notably* different from the rest of the United States. In short, while the school bus is a major player for these trips across the country, in California its role has been diminishing since the early 1980s. State law in California does not require K-12 school districts to provide school bus transportation to students, and state funding was limited from 1982 until 2022 — which became a recipe for infrequent school bus provision and use relative to other states.

How do these differences play out across different groups of California students and families? And does public transit offer a potential solution to the Golden State's school bus gap?

This report analyzes these differences by systematically collecting data on school bus programs and eligibility criteria for a sample of 119 California public school districts. We then use this sample to first analyze the policies across different types of districts by student and geographic characteristics. Next, we attach these policy criteria to students in a statewide travel survey data to understand how these policies may be tied to different trends in travel mode choice and trip characteristics. Finally, we estimate hypothetical trip durations had they occurred on alternative modes, so that we can determine the effects of substituting public transit trips for school bus trips.

Major Findings by Analysis

The following are the major findings from these analyses:

California School District School Bus Programs and Eligibility Criteria

- Approximately 70 percent of California school districts provide some sort of school bus service to students.
- Some districts guarantee transportation to students based on the distance between their home and their school exceeding a set distance threshold. Other districts set bus routes and offer them to families without such a guarantee of home or near-home pickup.
- Districts that use distance thresholds tend to increase the threshold as students move up in school level from elementary to middle to high schools.

- Districts with comparatively higher shares of students of color were the most likely to offer no school bus transportation services to their students.

California Student Transit Programs

- Over 83 percent of California school district areas have a subsidized transit pass available in some form to students.
- Over half of the transit programs are completely free to students and families. These are mostly in the inner San Francisco Bay Area and across Southern California.
- The rest of the programs require some payment from students and families, but amounts and processes vary widely. These programs are mostly in the southern and outlying parts of the San Francisco Bay Area and northern and central California.

School Travel Behavior: California vs. U.S.

- School bus travel is very common in the United States (34% AM, 37% PM), but less common in California (8%).
- The private automobile has come to dominate the California school travel landscape (71% AM, 65% PM), but both in California and nationally students rely more on other modes in the afternoon while many parents/guardians are at work.
- Black students in California and the United States have higher shares of school bus usage than students of other races/ethnicities. In California, Latino/a students also have higher shares of school bus usage.

School Travel Behaviors & Transportation Eligibility in California

- In California, 31 percent of students are eligible for a school bus.
- Students in choice schools (magnet schools, charter schools, other district schools outside a student's assigned zone) are *much* less likely to be eligible for school bus transportation (23%) than neighborhood school students (36%).
- California students in rural and small town areas rely more on the school bus than students in cities and suburbs.

Estimated Trips on a Transit Alternative

- Students who would shift from the school bus to riding public transit for school trips would spend an additional 44 minutes in elementary school, 62 minutes in middle school, and 76 minutes in high school (round trip).
- Choice school students face higher time costs of substituting than students who attend their neighborhood schools.

- The most time-efficient substitute for the school bus is not public transit but the bicycle.

Across these analyses, we find that public transit is seldom used by K-12 students. In none of our 15 travel mode analyses did transit have higher than a 10-percent mode share. We instead find the school bus to have pockets of prominence, especially among students who we were able to impute eligibility in their district and school choice program type.

Policy Recommendations

Recent advances in state school transportation policy are a positive first step toward improving reliable and equitable access to education in California. In addition to the increase in state funds approved in 2022-2023, our findings suggest three additional steps:

1. *District requirements for providing school bus service:* California should require its districts to provide school bus transportation based on students' distance from home to school. Such a change in policy could be phased in over time as the current younger cohorts age up, or across different schools and districts as units. While California districts are free to provide transportation without guidance or requirements, only 31 percent of students statewide found themselves eligible for a school bus under the old program; we know for certain that the share in the country as a whole is higher (if not much higher) than this.

2. *Choice school programs are not exempt:* School districts that choose to implement choice programs — especially as interventions toward ameliorating educational inequality — must consider transportation as a core part of the program to ensure access is available for all students. Transportation needs for choice programs will vary across district characteristics; further investigation is needed into how to effectively implement these programs in ways students will benefit from and use them.

3. *Transit as a flexible compliment to the school bus:* School districts should view subsidized transit pass programs for students as a compliment, not a substitute, to school bus service. Transit passes help students fulfill needs for infrequent trips that require spatial and/or temporal flexibility — like trips home from band practice or trips to a friend's house. Except in circumstances where schools can verify that the typically large time cost does not apply to their students, transit should not be used as general school transportation.

Reducing the time and burden that students spend on transportation to and from school frees them up to spend more time on other activities. Enhancing their mobility also offers access to alternative or additional educational opportunities, like school choice programs and extracurricular activities (like sports, arts, and music) at nearly any school they attend. California should continue its work diligently and swiftly to improve the transportation services its school districts offer to students.

1. Introduction

Transportation of public school students in kindergarten through twelfth grade in California varies notably from most other states. This difference lies chiefly in the relatively low amount of school bus use in the state. Meanwhile, the state and many of its counties are continuing to invest public funds and resources into public transit. This has included programs to support the transportation of schoolchildren to and from school. Might there be a role for public transit in providing these essential rides?

While the research literature on adults' commutes to work and their various impediments and implications continues to be ever-growing, the research literature on school transportation is comparatively small. This overshadowing is not representative of the size of school travel in the U.S. Each day (as of 2017, to mirror the data we use in this study), roughly 56 million students in kindergarten through grade 12 attending public and private schools—17 percent of the total population—leave their homes and travel to a schoolhouse (Speroni, 2023). In California, that figure is about 6 million students—larger than 30 states' entire populations (California Department of Education, 2018). The effect that this movement places on the transportation system is massive: one estimate suggests school trips taken in private vehicles (e.g., a parent dropping off their child at school) accounted for about 10 to 14 percent of all pre-pandemic morning peak period vehicle trips and 5 to 7 percent of VMT (N. C. McDonald et al., 2011). (Adult commutes made up 40% of pre-pandemic morning peak period trips (Speroni & Taylor, 2023).)

But the picture we see today has not been consistent over time. Both nationally and within California, school travel patterns have evolved over the past half-century, such that parents chauffeuring children has taken over from walking and biking as the dominant travel mode. This shift is owed to three changes in education and parenting. First, school sites have steadily migrated from the centers of neighborhoods and towns to the fringes of developed areas, where land for parking lots and athletic fields is ample and inexpensive (Schlossberg et al., 2005). Second, parents have become much more hesitant to allow children to travel to school unsupervised, fearing "stranger danger" and other hazards (N. C. McDonald & Aalborg, 2009). And third, for decades, public school assignment was based solely on residential address, but today, public school choice programs—including magnet schools, charter schools, and open enrollment programs—have opened an array of school options for students to attend, most of which are further from their homes than their "neighborhood" school (Speroni & Lenhoff, 2023). These related underlying changes have altered not only the landscape of American public education but also the travel behaviors of students.

California families have experienced one additional change over the same 50 years: the steady decline of school bus service provision in the state. From 1977–1978 through 2011–2012, the share of students riding a school bus dropped by about half (Kapphahn & Ehlers, 2014). This stems from the 1978 passage of Proposition 13, which restricted increases of California property taxes—a primary revenue stream for public education in the U.S. As part of a wider response to this stagnation in

revenue, the state froze funding for home-to-school transportation at the levels districts received in 1981–1982, without any consideration for changes in costs or enrollment (absent occasional cost-of-living adjustments). This gradually led to funding levels that became both unusually low and unevenly distributed across school districts, with districts that have experienced the largest growth in student enrollment or transportation expenses being the most disadvantaged. Many other states require districts to provide transportation and/or substantially fund the operations (N. C. McDonald & Howlett, 2007); from 1981 to 2022, California left districts increasingly on their own. In a 2014 report on the status of school transportation funding in the state, the California Legislative Analyst's Office wrote, "Many districts interviewed for this report…noted that these trends also reflect shifting local priorities, and that their governing boards have decreased transportation services in order to fund other school programs" (Kapphahn & Ehlers, 2014, p. 8).

In 2022, California shifted its policies more in line with other states and began reimbursing districts for 60 percent of transportation costs; the results of this policy change are still to be explored. Our goal in this report is to set the stage for what might come next by highlighting what has been. While a dramatic increase in cash for districts may lead to more service, this report reveals that California school districts are starting near the bottom on this front, and that these investments may take time to bring the state up closer to the type of policy environment present across much of the rest of the United States.

This report considers various aspects of local California school district bus transportation policies and programs, student transit pass programs, and the respective uses of both, as of 2023 (before most districts had changed their policies to align with the new state budget incentives). We set out by reviewing the literature about school transportation, with a special eye toward the role of public transit. We then overview our methods and myriad data sources. Our first analysis section examines the variations in school district school bus transportation offerings and the student transit pass programs available in those district's areas. We examine this through a series of maps and tables. Our second analysis section uses travel survey data to construct estimates of travel mode share and trip characteristics for students in California and the U.S. across several personal, spatial, and educational characteristics. And our third analysis uses these trips to estimate the differences in trip durations across different alternative modes. We conclude by offering five key findings and three policy recommendations.

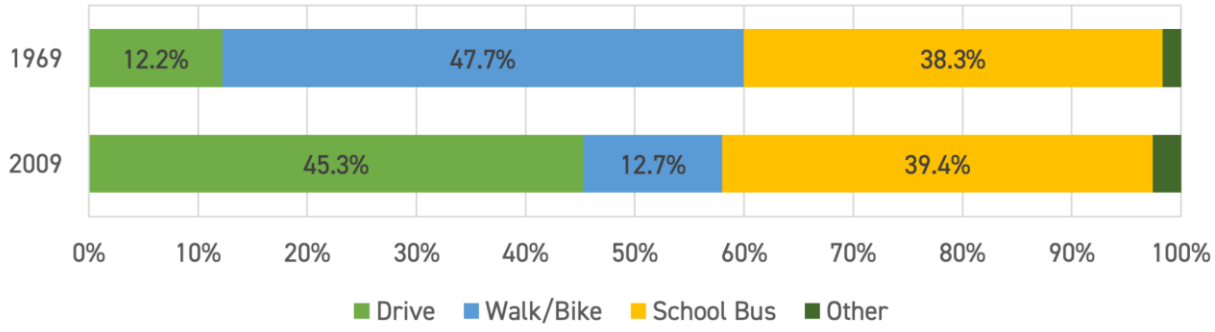
2. Literature Review

In this literature review, we first provide background and context for school transportation and public transit as a provider of school trips in California.[1] Next, we detail the prior research literature on school trip mode choice. Third, we examine the aggregate effects of school transportation, including greenhouse gas emissions, traffic congestion, and traffic safety. Fourth, we consider the research on existing transit pass programs for K-12 students, which we follow with an overview of the transit ridership experience for school-aged children. And finally, we conclude by interrogating research on the relationship between transportation to school and educational outcomes and access.

School Travel Mode Choice

Travel to school in the United States occurs on five principal modes: private automobile, yellow school bus, walking, bicycling, and public transit. The big difference between the commuting patterns of children ages 5 to 17 going to school as compared with their adult counterparts is the school bus mode: roughly 33 percent of students ages 5 to 17 take the school bus to school. Just over half of students nationally were driven or drove themselves to school in 2017; of the remaining 12 percent who did not take a private automobile or school bus, about 10 percent walk or bike and about 2 percent take public transit (FHWA, 2019; Kontou et al., 2020). Over time, the school bus mode share has remained relatively steady; however, as illustrated in Figure 1, the share of students who travel by automobile has skyrocketed while the share of those who travel by active modes has plummeted (N. C. McDonald et al., 2011).

Figure 1: School trip travel mode shares, 1969 and 2009 (Adapted from McDonald et al., 2011)



[1] Note that we focus here on public schools, which have an obligation to provide a free public education to students in California. Families who choose into private schools are also choosing into the transportation arrangements of that school and thus face a different set of circumstances than public school students. California does not permit vouchers for students to attend private schools at taxpayer expense.

Before we begin, there is an important shortcoming of most school trip mode studies that warrants highlighting: Most researchers have been unable to construct the "choice set" for travel modes to school. In most travel behavior studies, the choice set of modes available to a traveler is usually known; most travel surveys ask about the availability of household vehicles and the health of the respondent (for the purposes of identifying the feasibility of walking/biking), and public transit is generally available in most major and minor metropolitan areas in the U.S. Thus, we can be reasonably certain which of that the principal modes are available to each person across are some combination of automobile, transit, walking, and biking, with other assorted modes making up a small fraction of the remainder. However, the school bus again complicates this matter for school trips. While the school bus *is* pervasive in the U.S., it is not universally available. Whether or not the school bus is included in a family's school trip mode choice set depends on state and local school district policies, which vary widely (N. C. McDonald & Howlett, 2007). As mentioned earlier, this is especially true in California, where the school bus is more often not in the choice set. Researchers have dealt with this issue in a variety of ways we explain in the coming section, but generally, this issue has strongly contributed to the under-research of mode choice selection for school trips.

Analyses of school trip mode choice have typically considered two geographic levels: national and local. Nationwide studies are common because data are readily available and are updated regularly, in turn offering insights into the changing nature of these trips. Local studies are also common because studying one or two school districts allows researchers to isolate a policy environment so that families' individual choice sets are better understood. Conversely, state analyses are less common because few states have household travel surveys and the choice sets are complicated to understand. Ultimately, the diverse nature of these studies makes it difficult to create a uniform understanding of what characteristics explain school trip mode choice. Thus, here we summarize the findings of these studies across the three levels of political geography and conclude with some emergent themes.

National and State Studies

For U.S. national studies, the most common data source is the National Household Travel Survey, a semi-regular survey conducted by the Federal Highway Administration (FHWA) that provides a detailed cross-sectional analysis of the travel behaviors of U.S. households on an assigned "travel day." Four recent studies look at student school trip travel mode choice at a national level using these data, two of which explain overall mode choice (Lidbe et al., 2020; N. C. McDonald, 2008) and two of which seek to predict active mode (i.e., walking and/or biking) selection (Kontou et al., 2020; N. C. McDonald et al., 2011). We describe these in order of publication below:

1. First, from the 2009 NHTS, McDonald (2008) used a multinomial logistic regression with driving/riding in an automobile as a reference category to argue that travel time had the strongest effect on mode choice, but also found significant coefficients on age, having siblings, and gender: Older children and children with siblings were more likely to ride the bus and walk than ride in a car, and girls were less likely to walk than take a car.

2. In a follow-up study (N. C. McDonald et al., 2011), McDonald and coauthors added new variables to their analysis, including parent characteristics like education and country of birth,

and examined only the probability of walking or biking to school. This time, they used a binomial logistic model to predict the odds of walking to school. They found ethnicity (Hispanic/Latino), more household vehicles per driver, and low parent educational attainment to be associated with lower odds of walking/biking, while they found being male, having a higher income, having a foreign-born parent, and living in an urban area all to be associated with higher odds of walking. Above all, they found trip distance to have the largest marginal effect, with decreasing odds of walking/biking as trip distances increase toward the one-mile maximum they imposed.

3. Later, using 2017 NHTS data and a similar binary logistic model to predict walking/biking to school, some findings remained the same while others shifted: students were less likely to walk to school if they lived further away from school or if their parents owned their homes, while students were more likely to walk to school if they were male, older, lived in a zero-vehicle household, came from a wealthier family, or lived in a dense area. Their study also controlled for race/ethnicity, which was notably not statistically significant (Kontou et al., 2020).

4. A fourth study, Lidbe et al. (2020), conducted a similar analysis to Kontou et al.; however, their multinomial logistic model used "other modes" as a reference category, which encompasses less than one percent of all travelers and complicates understanding of the more-frequent choices between automobile, school bus, and walking trips. This makes it difficult to draw conclusions about and between the five primary modes.

We are only aware of one state-specific study. Using the 2017 NHTS Georgia Add-On, Speroni (2023) analyzed the mode selection between automobile and school bus for students who were eligible for school bus service (those who lived at least 1.5 miles from their school, which practically excluded walking; other modes had sample sizes that were too small to analyze). Georgia students were more likely to ride the school bus if they were Black, older, or living in greater Atlanta, while students were more likely to drive/be driven (instead of taking the bus) if they lived further from school, were girls, had a parent with a college degree, or had a parent with a flexible work schedule. This study highlights that several categories not as present in national studies, especially race, are much more revealing at the state level, suggesting that different policy and cultural environments across the country may lead to varied travel behaviors among students in different states and regions.

Local Area Studies

Several scholars have modeled school travel mode choice examining different, more specific geographies and thus different mode choice sets. While national and even state studies are broad-reaching and have complicated variations, local analyses offer more succinct and uniform policy environments. However, their generalizability beyond their study territories is likely limited. Here we review several studies drawing on district-level data from California, Florida, North Carolina, and Oregon.

In Southern California, He (2011) used a multinomial logit model to examine personal, environmental, and school factors in predicting mode choice in Southern California. The study considered the odds of walking/biking and using a bus (school or transit) for students in kindergarten through sixth grade and separately for students in grades seven through twelve. Specifically modeling for walk/bike or school bus use, she found that for both age groups the odds of walking decreased as distance increased and as the number of vehicles in the student's household decreased. Other characteristics were less consistent across the age groups. For example, an increase in age by year was associated with greater odds of walking to school for the younger age group and lower odds for the older age group; this is likely attributable to students gaining independence as they age through sixth grade but then gaining driver licenses as they age through high school. Additionally, Latino/a students were more likely to walk in both age groups, and increased household income was associated with less bus use for both age groups and less walking among the older group (but not the younger group). He's findings demonstrate that determining the predictors of mode choice vary across combinations of characteristics, depending on how researchers construct the model. Additionally, understanding mode availability is an acknowledged limitation of this study; that is, we do not know if a student had a school bus available to them in their choice set—in California it is unlikely but not impossible—and He mentions the need for examining school busing policies. (We address this gap directly in this study.)

Ewing et al. (2004) addressed this issue by examining a single school district in Gainesville, Florida, in which the choice set was fully known. Although they theorized that school transportation could better fit into a nested logit structure—one in which families first choosing whether to drive and then choosing from a subsequent set of modes—they found the multinomial logit structure (an even-level choice among all available modes) to be preferable due to the absence of strong evidence of shared unobservables among the non-driving modes. They included a wide variety of variables in their models, including built environment, such as jobs-residents balance and density; urban design, such as sidewalks with trees and sidewalk widths; and school data from the Alachua County School District. Notably, they elected to not analyze public transit as a mode, as only four total students used it out of a sample of nearly 800. Ultimately, they found that students with shorter walk and bike times were more likely to walk and bike than ride/drive in a car, while they describe school buses as "a mode of last resort" (Ewing et al., 2004, p. 62). They also found that urban form was significantly related to walking rates; specifically, they found a positive association with sidewalk width.

Other studies also suggest built environment characteristics have an effect on school travel mode choice. McMillan (2007) generally supported Ewing et al.'s findings in an binomial logit analysis of urban form variables predicting walking/biking to several schools in Northern and Southern California. They included the proportion of street segments with a complete sidewalk system, the proportion of street segments with houses facing the street, and the proportion of a street with mixed land uses. The latter two were positively associated with students walking to school; surprisingly, complete sidewalk systems were not. Along the same lines, Schlossberg et al. (2006) found distance, intersection density, and dead-end street density have increasingly negative effects on students' choice to walk to school.

Not all reasons for parents driving their children to school are associated with urban form and walkability. Several other studies examine the relationships between a variety of factors and the choice

to drive or walk to school that are better revealed in local data, including parental preferences and school obligations. In a study of only walkable built environment areas in the San Francisco Bay Area, McDonald and Aalborg (2009) found that parents were particularly concerned about the presence of strangers ("stranger danger"), the distance to school, and the time their child would spend walking; their respondents also commonly cited the ability to drop off their child on the way to work. Schlossberg et al. (2006) also found heavy backpacks, dangerous traffic conditions, and extracurricular activities as reasons for parents driving. Notably, they also identified bad weather as a reason for parents driving, which is less of a concern in the Bay Area but is much more of an issue in their Oregon study region. Neighborhood social trust (N. C. McDonald, 2007) and household transportation options, attitudes, and social norms may also play a role in this decision (McMillan, 2007).

We find it particularly noteworthy that the existing research literature does not meaningfully touch on public transit as a part of the school trip mode choice decision. This does not seem intentional but rather a result of three potential factors. First, public transit use to and from school appears quite rare, especially outside of a few major dense cities. (There are studies we cover later in this review about transit use and school in Baltimore, New York City, Philadelphia, and Washington, D.C., but none are mode choice studies.) Second, relatedly, data about school trip mode choice are difficult to find and obtain; most travel surveys ask only limited questions about the school commute, and most school district surveys are confidential and do not ask about transportation, especially outside of school buses that the school district directly provides. And third, many—perhaps even the majority—of school mode choice studies focus on the choice to walk to school; some even model only that as an outcome, leaving transit lumped into a hodgepodge group of motorized modes (which is mostly private cars and school buses).

Transit Policy Context and the "Tripper Rule"

One reason for comparatively low transit use among students is that agencies deliberately do not design their systems for students, in part because federal law prohibits them from going so. Beginning with the Federal Mass Transit Assistance Act of 1974, Federal Transit Administration (FTA) Regulations (49 CFR Part 605)—commonly known as the "Tripper Rule"—restrict transit agencies' abilities to provide school-specific rides to any transit agency that receives federal funding (Vincent et al., 2014). In short, the "Tripper Rule" allows transit agencies to serve K-12 schoolchildren on routes open to the general public and at stops open to the general public; it prevents transit agencies from operating routes that would ostensibly function as school buses dedicated solely to students. "Trippers," or vehicles added to service to serve additional loads, are permitted, but must remain open to the general public and can deviate only minimally from their usual routes. This regulation simultaneously serves to ensure that transit agencies are serving the needs of the entire public and to protect private school bus operators and public school district bus operations from redundant competition, which notably are also publicly-funded but from a different source of revenue (i.e., the education budget).

Aggregate Effects of School Travel

School trips make up a significant portion of students' travel and of all travel in the state, particularly during the peak morning commute hours. Most children in California currently get to and from school by private automobile, which contributes to traffic congestion, increased greenhouse gas emissions, localized pollution, and traffic collisions, all of which have negative consequences for students, their communities, and the state as a whole.

Congestion

Traffic congestion increases the amount of time that it takes Californians—including students—to get to the places that they need to go, reducing the time that they can spend on other activities. In 2017, the average commuter in California spent more than 40 additional hours in their vehicles due to traffic congestion, and congestion is particularly pronounced in the San Francisco Bay Area and Greater Los Angeles (California Department of Transportation, 2021). As a result, congestion is a dominant concern of residents, with 64 percent of California adults rating reducing traffic delays as a very important goal for the state (Agrawal & Nixon, 2023). Congestion that reduces freeway vehicle speeds below about 45 MPH is also a primary determinant of the extent to which vehicle miles traveled translate into emissions, because it creates a "stop-and-go" driving pattern of increased accelerations and decelerations that increases emissions and increases the amount of time that vehicles spend on the road (Barth & Boriboonsomsin, 2008; Grote et al., 2016). Research has shown that the actual driving patterns for trips with an average speed up to 40 MPH in Southern California produce 30-45 percent more emissions than the trips would produce at the same average speed if that speed were perfectly constant (Barth & Boriboonsomsin, 2008).

Congestion can also become self-reinforcing, particularly as it relates to school travel. Monast et al. (2022) used traffic flow and congestion data, public transportation data, and school travel data to estimate the number of hours that public transportation and school buses spend in delay due to congestion in Durham, North Carolina and Pinellas, Florida. They found that congestion creates significant increases in delay and cost for buses, including at least 18,750 hours of delay for public transit buses and 20,900 hours of delay for school buses in Durham. They note that congestion can increase the appeal of driving rather than taking a bus, by decreasing bus routes' reliability and slowing down buses to the extent that public transit agencies or school districts may have to reduce the amount of service that they can provide, which can contribute to a vicious cycle of increasing congestion.

While reducing congestion is an important public priority, generalized interventions that have sought to address congestion by building or widening roads have not delivered their intended benefits, in part due to the "induced demand" phenomenon by which increased road capacity leads to temporarily faster speeds, until those conditions attract new drivers from other times, routes, and modes, eventually nullifying any temporary improvements in congestion (Downs, 2004; Ralph et al., 2022) (Ralph et al., 2022). As a result, California's current goals include addressing congestion through new strategies like encouraging travelers to switch from private vehicles to modes like public transit that more efficiently utilize existing road capacity (California Department of Transportation, 2021).

Efforts to address congestion by incentivizing switches away from driving must account for school trips. Students' travel to school can substantially increase congestion, particularly in the mornings, when travel to school coincides with the traditional morning rush hour. School travel accounts for about a quarter of all daily commutes (work and school) in the United States (Rick, 2023). Further, McDonald et al. (2011) estimated that school trips account for 10-14 percent of all private vehicles on the roads in United States during peak morning commute times during the school year, and these numbers may likely be higher in a state where school trips are more likely to be made by private vehicle than in the country as a whole, as is true in California.

Although there is little literature specifically investigating the relationship between school transportation and congestion, Rick (2023) conducted one such study by exploiting the variation in the number of school travel days per month across different primary-city school districts in the 51 largest urban areas in the United States (e.g., Los Angeles Unified School District for the Los Angeles urban area). That study found the effect of a complete school month increases total congestion by 18 percent, and that the effect is strongest in the AM peak, when school trips increase congestion by 24.6 percent. This finding tracks with existing evidence suggesting that school trips did not overlap with PM peak traffic prior to the pandemic (Speroni et al., 2024).

Rick also found evidence that school transportation programs, which enable students to take more space-efficient modes like school or public buses to school, very likely reduce congestion. A 10-percent increase in the percentage of students transported to school by school bus is associated with a 2.3-percent reduction in congestion, with a 4.5-percent reduction in the AM peak period. More generally, a 10-percent increase in per-student transportation spending (which is typically for school bus service or but can also be for subsidized public transit) is associated with a 0.9-percent decrease in overall congestion and a 1.1-percent decrease in AM peak period congestion. For cities like Los Angeles and San Francisco that currently have both comparatively high congestion and low transportation spending per pupil, public investment in school transportation—especially school buses—could most cost-effectively reduce congestion.

Transportation Emissions

The transportation sector is a primary contributor towards climate change and localized air pollution, and school trips make up an important and sizable part of all local travel. School trips account for about 22 percent of all trips made by children ages 5-18 (N. C. McDonald et al., 2011), and more often than not also include parents as chauffeurs (Speroni, 2022). Overall in California, the transportation sector directly produces about 40 percent of greenhouse gas emissions and is responsible for over 50 percent of statewide emissions after accounting for emissions produced by extracting, refining, and moving transportation fuels (California Air Resources Board, 2021). Moreover, the state is not on track to meet its goal to reduce statewide greenhouse gas emissions to 80 percent below 1990 levels by 2050 (California Department of Transportation, 2021). Local air pollution has a variety of negative public health effects by increasing rates of respiratory and cardiovascular diseases (Simeonova et al., 2019), premature births (Currie & Walker, 2011), and disproportionately affects low-income communities and communities of color (California Department of Transportation, 2021). As such,

reducing the environmental impact of school trips is important for the state to meet its environmental and equity goals.

The environmental impacts of school travel are in part determined by both school district characteristics and transportation policies. School district policies, including school choice policies, and school siting decisions, and the built environment of the district affect the distances that students travel to school. And a district's transportation policies, such as whether or not students are eligible for school bus service or subsidized transit, influence mode-choice and travel distance for school trips. Although there has been minimal research directly quantifying the aggregate environmental impact of school travel or how various local policies can affect these impacts, existing research supports the conclusion that policies leading directly or indirectly to increased distances to school increase environmental impacts. The literature also suggests that student transportation programs can reduce environmental impacts by moving students from private vehicles to modes that produce less pollution per student.

District characteristics that increase the distance children must travel to school simultaneously increase the environmental costs of school travel both by reducing rates of walking or biking and by increasing the length of each carbon-emitting trip. Marshall et al. (2010) developed a logistic regression model to predict elementary students' dominant mode-choice for school trips by using survey data from the parents of elementary school (grades K-6) students in the St. Paul School District (Minnesota), and then applied this model to all students to estimate aggregate mode-choice decisions and resultant transportation emissions. They estimated that school trips for kindergarten students in St. Paul School District produced almost 12,000 kg of CO2 per day, and that emissions of various pollutants were 3-8 times higher than they would be if students all attended their neighborhood school. Similarly, Wilson et al. (2007) used students' distances to school to estimate aggregate mode-choice decisions and emissions for all students of a representative city-wide (choice) school and a representative neighborhood school in St. Paul, Minnesota under the district's current school bus policies and an alternative policy scenario with no school transportation provided. They found that vehicle miles traveled and emissions were about 4.5 times higher for the citywide school than the neighborhood school (due to lower rates of walking and longer distances traveled), but that the provision of student transportation by school bus reduced the tons of CO2 from 37 to 35 tons for a 350-person neighborhood school and from 167 to 133 tons for a 350-person city-wide school.

In the coming decades, the emissions of private vehicles and bus transportation will be reduced by policies and regulations to support the transition to electric vehicles. California has mandated that all school buses be battery electric vehicles by 2035 (or 2045 for rural school districts), but battery electric school buses currently make up very little of the state's school bus fleet, accounting for only about 500 of 24,000 school busses currently in operation or on order (Schoolbuses: Zero-Emission Vehicles, 2023). Given that the vast majority of cars and buses will remain carbon-emitting vehicles in the coming years, the emissions associated with school travel remain important. The minimal existing research suggests that districts providing school bus transportation can reduce the environmental impacts of student travel, but these policies have a smaller effect on aggregate air pollution than district policies that influence how far children live from their schools.

Traffic Collisions

Motor vehicle crashes are the number one leading cause of death among children and adolescents, making traffic safety a priority consideration with regard to school transportation (Cunningham et al., 2018). The substantial majority of such incidents during school trips occur in or around private vehicles, while school buses and public transit buses remain extraordinarily safe modes of transportation for children (National Highway Traffic Safety Administration, n.d.).

There are many design features and regulations that make school buses extraordinarily safe. School buses are subject to unique crash-protection standards that increase rollover protection, bus joint strength, fuel system standards, and seat padding and height to create passive safety compartmentalization for students and otherwise reduce the potential for injury in the case of a school bus crash, as well as specialized mirrors and crossing arms so drivers can see children crossing in front of a stopped bus (Kostyniuk, 2003; National School Transportation Association, 2013). Additionally, complementary laws require other traffic to stop behind school buses when they are loading or unloading students to reduce the risk of children being hit by an oncoming vehicle while approaching or leaving the bus (Kostyniuk, 2003).

Traveling by public transit is similarly safe from a traffic safety outcomes perspective, although legislation is not as uniform and is not specifically tailored for children. Traveling by public transit has about one tenth the crash risk for injuries or fatalities as traveling by car, and increases in transit use reduce the overall traffic fatality rate in communities (Litman, 2014).

While there is little research comparing traffic safety for school buses and public transit and researchers are constrained by poor data availability, estimates of crash risk have generally concluded that the traffic safety of school buses and public transit buses is comparable, and that both are *substantially* safer than other modes of transportation. A Transportation Research Board Special Report that combined travel survey data and crash report data to estimate crash risk for school-aged children during normal school travel hours found that injury and fatality rates were similar for school bus and other public transit bus trips (0.3 and 0.1 fatalities per 100 million school trips), and that both modes were magnitudes safer than being driven by an adult (1.6 fatalities per 100 million school trips), walking (4.6 fatalities per 100 million school trips), bicycling (9.6 fatalities per 100 million school trips), or—most glaringly—teenagers driving themselves or being driven by another teenager (13.2 fatalities per 100 million school trips) (*The Relative Risks of School Travel*, 2002). Another study which sought to understand crash risk associated with school trips including risk onboard and pedestrian risk while approaching or leaving the bus similarly concluded that there is no distinguishable difference between the crash risk of traveling by public transit bus or school bus (Kostyniuk, 2003).

Addressing the Aggregate Effects of School Travel

Incentivizing students to travel to school by bus or active travel and achieving a reality where that occurs would alleviate nearly all of these social costs of transportation. For students who cannot safely walk or bike in a reasonable amount of time — which is the sizable majority of students — these goals can similarly be achieved through the use of school buses or public transit buses. However, these

goals can only be achieved if students actually do switch from vehicles to buses, and uptake of student transportation programs may vary between school bus service and public transit programs and will depend on the details of how programs are designed.

Student Transit Pass Programs

General Justifications for Student Transit Pass Programs

School Districts' Perspective

The most fundamental justification for student transportation programs is to facilitate students' access to education. In California, students have a fundamental state right to an education, and a means of traveling to that education is necessary to enable that right (Speroni 2022). As students live increasingly far away from their schools, walking and biking have ceased to be viable options for many children (Vincent et al., 2022). This leaves few options for students whose parents do not have the means to transport them to school by private vehicle or who cannot afford public transit fares, causing them to miss school (N. McDonald et al., 2004) or evade fares, which can result in fare evasion citations that can lead to heavy fines or harmful interactions with the juvenile justice system (Gase et al., 2014). Accordingly, the school districts in California that have relatively large student transportation programs report that they primarily offer these to meet the needs of students who lack viable alternatives to get to school (Kapphahn & Ehlers, 2014). California school districts (and those in several other states) are incentivized to focus on increasing attendance both because attendance is instrumental to positive educational outcomes, but also because the state provides funding to districts based on how many days students attend school (Kapphahn & Ehlers, 2014).

As school districts have considered providing student transportation through public transit rather than school bus service, they have argued that a variety of potential benefits to students could accrue due to this approach. Public transit offers considerable flexibility in terms of schedules and potential destinations as compared to school bus service. As a result, proponents argue that public transit can more effectively improve attendance by allowing students to still get to school even if they miss the bus they had originally planned to take (Fan & Das, 2015); and that public transit is better at improving access to after-school activities both at school and at other locations (Fan & Das, 2015; N. McDonald et al., 2004).

Additionally, the cost and logistical challenges of providing of school transportation through school buses has risen in recent years, due to a variety of factors including increases in school consolidation and school choice programs; rising contracting and fuel costs; and more stringent regulations for school bus vehicles and operators related to safety and emissions (Vincent et al., 2014; Wexler et al., 2021). As a result, school districts have often turned to public transit to reduce their transportation costs. For example, when Minneapolis Public Schools (MPS) replaced its school bus service with a student transit pass program for high school students, the net fiscal impact on MPS was over $1,500,000 in cost savings in the first full year of the program, after accounting for administrative costs, the cost of purchasing the passes for students, and the cost savings of eliminating school bus

service for high schoolers (Fan & Das, 2015). However, this assumes that the transit agency has unused capacity on its vehicles, and that transit costs have not risen as fast as school bus costs have; otherwise, it is not clear if there are cost savings to the overall public (when viewed without consideration for which provider's ledger the costs accrue on, school district or transit agency).

Transit Agencies' Perspective

Student transit pass programs often also receive support from transit agencies if they are designed to align with agencies' ridership and revenue goals. Student transit pass programs can benefit transit agencies by increasing ridership in both the short-term and long-term. In the short-run, student transit pass programs can increase the number of students getting to school by transit. Moreover, proponents argue that facilitating public transit use for students can lead to long-run ridership gains by increasing students' comfort with, and thereby their willingness to use, public transit throughout their lives (Wexler et al., 2021).

Some research has demonstrated the potential efficacy of this long-run use effect. Smart and Klein (2018) used longitudinal panel survey data to demonstrate that increased exposure to transit at the ages when children attend school (ages five to eighteen), measured both through the prevalence of transit use and transit quality in someone's residential area, increases the probability that someone's household will use transit throughout their life, even after controlling for the built environment and quality of transit available where that person currently lives and other sociodemographic variables. Although the authors did not test any mechanisms that produce this effect, they posit that it could be produced by either an individual learning process or a social learning process, by which transit use is "normalized" for children or teenagers who grow up in places with higher rates of transit use. Student transit pass programs could work through either of these mechanisms by incentivizing individual students to get to school by transit and by normalizing this mode choice more broadly. To quantify the magnitude of this effect, Gase et al. (2014) estimated that providing free public transit passes for all students from kindergarten through college in Los Angeles County could increase total transit ridership in the region by 6-15 percent in the short-term and up to 26 percent in the long-term.

However, student transit pass programs can also create significant costs for transit agencies, including administrative costs, the costs of increasing service to meet increased student ridership, and lost revenue if student transit pass programs are implemented by transit agencies without a designated funding source (such as a partnership with a school district through which the district purchases transit passes on behalf of its students). Gase et al. (2014) estimated that without securing funding, fare elimination for all students from kindergarten through college would result in a 20.6 percent decrease in transit agency fare revenue in Los Angeles County (with an 8 percent decrease in fare revenue attributable to K-12 students), even without accounting for potential new costs like increased service. The net fiscal impact on transit agencies is much smaller in magnitude if school districts or other local governments purchase student transit passes on behalf of students. The transition from school bus service to a student transit program for high schoolers in Minneapolis Public Schools (MPS) only resulted in a net revenue loss of about $150,000 for Metro Transit (which was equivalent to only about 10 percent of the cost savings by MPS) (Fan & Das, 2015).

Broader Societal Goals

Beyond school districts' and public transit agencies' needs, school transportation programs — and student transit programs specifically — have been promoted as a way to achieve broader societal benefits for children and families. Proponents have argued that giving families an alternative to private vehicle transportation can reduce congestion and emissions, decrease the number of collisions young drivers are prone to, and save parents the time they would otherwise have to spend chauffeuring their children (Reed et al., 2021; Wexler et al., 2021). Additionally, student transit programs can have benefits from a racial justice perspective, by eliminating financial barriers for students who cannot afford transit and reducing youth interactions with the juvenile justice system related to fare payment issues. In Los Angeles, reducing the substantial number of youth citations for fare evasion was a central goal of proposals to eliminate fares for students, because these citations disproportionately affect students of color and can lead to heavy fines or harmful interactions with the juvenile justice system (Gase et al., 2014).

Existing Student Transit Pass Programs in the United States

To our knowledge, there has not been a systematic review of which school districts have chosen to provide student transportation through student transit programs in the peer-reviewed or gray literature, and assessments of districts' transportation policies represent snapshots in time that may not reflect current transportation offerings. Some reports have compared different student transit programs as case studies. Vincent et al. (2014) provided detailed case studies of student transit programs in Polk County, Florida (south of Orlando and east of Tampa), Oakland, California, Portland, Oregon, and Washington, D.C., and Burgoyne-Allen & O-Neal Schiess (2017) also provided a general overview of student transit pass programs in the United States. Additionally, peer-reviewed literature and other reports have described individual student transit pass programs in Baltimore, Maryland (Schoenberg et al., 2021; Stein & Grigg, 2019), Detroit, Michigan (Pogodzinski et al., 2021), Minneapolis, Minnesota (Fan & Das, 2015; Wexler et al., 2021) and Leon County, Florida (greater Tallahassee) (Garcia-Munoz & Sandoval, 2022).

Taken together, these sources help illustrate some of the similarities and differences between student transit pass programs in the United States. We overview these studies below, considering them together along several dimensions that were present in most: grade level, eligibility, restrictions, enrollment process, fare media, prevalence of other transit use in the area, and financial agreements.

Grade Levels: As noted by Burgoyne-Allen & O'Neal Schiess (2017), student transit programs are generally more common for older students. The programs in Portland, Detroit, Minneapolis, Cincinnati, and Polk County were initially only for high school students, although the Polk County school district was planning on expanding the program to grades 4-12 (Vincent et al., 2014; Burgoyne-Allen & O'Neal Schiess, 2017; Pogodzinski et al., 2021), and the transit program in Baltimore was only for middle school or high school students (Stein & Grigg, 2019). In contrast, all youth ages 5-18 could take advantage of the student transit program in Oakland, all students under the age of 22 could do so in Washington, D.C., and all K-12 students could do so in Leon County (Garcia-Munoz & Sandoval, 2022; Vincent et al., 2014).

Eligibility: Programs funded and administered with more local government involvement often cover all students (regardless of whether they attend public, private, charter, or parochial schools), as was the case in Oakland and Washington, D.C (Vincent et al., 2014). In contrast, programs paid for by school districts may be restricted to public school students or have other types of eligibility restrictions (such as students' distance to school) (Vincent et al., 2014; Wexler et al., 2021). Students attending charter schools may also experience different eligibility criteria for subsidized transit programs compared to students attending traditional public schools.

Restrictions on Use: Most student transit programs offer unlimited use, but some are targeted towards primarily facilitating regular travel to and from school. The programs in Portland, Oakland, Polk County, and Leon County all offered unlimited, unrestricted transit use on participating agencies' services (Garcia-Munoz & Sandoval, 2022; Vincent et al., 2014), while the student pass program in Minneapolis allowed unlimited travel from 5 AM to 10 PM all days (including weekends) during the school year (Wexler et al., 2021). In contrast, students in Washington D.C. could only ride the bus for free on weekdays from 5:30 AM to 9 AM or 2 PM to 8 PM, although they could purchase discounted passes for unlimited travel at other times (Vincent et al., 2014). Students in Baltimore could only ride transit for free from 5 AM to 8 PM on school days (Schoenberg et al., 2021). Vincent et al. (2014) also noted that some student transit programs had limitations on the number of subsidized trips that a student can take each day, with a limit of two trips per day in Philadelphia and three trips per day in New York City. While restrictions on use can reduce the cost of student transit pass programs, these restrictions can also prevent programs from having benefits associated with non-school travel, like access to extracurricular activities, alternative childcare arrangements for younger students, or jobs for older students.

Relationship to School Bus Service: School transit programs generally substitute for or replace (rather than supplement) school bus service. There is no school bus service for general education students for public-transit-eligible grades in Oakland, Portland, Washington D.C., Baltimore, Boston, and Polk County (Vincent et al., 2014; Stein & Grigg, 2019; Boston Public Schools, 2023). However, there were also school districts like in Leon County, Florida that offered free transit for all students in addition to school bus service for eligible students (Garcia-Munoz & Sandoval, 2022). In New York City, it is a school-level decision if its students in kindergarten through sixth grade will be provided transit passes or school buses (Trajkovski et al., 2021).

Ease of Enrollment: There is variation in how easy it is for students to sign up for student transit programs. In places with the easiest enrollment, like Baltimore, schools automatically provide eligible students with their student transit pass (Schoenberg et al., 2021). In Polk County, parents had to complete a form and pay a very small fee ($2.14 per year) (Vincent et al., 2014). On the most burdensome end of the spectrum, students in Oakland, California had to apply in-person with government-issued identification for a youth pass, which could take weeks to arrive (Vincent et al., 2014).

Fare Media: Most school districts administer student transit pass programs by providing students with preloaded transit agency fare cards that can be used to pay for local transit fares. Such school districts include Washington, D.C, Baltimore, Boston, and Oakland (District Department of Transportation, 2023;

Baltimore City Public Schools, 2024; Massachusetts Bay Transportation Authority, 2024; Alameda County Transportation Commission, 2024). While integrating student transit passes into students' existing identification cards is currently uncommon, districts could make this integration electronically, by integrating RFID chips into students' cards, or physically, like in Polk County, where students who receive free transit receive a sticker on their student IDs that they can show bus operators to ride for free (Polk County Public Schools, 2024). While combining transit passes with existing identification cards reduces the risks of unsanctioned uses or of students losing or forgetting their passes, doing so requires collaboration between school districts and transit agencies to print cards with integrated fare payment technology or coordinate agreements around boarding with a student ID. This effort can be more difficult in areas with large student enrollments and/or many school districts served by the major transit agency, which could be one reason that large urban districts served by robust transit systems largely provide students with transit through dedicated fare media. School districts could also make student transit passes available through a smartphone app or mobile wallet, which would even further reduce the likelihood of students losing or forgetting their passes (Schoenberg et al., 2021). Although there are some transit agencies that do not support smartphone payments, such a solution is particularly promising in California, where the majority of transit agencies in the Los Angeles and San Francisco Bay areas accept mobile payments, and over 95 percent of students above 13 years old now own smartphones as of 2018 (Radesky et al., 2023; Richter et al., 2022).[2]

General Prevalence of Transit Use: Student transit programs are generally — but not exclusively — offered by large, urban districts in cities with relatively robust public transit systems (Burgoyne-Allen & O'Neal Schiess, 2017). Notably, these programs extend far past the areas with the highest transit ridership (such as the San Francisco Bay Area of California or Washington, D.C.) to cities like Detroit and Cincinnati where transit use is about as common per-capita as in the Los Angeles area. Additionally, transit pass programs can also be successful in other contexts. Over 50 percent of eligible students participated in the student transit pass program in Polk County and there was demand for the program to be extended to younger grades (Vincent et al., 2014).

Financial Arrangement: Financial arrangements differ substantially. Student transit pass programs can be paid for by the local school district (as in Polk County and Minneapolis), the city government (as in Washington, D.C.), the transit agency, or shared by these three entities (as in Portland, Oregon) (Vincent et al., 2014; Fan & Das, 2015). The level of subsidy that students experience is generally determined by school districts' ability to reimburse the transit agency (which is strongly affected by the amount of funding for school transportation that the district receives from its state) and the local public's willingness to cover the cost, which may be higher in places where transit ridership is generally higher (Vincent et al., 2014).

[2] Smartphone availability is prevalent among high school students, and even for those whose phones may not be currently active on a cellular network, mobile pay cards function with or without cellular service (and in many cases with or without battery life). Smartphone use among middle-school-aged students (through age 11) was lower as of 2018; only 53 percent of students have smartphones (Richter et al., 2022). So, while it may be feasible to expect high schoolers to carry a digital transit pass with only a few exceptions, such a widespread expectation does not appear appropriate for middle school students.

Subsidized Student Transit Pass Programs in California

Although student transit programs funded by school districts and administered through strong partnerships between schools and transit agencies are not common in California, many students are still able to access reduced public transit fares. Saphores et al. (2020) conducted a survey of California transit agencies that captured responses from agencies that provide about 55 percent of transit trips in the state. They found that 34 agencies (58% of respondents) had free or reduced fare programs for K-12 students, and that programs varied widely in size. They also varied widely in discount level, from only 10 percent discounts to completely free fares for students. Most agencies reported that these programs had no designated funding, although some were funded by student fees or other sources like local sales tax measures. None of the programs involving agencies that responded to the survey received funding from a local school district.

Rider Experience

Transit Ridership in the United States

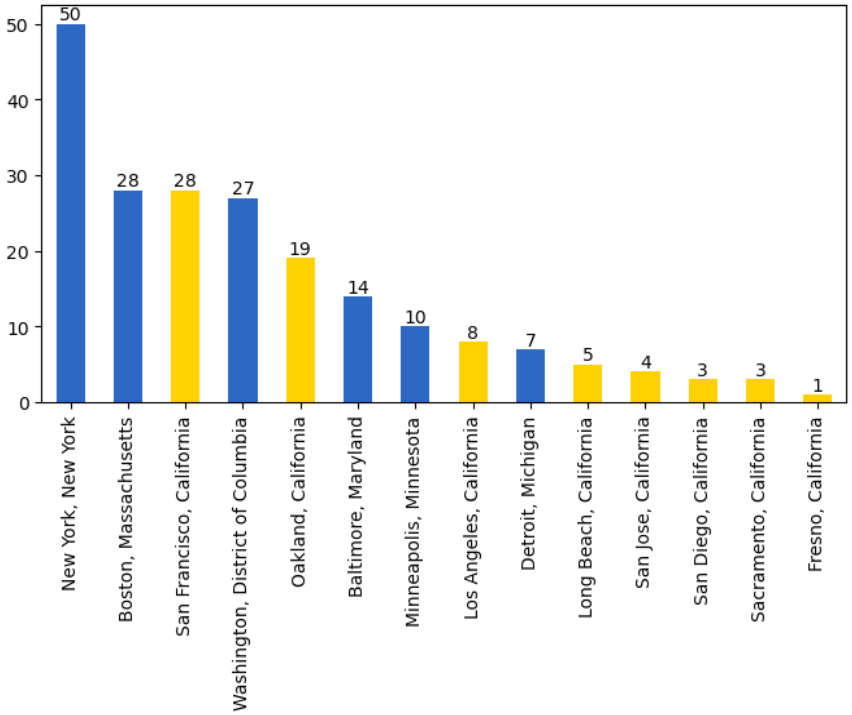
The experience of being a transit rider varies widely between cities based on the quality of the transit system and general prevalence of transit use in that city. People make mode-choice decisions not only based on what the experience of taking one given mode will be like, but also based on how that experience would compare to alternatives. Accordingly, city-level transit ridership is highly sensitive to a city's automobile orientation. A review of the literature investigating determinants of transit ridership by Taylor and Fink (2003) found that factors related to the ease of driving (such as parking availability) are consistently found to be the strongest determinants of transit ridership, although factors within transit agencies' control (such as transit frequency and reliability) do also affect transit ridership.

As a result, transit ridership looks very different in different cities in the United States. New York City is unique among cities in the United States — about 40 percent of all transit trips in the United States take place in the New York City metro area. Transit use is also relatively common in other "legacy" cities, which largely developed prior to widespread automobile ownership, resulting in built environment characteristics like narrow streets and scarce parking that make driving difficult enough that higher-income people also choose to take transit (Manville, 2018). In these cities, which include Boston, Washington DC, Chicago, Philadelphia, and San Francisco, transit use is not a marker of socioeconomic status; the median earnings and poverty rates of transit commuters and all workers are roughly equivalent (Manville, 2018). Outside of these places, however, public transit serves a relatively small share of the population, and is primarily seen as a "social service" that provides access to transportation for people who are unable to drive due to financial, medical, or legal constraints (Manville, 2018). For example, transit riders in Los Angeles have median earnings almost half as high as median earnings for workers overall (Manville, 2018). Notably, however, there is also a substantial difference between cities like Los Angeles and Detroit, where public transit still serves a reasonable percentage of travel in the region, and areas in which transit use is more rare, which include suburban and rural areas in addition to cities with very low transit ridership, such as San Diego, Sacramento, Houston, and Dallas.

These differences directly affect the quality of students' trips, students' and their families' perceptions of transit, and how likely students are to take transit for non-school trips. This last difference in particular is important for evaluating the holistic effect of transit programs on students, given the benefits of and challenges with transit to be discussed. In instances where students are unlikely to otherwise take transit, relying on transit for school transportation can open them up to longer travel times and increased exposure to violence and law enforcement. However, in instances where students are likely to take transit regardless of the existence of student transit programs, these programs can provide families with much needed financial relief, reduce potential exposure to law enforcement, and increase students' mobility through associated information and training programs provided by their schools.

Additionally, it is important to consider that research conducted in different transit contexts is most directly applicable to other cities with similar transit systems and transit ridership, and that research may not be generalizable across different such contexts. Figure 2 shows a common proxy for transit usage — the percentage of workers who commute using public transit — among cities most commonly studied in the school transportation literature (blue bars) and major cities in California (gold bars). The majority of school transit research, particularly qualitative research into the experience of taking transit to school, has been conducted in the cities of Baltimore and Detroit. These cities have transit characteristics that are most analogous to the Los Angeles area, and research from these places most directly speaks to what experiences and outcomes with transit may be like for students in Los Angeles. Some student transportation research has also been done in Washington D.C. and New York City, two legacy cities whose built environments make lessons from these programs most applicable to students in the San Francisco area. Critically, there has been virtually no research on the experience of taking public transit as a form of school transportation in areas with very minimal transit ridership, creating a knowledge gap regarding how these programs would be experienced in the parts of California outside of the Los Angeles San Francisco areas, including in rural and suburban areas as well as other cities like San Diego and Sacramento.

Figure 2: Percent of Workers Commuting by Public Transit in Select U.S. Cities, 2017–2021 (US Census Bureau, 2021)



How Experiences Differ for Children

Most K-12 students cannot drive themselves or are subject to restrictions on their ability to drive by virtue of their age. In California, youth must be at least 16 years old to receive a license, and they cannot drive between the hours of 11 PM and 5 AM or independently transport co-passengers under the age of 20 for the first year of having a license (State of California Department of Motor Vehicles, 2023). Additionally, the cost of driving is prohibitively expensive for most teenagers, due to the already high costs of car ownership and operation and particularly high insurance rates for young drivers (Cain, 2006). As a result, teenagers are often dependent on their parents for mobility. When appropriate, public transit offers teenagers an alternative avenue for independent mobility, which increases their freedom and autonomy, and allows them access to opportunities that they would not have if their parents or guardians do not have the time or means to transport them. Despite this potential, public transit can also come with a variety of challenges, many of which disproportionately affect children.

Long, Unreliable Trips

Travel by public transit is often slower and less reliable than other motorized modes, but these disparities can be particularly strong for school transportation. Transit systems are generally designed to optimize travel to employment centers rather than to connect the different residential neighborhoods in

which most students live and go to school (Schoenberg et al., 2021; Stein & Grigg, 2019). Recent trends in school siting locations that increasingly favor lower density locations with more available land exacerbate the issue of schools' accessibility by transit (Vincent et al., 2022). In fact, only 16 percent of new schools built in California between 2008 and 2018 are located within a high-quality transit area (HQTA), only 22 percent are within a third of a mile of a HQTA, and 47 percent are more than 3 miles away (Vincent et al., 2022).

As a result, school travel often requires particularly long and complicated trips by transit. For example, an analysis of students' residential and school locations in Baltimore found that about 68 percent of students would have to make at least one transfer to get to school by public transit, compared to 47 percent of all Maryland Transit Administration (MTA) trips, and that 37 percent of students would have to make two or more transfers, compared to only 12 percent of all trips on the MTA (Stein et al., 2017). This comparatively high number of transfers increases the length and complexity of students' trips and exposes them to additional waits, potential missed buses, and potential issues with reliability. (It may also suggest that general users may forgo trips with many transfers, while students generally have far less choice in attending school.)

Schoenberg et al. (2021) interviewed a geographically and demographically representative sample of 274 Baltimore City Schools high school students to understand themes in students' transportation experiences. Students described waking up as early as 5 AM to be able to complete their often lengthy commutes to school in time, and general feelings of anxiety and frustration associated with unreliable buses. As one such student describes:

> *"For my senior year [at Patterson], I [take] two buses...the Gold and the Orange. [It takes] an hour and 30 [to get to school]. I would have to wake up at 6:00 and leave by 7:14...because that's the first bus that I can catch and get on fine. … Since it's a very long distance, and I guess the weather was really bad, I would not go to school. [O]ut in this weather for an hour and 30 minutes to get to school, it's just too much. If it's pouring rain, I refuse to go to school like that....But I guess I would only miss school less than five times [over the course of a year]." (Baltimore City Schools 12th Grade Student, quoted in Schoenberg et al. (2021).)*

In addition to causing students stress and frustration, these long, unreliable commutes affect students' academic outcomes. Schoenberg et al. (2021) found that students' long commutes by public transit reduced the time that they were able to devote to homework and jobs. Further, students reported that transit buses were not reliable, and that issues with transit were the primary reason that they were late to school.

Safety

Despite the comparative safety of public transit from a crash safety perspective, students are exposed to a variety of other safety risks while they are walking to, waiting at, or riding public transit vehicles. Through their interviews, Schoenberg et al. (2021) found that high school students commuting to school by transit are exposed to stressors, violence, and harassment caused by exposure to adults

while on public transit. Students reported regularly witnessing adults getting into physical fights and altercations and using drugs while on transit, and girls reported frequently being sexually harassed by older men while accessing or taking transit. These experiences translated into heightened levels of fear, stress, and discomfort while students are traveling, and forced students to be persistently on guard while traveling and engage in adaptive behaviors like talking on the phone while traveling to protect their safety. One student interviewed described their experiences as follows:

> *"Then I had crazy experiences on the bus with people, especially older men, so I'll still be scared. [O]ne time it was this older guy and...he was on the first bus. I noticed him staring at me, and I was really creeped out. And this is where I wasn't with my sister, I was by myself.... I wanted to call my parents, but I didn't have my phone....I just looked away and tried to avoid him...then I got off the bus, because it was the last stop. So then I was going for my second bus, and he comes over there too, and I'm like, that's weird. So I get on the bus, and he gets on the bus too, and then when I sit down, he actually said something to me. I think it was like, 'How are you doing?' And I just ignored him, and I tried to move. I don't think nobody noticed it, because... they didn't say anything, but it would have been better if they would have said anything....it's probably like 15 to 20 minutes in, that's when he finally got off the bus. I was still a little creeped out, because I was like, what if he was trying to follow me or anything? And then he was way older." (Baltimore City Schools 9th Grade Student, quoted in Schoenberg et al. (2021).)*

Beyond the evident moral implications of this exposure to stressors, safety concerns dampen the ability of transit programs to create access to opportunities, and disproportionately constrain the mobility of girls. Schoenberg et al. (2021) found that fear of using transit limits students' participation in after-school activities, including sports, clubs, jobs, and internships because some students are afraid of or not allowed to use public transit to get home after dark. This finding was echoed by Cain (2006) and Lenhoff et al. (2022). Cain (2006) conducted eight focus groups with teenager-parent pairs in Florida to identify families' perceived benefits and challenges associated with riding public transit. These focus groups revealed that teenagers and their parents had concerns about the safety of using transit, which translated into mobility restrictions, particularly for girls, and general prohibitions on using transit after dark. Lenhoff et al. (2022) interviewed families from a sample of schools in Detroit who expressed similar reservations about safety both on and waiting for public transit, especially in the dark.

Exposure to violence and harassment is also an important educational issue because it can reduce academic performance by causing students looking to avoid unsafe conditions to in turn avoid school altogether and by harming their ability to successfully focus on schoolwork. Burdick-Will et al. (2019) found a link between exposure to violence while using transit and attendance, by demonstrating that higher rates of reported violent crimes along the streets that students would have to walk along and wait at get to school by public transit increase the number of days that ninth-grade students in Baltimore City school were absent. Exposure to violence has also been shown to reduce academic performance measured by test scores and graduation rates (Schoenberg et al., 2021; Schwab-stone et al., 1995).

Exposure to Law Enforcement

Children and teenagers who use transit to get to school are also at increased risk of contact with police during their trips. Policing is often disproportionately experienced by people of color, and policing on transit is subject to this trend. An analysis of LA Metro citation data by the community-based organization Alliance for Community Transit-Los Angeles (ACT-LA) found that although Black riders make up only about 18 percent of LA Metro riders, they receive 50 percent of all officer citations. For youth, contact with the criminal justice system can lead to stress and negative academic outcomes, including increased risk of dropping out of high school (Gase et al., 2014; Sweeten, 2006).

However, for children who already take transit to school, free or reduced fare transit programs can reduce exposure to law enforcement. Prior to the ongoing pilot that makes most public transit in the Los Angeles area free for students at participating K-12 schools and community colleges, Gase et al. (2014) found that there was a high volume of fare evasion citations issued to youth, particularly youth of color, and that citations could result in heavy fines and court appearances. By reducing students' need to evade fares, school transit programs can therefore meaningfully reduce exposure to law enforcement and the juvenile justice system for students already riding transit.

Regardless of any fare programs in place, students' exposure to law enforcement is an area where school buses differ drastically from public transit. Students on public transit systems are general riders; they are subject to the regulations of the transit system and to enforcement by the law enforcement agencies with which the agency contracts. In many cases, this involves police interaction for minor disruptions and infractions. Meanwhile, school buses are essentially roving schoolhouses, governed by the school district superintendent and/or the school principal. In these cases, school buses fall under the legal doctrine of schools; schools bear the legal responsibility for the children's safety but also are tasked with managing their misbehaviors. Instead of police involvement, most incidents are dealt with through student disciplinary processes used for incidents on school grounds. On school buses, the school bus driver is typically the first line of authority as a teacher would be in a classroom, with school administrators stepping in for escalating incidents.

Agencies' Ability to Respond

Amid these shortcomings, transit agencies are limited in their ability to adapt to better meet the needs of students. The data used in planning often explicitly exclude students due to the additional barriers associated with including minors in research studies. For example, the Maryland Transit Administration's origin-destination surveyors could not survey riders under 18 years of age (Schoenberg et al., 2021). Moreover, as noted earlier, agencies' ability to design service around student travel is limited because the federal government's "Tripper Rule" does not allow public transit agencies that receive federal funds to run routes designed for students (although agencies can operate extra service on regular routes to accommodate times of peak student demand), except in rare exceptions (Vincent et al., 2014). As a result, agencies are limited in their ability to optimize service for student travel patterns or offer students the opportunity to travel on buses without other adults present.

Public transit comes with a variety of challenges that cannot be overlooked, and school buses are generally a safer, faster, and more reliable option for students' travel to and from school. Despite

this, travel to and from school makes up the minority of children's trips, and public transit can create access to independent mobility for children that would otherwise be unattainable. For students who may be generally reliant on public transit for their travel, school transit programs can ease the burden of that travel through financial support and training.

How Experiences Differ for Students in Federally Regulated Populations

As noted earlier, California state law does not require local school districts to provide students with transportation to school, but federal law requires that districts provide transportation in certain instances, including transporting students with disabilities, foster youth, and homeless students (Kapphahn & Ehlers, 2014; Speroni, 2020). Despite the unique needs of these groups of children, there has been very little research about these students' experiences with school transportation and virtually no research about these students' experiences with public transit as a form of school transportation. The little research that does exist suggests that although public transit is not appropriate in many instances, school transit programs can enhance students' school transportation experiences and overall mobility when transit is appropriate.

Students with Disabilities

If not addressed, transportation can impede students with disabilities from receiving a legally-required inclusive and equal education both as a potential barrier to school access and as a part of students' school experience. The federal Individuals with Disabilities Education Act (IDEA) requires school districts to provide students with disabilities with transportation to school if their individual education program (IEP) determines that transportation is necessary for their ability to receive a "free and appropriate public education" (Kapphahn & Ehlers, 2014). While districts do provide students with disabilities with transportation to and from school, these services often fall short of facilitating students' full participation in opportunities at the school. Graham et al. (2014) analyzed data from meetings with parents of students with disabilities and found that a primary issue was that existing school transportation services functionally excluded students from school programming. Students were generally unable to participate in after school activities because they took place after the departure of their assigned bus, and some parents reported other issues with inclusion, such as children unable to attend field trips because specialized buses were not available. While some students with disabilities may never be able to ride fixed route public transit, the increased flexibility associated with public transit schedules could facilitate after school participation for students who can use fixed route services with limited supportive services like travel training.

Beyond hindering access to educational opportunities, existing school transportation services often fail students with disabilities in other ways. A review by Ross et al. (2020) found that students, parents, and bus drivers experience a variety of challenges with the existing services, such as inadequate driver training specific to transporting students with disabilities. During their content analysis of parent meetings, Graham et al. (2014) found that parents referenced numerous issues with the equipment on their students' assigned buses, including malfunctioning wheelchair securing devices, a lack of air conditioning that could be dangerous for students with fragile health, and inadequate bus driver knowledge related to how to operate wheelchair lifts and or securing devices.

Existing school transportation programs also often entrench separations between students with and without disabilities. In their scoping review of the existing peer reviewed literature, legislation, and policy reports related to school transportation for students with disabilities, Ross et al. (2020) note that the importance of inclusive education extends to inclusive school transportation services that integrate transportation for students with and without disabilities. Integration facilitates informal socialization and can reduce students with disabilities' feelings of isolation and lack of belonging and increase students without disabilities' familiarity with disability. Despite this, they find that many schools begin this integration "at the school entrance" (Ross et al., 2020, p. 63), by having separated transportation services for students with disabilities.

As public transit buses have more accessibility features than most basic school buses, public transit programs may also offer more opportunities for inclusive student transportation for students who are able to use public transit. Additionally, school transportation programs that help students build the skills to use public transit can increase their long-run independent mobility. Nakamura and Ooie (2017) provide an overview of two international student transit programs: a program in Curitiba, Brazil that brings students with disabilities to a central public transit terminal, where they transfer to public transit to get to their schools; and a public transit school commute training program in Nordhorn, Germany that the authors adapted for a proof of concept training program in Kanagawa, Japan. The authors argue that an important goal of school transportation programs should be preparing students for the next stage of their lives after graduation, and that implementations of programs based on the two examples studied have the potential to increase students with disabilities' long-term mobility by increasing their familiarity with how to use the transit system if they incorporate a focus on training.

Students Experiencing Homelessness and Foster Youth

Both students experiencing homelessness and foster youth also have additional federal protections and required educational supports that involve transportation. Beginning with the McKinney-Vento Act of 1987, federal law mandates that school districts provide students experiencing some form of homelessness with transportation to their school of origin (the school at which they began the school year), regardless of any changes in actual residential location. The McKinney-Vento definition of homeless is more expansive than the traditional definition of unhoused and includes "individuals who lack a fixed, regular, and adequate nighttime residence" (National Center for Homeless Education, 2017). While it does include those in unhoused situations, it also includes children who are living in shared housing due to economic hardship (e.g., living with a relative). Beginning with the Every Student Succeeds Act (ESSA) of 2015, the same laws have also applied to foster youth.

The Washington State Department of Transportation sponsored an evaluation of pilots implemented by eight school districts within the state to test different ways of providing such transportation to students experiencing homelessness, offering a rare look into the transportation experiences of these students (Carlson et al., 2006). Researchers interviewed the students, their parents/guardians, and transportation coordinators and homeless student liaisons from the school districts. While the number of interviews was small and the authors caution that results cannot be assumed to apply to other contexts, the interviews illuminate some ways in which older homeless students' transportation preferences can be shaped by their desire to receive transportation in a way

that does not attract attention or stigma. They found that financial support for private vehicle use, such as gas vouchers or mileage reimbursements, was students' and parents' preferred form of school transportation when cars were available, in part because this form of student transportation creates the least stigma associated with homeless students' transportation needs. However, many families experiencing homelessness do not have private vehicles, making this an inadequate solution for most students. Outside of private vehicles, they found a difference between younger and older students, with younger students preferring small school buses because it allowed them to ride with other students, and older students preferring public transit because it provided them with more freedom and anonymity.

Foster youth are also guaranteed to receive similar transportation accommodations as students in transition, beginning with the Every Student Succeeds Act (ESSA) of 2015. When a foster youth transitions between residential locations, they are afforded the right to continue attending the same school, even if transportation is burdensome to the district, provided that a support team of counselors and social workers agree that it is to the benefit of the child. These trips often traverse school, district, county, and sometimes even state boundaries, presenting logistical challenges to districts in providing transportation. Public transit can be a means by which these students can continue accessing school, but often these are long distance trips that would be complex and time-consuming on transit. Speroni (2020) examined school trips of foster youth in Los Angeles County arranged by HopSkipDrive, a ridehailing company specializing in supervised independent travel of children. That study found that while nearly two-thirds of trips *could* be taken on public transit, most of those feasible trips required two or more transfers, and the time burden those trips would have placed on foster youth was more than double the time they spent riding with HopSkipDrive.

Transportation, Student Outcomes, and Access

At the heart of why transportation to school matters is the idea that it might have some effect on how students learn and succeed *in* school. The literature has focused primarily on two relationships: between transportation and student attendance, and between transportation and school choice. Theoretically, reducing the friction that transportation imposes on the school trip should reduce barriers to attending school daily and reduce barriers to choosing a school other than the one to which students were assigned. But the amount of friction increases dramatically for families without adequate vehicle access and/or the ability to drive students to school; in turn, school-provided transportation modes play a critical role.

Transportation Enables Student Attendance

Issues of student attendance and chronic absenteeism have taken center stage among popular debates in post-COVID education policy (Cineas, 2024; Mervosh & Paris, 2024; The White House, 2023). California is no exception to this (Chang et al., 2024). Over the past decade, both before and since the COVID-19 pandemic, California has seen increases in student absenteeism (Harris et al., 2015; Jones, 2021), particularly chronic absenteeism, which the California Department of Education defines as a student missing 10 percent or more of the school year (approximately 18 school days). Interest in this

issue among education policy scholars has waxed accordingly. Five studies have attempted to address the relationship between home-to-school travel and attendance. These studies take two general forms: First, one national study and one study in Detroit considered if travel mode is associated with attendance, and second, different researchers studying Baltimore, Washington, D.C., and New York City have analyzed the relationship between trip duration/complexity and attendance.

Two studies have found associations between travel mode and attendance. Gottfried (2017) is the clearest exploration of tying how students get to school with whether or not they attend school, and was the first study of its kind. Using data from the nationally-representative Early Childhood Longitudinal Study for the kindergarten class of 2010-2011 (ECLS-K), he found that children who typically used the school bus—who constituted about a quarter of the sample—had fewer absences throughout the academic year and were less likely to be chronically absent, defined here as 10 or more days missing, even when controlling for a variety of other factors. Specifically, a child's use of the school bus was associated with 0.4 fewer absences throughout the year and a three-percentage-point decreased likelihood of chronic absenteeism, controlling for other related factors including English language proficiency, health, skills test, childcare availability, and siblings attending the same school. While Gottfried's findings are robust, they are limited to only kindergarten and limited only to the binary of having taken a school bus or any other mode. Of course, there is a great deal of difference between a kindergartener and a high school student, and there is a big difference between being driven and taking public transit as non-school-bus vehicular modes.

Lenhoff et al. (2023) explore this relationship more fully by considering all modes, but their study is not without complications, either. The caveat to their study is that in Detroit the answer to these questions is complicated by a relative uniformity of travel mode for school trips. Perhaps unsurprisingly, given a relative unavailability of public transit and school bus options available to its students, Detroit sees three quarters of its students drive or be driven to school. What is shocking is that only 68 percent of their students' families have access to a car. Prior work has qualitatively illustrated the complicated nature of piecemealing car access together for school travel (Lenhoff et al., 2022) and in general (Blumenberg & Pierce, 2012). Perhaps due to this, students who walk or bike to school in Detroit have better attendance outcomes than those who are driven, controlling for student and school characteristics (Lenhoff et al., 2023).

Three other studies have considered a given dominant travel mode and examined how that mode—or the eligibility for it—might affect student attendance. In short, all three suggest that longer and more complex trips to and from school have deleterious effects on students' attendance rates.

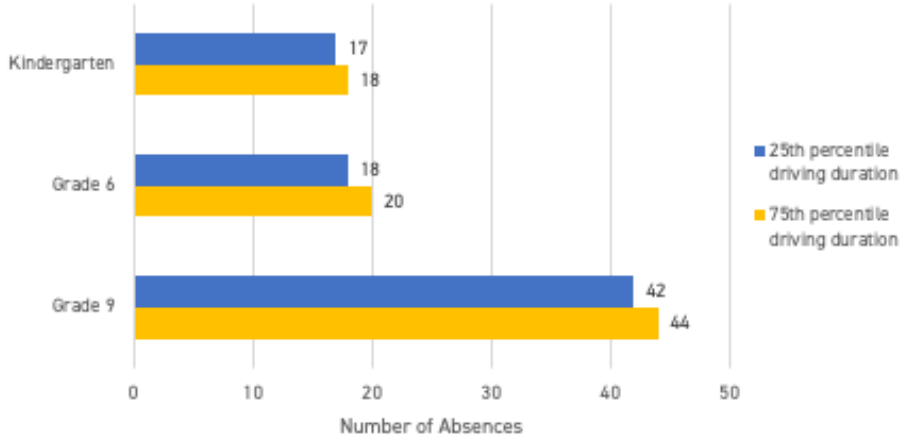
Stein and Grigg (2019) used administrative data from Baltimore City Schools to link attendance and travel to school for ninth grade students who had the same residential address as they did the year prior in eighth grade. This two-year analysis period covered the discontinuity between middle school (eighth grade) and high school (ninth grade) in Baltimore, which allowed the researchers to examine how attendance outcomes change when students' residence stays constant but their travel distance and

patterns change.[3] They found that although all Baltimore students miss more school in ninth grade than in eighth grade, those with commutes that became more difficult in the transition were absent even more. For students whose trip to school by public transit maintained the same number of transfers, a 10-minute increase in travel time was associated with an additional one-third day of missed school. The outlook is bleaker for students who need to increase their number of transit transfers; students who have more transfers in ninth grade than in eighth grade saw an additional day and a half of absence.

For Washington, D.C., Blagg et al. (2018) address a variety of student outcomes across three grade levels—kindergarten, sixth grade, and ninth grade—in their report for the Urban Institute. They extrapolate travel behaviors using the Google Directions API for driving and public transit for students in D.C. Public Schools, a district that has long only relied on its general use public transit system for school transportation, and connect these data to administrative outcome data for the 2013–2014 school year, including school transfers, absenteeism, and standardized test scores. Their findings indicate that school transfers and absences both increase across grade levels with longer commutes as measured by drive trip duration, even when controlling for student and school characteristics. Figure 3 shows their descriptive findings: the blue bars represent students who have simulated in-traffic car trip durations in the lowest quarter of the sample; the gold bars represent the same for the quarter of students with the highest duration. When modeled with controls applied, they find that for every 10 minutes of increased driving time, kindergarteners and sixth graders miss 0.6 additional days; ninth graders miss 0.8 additional days. However, we note that Blagg et al. do not capture observed travel mode nor suggest which might be more likely.

[3] Because most Baltimore City Schools middle- and high-school students rely on public transit for school transportation, the researchers assume this choice for all students and compare outcomes for students before and after their transition to high school. They derive simulated travel data using the students' home addresses and school addresses, which yield travel distance, duration, and number of transit vehicle transfers (e.g., the number of times a student must switch buses on their journey). However, it is worth noting that not *all* students in Baltimore use public transit to travel to school, and that it is likely the wealthier students are driven or drive.

Figure 3: Days Absent in the 2013-2014 School Year, by Grade and Drive Time Percentile (Adapted from Blagg et al., 2018)



Examining New York City public schools, Cordes et al. (2022) get closer to connecting the actual transportation experiences of individual students and their academic outcomes than the Blagg et al. (2018) analysis by analyzing the relationship of school bus ride durations for bus-eligible students with student achievement and absenteeism. Controlling for school and route characteristics, they find no relationship with standardized test scores in math and reading, but they find a clear relationship with attendance: students in grades 3–6 who have longer bus rides (30+ minutes) attend school less often and are more likely to be classified chronically absent. They also separate these findings into different models for students attending their residentially zoned school, a district choice school (i.e., attending a different zoned school or a magnet), and a charter school, and find that these results persist only for district choice students. While their findings are clear and increasingly specific, the analysis is only of students who are eligible and assigned to a bus; they do not know if students used that mode. So, they are closer than Stein and Grigg (2019) and Blagg et al. (2018), both of which assume a single mode across all students, but they still cannot assure observed mode.

There are more studies that explore the eligibility for transportation and its association with student attendance and absenteeism. The findings of these studies are quite mixed, likely due to the cloudy relationship between eligibility for and use of a transportation service. As mentioned, Cordes et al. (2022) find a negative relationship between school bus trip duration and attendance. Edwards (2022) also finds a relationship among transportation eligibility and student attendance in Michigan, with effects largest for economically-disadvantaged students. But despite that statewide finding, students in Detroit are more likely to be absent if they are eligible for transportation (Pogodzinski et al., 2021). Pogodzinski et al. (2021) point out that while their finding is counterintuitive to what they hypothesized, it is important to note that merely being eligible for school-sponsored public transit (especially when it truly is public transit and not a school bus) does not guarantee regular use of the service. Taken together, these again suggest that even within a state, findings can vary greatly.

Transit Passes and Student Attendance

Free or subsidized public transit programs for students have been proposed as a way of increasing attendance at school and after-school activities by increasing flexibility of travel times, promoting transit use, and eliminating financial barriers to accessing transit for students who may lack other reliable means of getting to school. While many student transit pass programs exist throughout the United States, there have been few studies evaluating their effectiveness, especially on the educational outcomes side. Three studies have evaluated changes in attendance surrounding the implementation of a transit pass program within a single school district or public transit agency's service area, and they have found mixed results.

McDonald et al. (2004) evaluated the effects of a one-year pilot that allowed low-income middle and high school students to apply for a free public transit pass to use on the primary transit operator for the eastern shore of the San Francisco Bay area (AC Transit), which is an area with very minimal school bus service. Researchers used surveys and focus groups, analysis of attendance data, and interviews with after-school program coordinators and truancy officers to evaluate the program. They did not find any effect on school attendance but note that one year is likely too short of a timeframe to change attendance patterns, particularly in high school students. However, after-school program coordinators overwhelmingly reported that after-school program attendance had increased, which they attributed to the free pass program creating flexibility for students to stay at school more easily and facilitating travel to programs located off-site from the schools.

While McDonald et al.'s study provided a seminal look at the effects of a free transit program, it was subject to a variety of limitations, including an inability to look at changes in attendance at an individual student level rather than an aggregate level. Wexler et al. (2021) was able to overcome this limitation in their assessment of the changes in attendance when Minneapolis Public Schools replaced its school bus service with free transit passes for high schoolers who either live more than 2 miles from school or are eligible for free or reduced-price lunch. Researchers linked student-level data on self-reported pass usage with school administrative data on students' transit pass eligibility and attendance prior to and after implementation of the student transit pass program to estimate a series of difference-in-difference and two-way fixed effects models with Poisson regression. They found that pass eligibility and self-reported transit pass use reduced excused absences by 27.5 percent and 11.5 percent respectively, but they found either no effect or a positive effect on unexcused absences depending on the model specification. Within the subset of students living within two miles of school, who could only be eligible for a transit pass based on free or reduced-price eligibility, the effects were even stronger, with pass eligibility and use reducing excused absences by 37.6 percent and 30.5 percent respectively.

Wexler et al.'s evaluation provides the best insight into attendance changes at an individual level, which is vital for isolating the effects on students who are actually affected by student transit programs, but was still limited to analyzing only the immediate changes upon the implementation of the program. Garcia-Munoz and Sandoval (2022) looked at multi-year effects in their evaluation of a program that allowed all K-12 students in Leon Country, Florida to ride public transit for free as a supplement, rather than a replacement, to school bus service and found unexpected, detrimental effects. They used the synthetic control method to test the effect of the free transit program on average

school attendance rates and the percentage of students who were chronically absent within middle and high schools in Leon County. This method entails comparing the outcomes within Leon County to a synthetic control ("synthetic Leon'') comprised of a weighted average of other districts in Florida based on their pre-intervention characteristics, and comparing outcomes between Leon County and synthetic Leon, and then further testing the effect of the program using a school-level data within a regression model. The authors conclude that three years after the beginning of the program, it had caused a decrease in attendance of about 1 percent and a growing increase in chronic absenteeism that had reached about 4 percent. These effects were larger in schools with more students receiving free or reduced-price lunches, larger in schools with more students of color, and were larger in high schools than middle schools.

Researchers note that negative or insignificant effects on attendance could be the effects of a variety of study limitations. Both McDonald (2004) and Garcia-Munoz and Sandoval (2022), the two studies that did not find attendance improvements, were limited to looking at aggregate attendance changes, rather than changes in the attendance for students who actually took or began taking public transit to school. Additionally, studies are often limited to short timelines that may obscure the true effects of transit programs on attendance. McDonald et al. (2004) argue that evaluations taking place too soon after the implementation of a program can miss the positive long-term impacts on attendance, particularly for older students, because transit may increase attendance over the long-term by enabling younger students to reliably afford to get there as they are building attendance habits.

However, some authors also note that free transit programs that allow unrestricted travel could unintentionally increase some absences by enabling students to get to activities other than school during school hours (Wexler et al., 2021; Garcia-Munoz & Sandoval, 2022). Such an explanation is consistent with the stronger reduction in excused absences paired with a potential increase in unexcused absences found by Wexler et al. (2021). However, this effect is just one that is plausible given the data, and not one that these authors tested empirically. Additionally, public transit may have varying effects on attendance based on the availability of school bus service within a district. Making public transit free could certainly increase attendance for students who struggle to afford transit and do not have access to an alternative, but it may have negligible or unintended negative effects on the attendance of students who already had access to a safe and reliable alternative mode of transportation. This offers one plausible explanation for why Garcia-Munoz and Sandoval's study, the only one that evaluated changes in a district that maintained school bus service, were more negative than studies where student transit programs represent the only means of school transportation offered to most students. Ultimately, existing research provides some insight into ways that student transit pass programs could affect student attendance, but conclusive evidence does not yet exist.

Public Transit and School Choice

The rise of school choice programs has complicated the traditional trip to school. From its beginnings in the school unification movement of the early 20th Century to the early 1990s, school transportation served one primary purpose: to transport children to their neighborhood school who lived too far away from it to walk. (In most states, private schools exist outside these regulations.) Most school transportation planning—and research on the topic—assumes this normative paradigm of

neighborhood school travel (Bierbaum et al., 2020). However, at least a quarter of California students do not attend their neighborhood schools (National Center for Education Statistics, 2021). Access to school bus transportation has proven to ameliorate the negative effect that distance and duration to a school have in a family choosing that school (D. M. Edwards, 2021; Trajkovski et al., 2021). Accordingly, assuming the neighborhood school paradigm for all school transportation results in serious omissions of large groups of students.

Public school choice has blossomed over the past four decades. It began with magnet schools in the 1970s, which originated as voluntary desegregation programs. These are schools with specialized programs designed to be offered across a wider area than most schools and attract (like an actual magnet) students who would otherwise attend another school/program (Frankenberg et al., 2008). Families' options opened wider when California adopted the second-in-the-country charter school act in 1991. Charter schools are public schools typically operated outside the confines of standard school curricula and policies, sometimes even outside traditional school districts, under charters from an authorizing agency (either the local district, the county, or the state). Both magnet and charter schools tend to draw from wider catchment areas than traditional public schools. In addition to these options, California law allows any student to enroll in any public school within their district at which there is available capacity (California Department of Education, 2023). These changes have resulted in California families having a variety of school options, which should not be considered interchangeable when viewed on a map, as they offer different opportunities to different families (Stein et al., 2017).

Some scholars have wondered if public transit might help to provide access to these choice schools. The basis for this argument is twofold: First, districts with school bus service may find it difficult and expensive to serve choice school students who come from a larger catchment area and thus have much less uniform travel needs than students from one neighborhood who attend the same neighborhood school. Second, for districts who do not bus choice school students, high-quality transit access might improve access to choice schools for students without automobility For both scenarios, perhaps transit could be well-positioned to help dispersed students criss-cross a district to dispersed schools.

Evidence to this effect, however, points toward the opposite, especially in cities that are less dense. A case study of Toronto—with North America's third-busiest transit system by unlinked passenger trips—found a weak association between public transit accessibility and families' choices to have their child(ren) attend schools other than the one to which they were assigned; they found stronger evidence that transit was an effective trip provider for after-school extra-curricular activities (Palm & Farber, 2020). In Philadelphia, transit trip durations to choice schools were much greater than driving trip durations (Scott & Marshall, 2019). And one study of Denver asked the question of public transit for school choice directly in its title: "Can public transportation improve students' access to Denver's best schools of choice?" In short, their findings led them to answer no: "...for all students to have reasonable access to high-performing schools, the city will have to look beyond the transit system for solutions" (Gross & Denice, 2017, p. 2).

There are three principal problems that public transit runs into for choice students, above and beyond what non-choice traditional students encounter: longer distances, spatial inequality of high-quality schools, and district boundaries.

First, choice school students tend to have longer distances from their homes to their schools than students who attend their neighborhood schools (within the same district/city). For drivers, this may tack on a few additional minutes in the car, but for transit users, this adds on in-vehicle trip time *and* transfers. In Baltimore, a 100-percent choice district, six in ten students ride public transit to school, and nearly 70 percent of them encounter transfers on their commutes, compared with less than half of adults on their commutes to work (Stein et al., 2017).

Second, high-quality schools are not always equally distributed across cities and regions, especially in less-dense cities. While the choice set for students in dense Philadelphia is relatively even, the choice sets represent largely suboptimal schools (Scott & Marshall, 2019). Less-dense Denver has several high-quality school options, but they are sited inconsistently across the city, leaving some neighborhoods in isolation and without adequate access. Students living in the southwest corner and the northern strip of Denver—both regions with high percentages of low-income families and people of color—would need 90 or more minutes of transit time each way to attend high-quality schools, but 98 percent could reach a high-quality school in a half hour or less in a private automobile (Gross & Denice, 2017).

Finally, transit systems are generally designed with a regional focus and seek to connect residential areas to key destinations, regardless of whether these trips cross political boundaries and jurisdictions. However, school districts have rigid boundaries that are difficult for most students to cross, even if they are choosing to attend a school other than their assigned neighborhood school. For example, many students who lacked transit access to high-quality schools in Denver lived close to boundaries with neighboring school districts, and they could have taken transit to high-quality schools in those neighboring districts *if* they were permitted to enroll (Gross & Denice, 2017). District policies prevented such enrollment. While California affords families the right to request enrollment at any school *within* a district irrespective of their place of residence, interdistrict choice is much more restricted (California Department of Education, 2023). Students who choose out of their neighborhood school may not be doing so to the nearest school geographically but to the nearest school available to them, which could be substantially further away.

Gaps in the Existing Literature

In all, the prior literature suggests broadly that K-12 schools and students have varying and complex needs that require a variety of transportation interventions to best serve their needs. While many students can—and do—rely on their parents to drive them, still many others rely on shared vehicular modes to attend school. For those children in particular, providing school bus or transit pass programs is essential, but society still stands to benefit from the provision of these services to all students.

The existing body of research gives very limited treatment to public transit as a means of school travel. Part of this is likely due to broadly limited use of the mode, and part is due to the geographic specificity of organized transit pass programs in select urban areas. On the whole, transit seems to comparatively excel as a means of offering independent mobility for high school students for travel outside of the traditional home-to-school norm. For example, studies have pointed toward transit as a benefit for students seeking to participate in extracurricular activities that happen before or after normal school hours. Further, transit can offer a normalized service for students who might otherwise be othered, specifically students experiencing homelessness. Transit agencies in turn benefit from additional ridership.

However, there are several challenges inherent in transit travel to school. Studies have suggested that transit is comparatively inefficient, time-consuming, stressful, and potentially dangerous, compared with both private vehicles and school bus service. Some of this is hardly the fault of transit operators; federal regulations limit what transit agencies can do in terms of service for K-12 public school students. But qualitative research in particular suggests that while transit may do well in serving off-norm trips like extracurricular activities, part-time jobs, and other reasons for staying at school beyond normal class hours, the mixing between adults and children on public transit presents challenges for transit to serve students en masse. For the bulk of students, these studies seem to suggest that school bus service is still important, as it separates children from adults during travel and places educators, who are trained in handling children, in charge.

A major gap in the literature of school transportation—and of students using public transit for school travel more specifically—is a systematic review of these programs and offerings over a given geography. This study seeks to address that gap and several related gaps along the way for California, including socio-demographic inequality in school travel, how students travel in the comparative absence of the school bus, and the characteristics of students, schools, and trips that might predict why students do or do not use public transit. Findings from these investigations can help inform state priorities in ensuring each California child has a safe and reliable means of travel to and from school.

3. Data and Methods

This report is comprised of three analyses, all focused on students in kindergarten through Grade 12 in California:

1. A descriptive analysis of the school bus transportation policies and transit pass programs for a sample of school districts.
2. A descriptive analysis of the travel behaviors of students to and from school.
3. A simulated analysis of travel behaviors of students to and from school.

To achieve these three goals together, we began with the most granular data we had — of individual student trips in the National Household Travel Survey California Add-On — and built the sample of school districts up from there.

This section of the report first describes the various data sources and how we matched them together. Then, it describes methods of analysis for each of the three.

Travel Survey Data

The National Household Travel Survey is the authoritative source of travel behavior data in the United States. While this report uses the confidential spatial data included in the 2017 National Household Travel Survey California Add-on, it also uses the national data as context.

The Federal Highway Administration conducts the NHTS roughly every 5 to 10 years through a contracted statistical consultant by studying a stratified random sample of United States households, asking questions about their household, its members, and their vehicles. The centerpiece of the NHTS is an activity diary for an assigned travel day, wherein the survey asks respondents about each activity and their mobility between them—travel mode, trip distance, trip duration, and other attributes—throughout the assigned single day. The 2017 NHTS includes travel days ranging from April 2016 through April 2017 (Westat, 2019).

In 2017, the NHTS used an address-based sample to mail invitation packages to households across the U.S. The primary respondent is the household adult who completes the household intake form. Once successfully recruited, that adult then receives and distributes survey materials to the remaining members of their household to complete on their travel day. Although survey data include travel diaries for all household members ages 5 and up, adult (i.e., parent) proxies complete the diaries for participants ages 5 through 15. The survey dataset also includes a variety of variables about socio-demographics, employment, transportation resources, and residential location.

The 2017 NHTS contains data on 129,696 households from all 50 states and the District of Columbia. Its overall response rate was 16 percent. Within these households there are 264,234 persons, of whom 30,959 are students in a public or private K-12 school. The NHTS includes replicate weights that are constructed such that the state add-ons can be used either in national analyses or independently. While the survey itself is not stratified for socio-demographic characteristics, the weights use a raking process to consider demographic categories based on American Community Survey data, including location in a metropolitan area with heavy rail (i.e., a subway), race, ethnicity,

homeownership, number of household vehicles, household size, and number of household workers. Note that presence of children was not a category used in weighting.

The California Add-on to the 2017 NHTS is the largest state add-on sample, with 26,099 households included. This oversample includes 53,603 persons, of whom 5,970 are K-12 students. Importantly, the confidential version of the California Add-on includes spatial data and descriptions for all locations in each respondent's travel diary, including school name and location and home location.[4] This allows for detailed construction and simulation of school trips in California. Additionally, the California Add-on includes a special question on residential self-selection—another oft-lamented typical limitation of school-related studies—in which the primary respondent indicates if they chose their home due to the school district, convenience to school, or eight other possible reasons.

The California Add-on sampling procedure is further stratified. The sample is allocated among eight regions of the state, and then sub-stratified by counties within those regions with over a million residents and heavy rail, over a million residents without heavy rail, and counties with less than a million residents. The survey designers constructed this allocation to ensure that 20 percent of the sample comes from rural areas, an intentional oversample of California's rural population that is less than six percent of the total (Johnson & Mejia, 2024).

For school travel, both samples include two sets of relevant questions. In the person-level data, respondents indicate their *usual* modes of travel to school and from school separately, and the distance between home and school, calculated by the survey designers using the Google Directions API. And in the travel day data, respondents report on their trips to and from school in greater detail, including observed mode, trip departure time, trip arrival time, other travelers on the trip if not public transit (e.g., a parent chauffeur or a fellow student from another family in carpool), and any transfers of mode (e.g., a parent drives the student to a school bus and then the bus takes the student the remainder of the way to school). Because this report is interested in the specific trips to and from school and their durations, we rely on the trip data rather than the usual mode.

Matching Students to Schools

One of the key elements of this report is identifying the choices available to students in different school districts, which first necessitates understanding in which school district students live and which school they attend. To facilitate this match, we used the confidential spatial data to match students to the school they attended and, in turn, the school district they attended. While most students do attend the district in which they live, both public and private school choice enable students to attend schools either outside their home school district or, in the case of private schools, outside school districts all together.

First, we constructed a list of possible schools students could attend. We used the Urban Institute's Education Data Explorer to generate 2016-2017 data for each public school in California, which aggregates public school data on location, demographics, achievement, and other characteristics

[4] The school data in this dataset are generally reliable, but not perfect. For example, while most respondents listed the name or close to the name of the school, a very small number of respondents wrote simply "school" and a few others used acronyms.

from a variety of data sources into one dataset. For private schools, we used the National Center of Education Statistics Private School Universe Survey. Then, using the school name and geo-coordinates included in the NHTS, we matched each student to their school through the following steps:

1. Matching geo-coordinates
2. Matching school name through a fuzzy string matching algorithm with manual review
3. Manually matching the remaining

In all, we were able to match 96 percent of students to the school they attended.

Matching at the school level was particularly important because it allowed us to differentiate between students who attended a choice public school — which is a public school other than the one to which they were assigned (e.g., a magnet school or a charter school) — from those who attended their neighborhood public school. It also allowed us to identify students who attend private schools, to whom any public school transportation policies would not apply.

School District Sampling

There are over 900 school districts in California, which range in enrollment size from the nation's second largest (Los Angeles Unified, with approximately 428,000 students) to small districts with fewer than a dozen students. This expanse makes collecting data on all districts costly and difficult. To gain an understanding of different types of districts in the state, we constructed a stratified random sample of 119 school districts that vary across seven key metrics — and all of which have at least one student in the NHTS who attends school there. The sample of school districts is comprised of:

1. A 81-district, representative sample selected to represent all California school districts that are not charter *only* districts (but that may *contain* charter schools)

2. A 33-district oversample of the largest school districts (as defined by total enrollment) and districts attended by students who reported using transit for school trips in the NHTS. These districts were added to increase the sample size of students in the analysis and improve the trip characteristics estimates for school trips.

3. A 3-district sample of charter-only districts.

Figure 4 illustrates each of these districts on a map, shaded based on student enrollment. Table 1 contains details about the data sources that were used in the construction and evaluation of the sample.

Figure 4: Map of Sampled School Districts by Student Enrollment

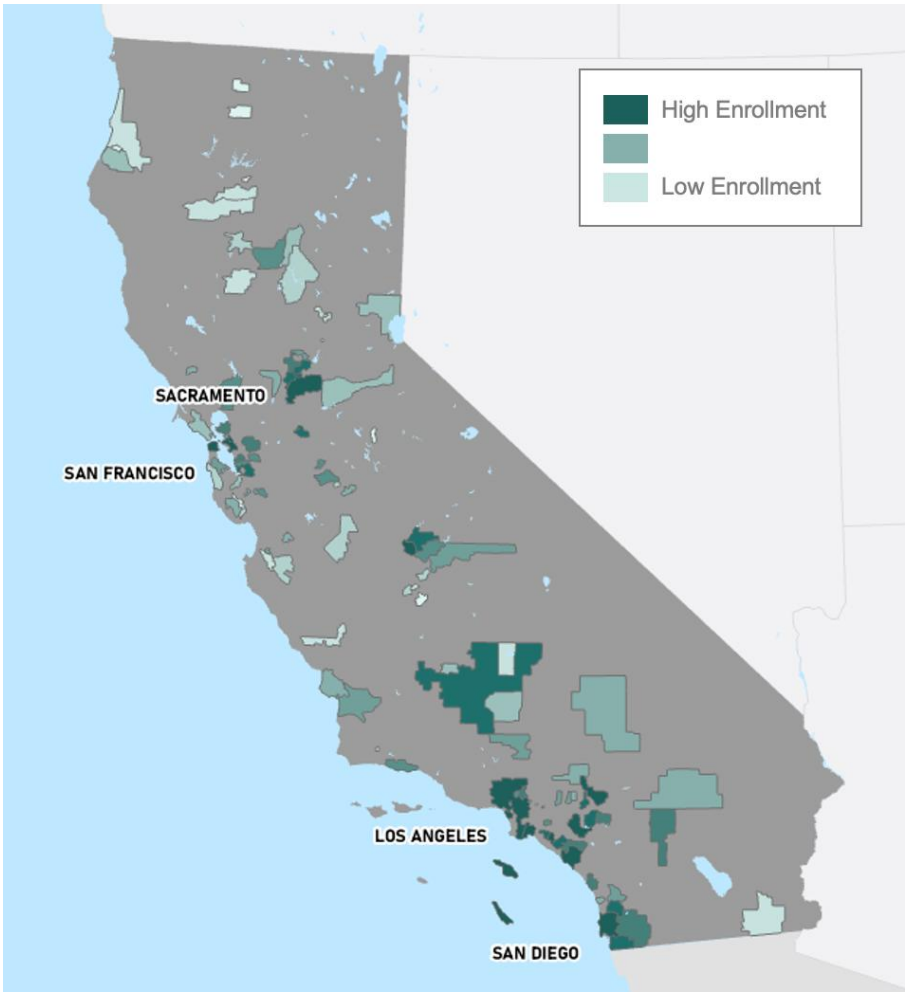


Table 1: School District Sample Characteristics

District Characteristic	Data Source	Categorization
District Type	NCES Common Core of Data for 2021 (most recent year available)	Unified Elementary Secondary Administrative
Region	California Regions for 2020 Census	Central Coast Inland Empire Los Angeles North Coast

		Northern San Joaquin Valley Orange San Diego / Imperial San Francisco Bay Area Southern San Joaquin Valley Superior California
Urbanization	NCES Common Core of Data for 2021 (most recent year available)	City Suburb Town or Rural
Enrollment	NCES Common Core of Data for 2021 (most recent year available)	Large (Above 30,000) Medium (9,000 - 30,000) Small (At most 9,000)
Percent of students eligible for free or reduced price lunch	NCES Common Core of Data for 2021 (most recent year available)	High (67% or more) Medium (33-67%) Low (Less than 33%)
Percent of students who are students of color	NCES Common Core of Data for 2021 (most recent year available)	High (75% or more) Medium (50%-75%) Low (less than 50%)
Percent of workers living within the district boundary who typically commute by public transit to work	American Community Survey 2018-2022 5-Year Estimates for census tracts proportionally allocated to school district boundaries	High (Above 5%) Moderate or Low (At most 5%)

The representative sample of districts was constructed by creating 213 strata representing different combinations of regions, district types, urbanization, and the percentage of students eligible for free or reduced price lunch, using the categories described in Table 1. We set a quota of districts for each of these strata based on the percentage of statewide districts (excluding charter-only districts) exhibiting each combination of characteristics. For example, because 2.5 percent of districts are unified, rural districts in Superior California in which 33 to 67 percent of students qualify for free or reduced price lunch, we set a quota such that 2.5 percent of districts in our sample would share these characteristics (implying a target of 2 schools for our representative sample). We then filled these quotas by selecting the districts with the highest number of students who had reported school trips in the NHTS, with higher weight given to students who reported using transit for school trips (either as their usual mode or as their mode during the reported travel day). This was done to maximize the number of students, particularly students who use transit for school trips, who could be included in the analysis. In the case of a tie where two districts had the same number of students with reported school trips, we prioritized the district with lower enrollment, to counteract the bias towards larger districts caused by prioritizing districts with more respondents.

To check the representativeness of the "representative sample," we compared the percentage of districts in the sample to the percentage of all districts (excluding charter-only districts) for each category in Table 1. This comparison is shown in Table 2.

Table 2: Characteristics of All California Districts and Sampled Districts

District Characteristics	Category	% of Districts	% of Sampled Districts
District Type	Admin	1%	1%
	Elementary Only	47%	44%
	Secondary Only	7%	4%
	Unified	46%	51%
Region	Central Coast	10%	11%
	Inland Empire	6%	6%
	Los Angeles	9%	7%
	North Coast	11%	9%
	Northern San Joaquin Valley	9%	10%
	Orange	3%	4%
	San Diego / Imperial	6%	7%
	San Francisco Bay Area	12%	15%
	Southern San Joaquin Valley	14%	11%
	Superior California	19%	20%
Urbanization	City	15%	15%
	Rural	53%	48%
	Suburb	32%	37%
Enrollment	Large	3%	4%
	Medium	16%	25%
	Small	82%	72%

Free and Reduced Price Lunch	High (67% or more)	38%	35%
	Medium (33-67%)	40%	43%
	Low (33% or lower)	21%	22%
Students of Color	High (75% or more)	42%	38%
	Medium (50-75%)	25%	31%
	Low (50% or lower)	33%	31%
General Transit Use	Low Transit	93%	91%
	Transit	7%	9%

There are a small number of ways in which the sample differs from all California school districts, none of which preclude the use of this sample for understanding transportation offerings statewide. The sample overrepresented suburban school districts by 5 percent and underrepresents rural school districts by 5 percent, but we determined this to be appropriate because nearly half of the sample is made up of rural districts, providing ample information about this category. Similarly, small districts were underrepresented, but still make up the majority of this sample, providing sufficient information about small districts. Finally, the sample overrepresents districts where 50 to 75 percent of students are students of color, but we determined this to be acceptable since this is counteracted by very small overrepresentations of both districts with low enrollment of students of color (under 50%) and very high enrollment of students of color (75% or more), indicating that the sample is not skewed towards or against districts with more students of color.

We then added an oversample containing all remaining large school districts (those with more than 30,000 students) and all remaining districts with at least one student who reported using public transit for school travel in the NHTS. Including large school districts was important to increase the sample size of the analysis, because these districts contain a disproportionate share of students who reported trips in the NHTS. Including the districts of all students who use public transit for school trips was important due to this project's focus on public transit as a form of school transportation. Importantly, however, this augmented sample also helps paint a better picture of school transportation options in California, because these districts dictate the transportation offerings experienced by a large number of California students, even if they make up a small percentage of districts. In fact, 28 percent of all students attend just these 25 largest districts (which account for just 2.5% of districts). This process added 22 additional large school districts, and 11 additional small or medium districts with at least one student who used public transit for school transportation (either usually or on the reported travel day). This brought the total sample to 116 districts.

To check the representativeness of the *respondents* attending districts within the augmented sample, which will limit the students whose trips can be included in the analysis, we compared the

weighted percentage of students in the NHTS trip data attending districts within the augmented sample to the percentage of all California students attending districts (excluding charter-only districts) across each category in Table 3.

Table 3: Characteristics of Student Enrollment of California and of NHTS Sample

District Characteristics	Category	% of Student Enrollment	% of Weighted Sample
District Type	Admin	0%	0%
	Elementary Only	17%	15%
	Secondary Only	8%	5%
	Unified	75%	80%
Region	Central Coast	6%	3%
	Inland Empire	14%	8%
	Los Angeles	22%	27%
	North Coast	2%	1%
	Northern San Joaquin Valley	6%	5%
	Orange	8%	6%
	San Diego / Imperial	8%	15%
	San Francisco Bay Area	15%	15%
	Southern San Joaquin Valley	9%	12%
	Superior California	8%	8%
Urbanization	City	45%	54%
	Rural	10%	8%
	Suburb	45%	37%
Enrollment	Large	28%	55%
	Medium	44%	25%
	Small	28%	20%

Free and Reduced Price Lunch	High (67% or more)	42%	43%
	Medium (33-67%)	40%	38%
	Low (33% or lower)	18%	19%
Students of Color	High (75% or more)	70%	72%
	Medium (50-75%)	21%	22%
	Low (50% or lower)	9%	7%
General Transit Use	Low Transit	84%	73%
	Transit	16%	27%

Although the sampled students differ from all California students in a couple of ways, these divergences were largely driven by the oversampling strategy, which created an overrepresentation of students attending Large schools and students who live in areas with high rates of general transit use, both of which result in an overrepresentation of students who live in Cities. Importantly, however, the sample was not unexpectedly nonrepresentative by other key demographics, like the racial or income composition of the districts. Finally we added all three of the charter-only districts with at least one student trip in the NHTS, bringing the total final sample to 119.

School District Data Collection

For each of the 119 sampled school districts, we gathered data on the transportation offerings to students for all grade levels — kindergarten through Grade 12 — across three scenarios:

1. A public school student attending their assigned neighborhood school seeking to ride the school bus
2. A public school student attending a choice school seeking to ride the school bus
3. A public school student attending any school type seeking to ride public transit[5]

For each scenario, data collectors acted as prospective parents who had just relocated to the school district and were seeking information about what transportation options their students would have upon enrolling in their new school. In cases where no information was available, data collectors placed phone calls to school districts or transit agencies in an attempt to resolve the missing data.

Data collectors gathered data for each grade level individually. Although most documentation on district and school websites were grouped by “Elementary,” “Middle,” and “High,” these grades are not consistent throughout California. So, we opted for a more consistent approach to verify the grade levels for each selected district and individually capture the transit offerings for each grade level.

[5] In our initial stages, we examined transit pass offerings for neighborhood school and choice school students separately. However, we found no deviation in offerings along that line, so we merged our process together during the data collection phase.

School Bus Service

We collected data about school bus offerings from district and school websites. If districts provided students with transportation services, bus offerings were generally grouped into two categories: distance-based eligibility and fixed route services. For distance-based offerings, districts promised families who lived beyond an announced distance from their school that their children would receive transportation, generally in a form where a school bus would pick up their child relatively near their home. For fixed route offerings, districts posted set school bus routes, which families could use if they lived close or were willing to self-transport their children to the nearest bus stop.

We sorted each grade level into one of the following: 0.1 miles to 10 miles (these varied widely and were manually entered), "No Bus", "Fixed Route Service", or "Varies by School." We also took note of any school bus fees, but again these required varied descriptions as fee structures varied widely both in amount and frequency of collection.

Capturing these data was not always straightforward because of district and school website design and upkeep, lack of transparency, and the tendency to organize student transportation logistics internally. Some of the time, districts had straightforward policies in intuitive places on their websites, but more often we found transportation information on individual school websites or online forums. Further, many of the smaller districts had minimal upkeep of websites — likely due to limited resources — leaving us with out-of-date information, often pre-pandemic. Common places our data collectors were able to find information about transportation were "FAQ" pages, "Transportation" pages, and "Facilities Management" pages. When transportation offerings were only available on individual school websites and not the umbrella district website, we cross-referenced multiple schools within that district to attempt consolidating accurate transportation offerings. Examples of different levels of information we found on school district websites can be found in Appendix C.

One issue we often ran into was verifying when a district or choice school did not offer transportation options. Often, a district or school would not specify if options were available, which prompted us to research other potential modes of communication. In these cases, we began searching the Internet for parent questions channels, online forums, etc. Often when transportation resources were distributed internally to students, parents posted about it. However, if we found no mention of transportation, we attempted to call districts to clarify their policies. If the district truly offered no school bus transportation service, we labeled the grade level as "No Bus."

Transit Passes

We also collected data on the transit pass programs available in our sampled school districts. While these programs were often offered by — or at least in collaboration with — the local transit agency/agencies, we maintained the school district level of analysis so we could continue attaching these data to the students who the programs served.

For this stage, we first identified the primary local transit agency for each of the 119 sampled school districts. We then searched each of those transit agency websites, which had varying amounts of information about student transit resources. Larger transit agencies generally had more information

while small, more rural agencies usually had less up-to-date resources and less information. Again, examples of different levels of information can be found in Appendix C.

For each program, our data collectors gathered the program name, student pass eligibility criteria, acquisition process, acquisition cost and frequency, ride per cost, and payment methods accepted. We then organized the data about the following characteristics: transit pass subsidy type (free or discounted), main transit agency, pass eligibility (different age brackets, usually 0-18 or 6-18, K-12, K-College, participating schools, or no student pass available), acquisition process (student is automatically opted in, student elects to opt in through the school, online application, online application with payment, in person application, in person application with payment, or download app and upload ID), acquisition cost and frequency, per ride cost, and how to pay (no payment required, Student ID, App, Debit / Credit / Cash, transit card, or a combination of multiple methods.) We made note of data that fell outside of these bounds, and consolidated other criteria where appropriate. Ultimately, this report focuses on the differentiation between free and subsidized student transit passes, or if no program exists.

Spatial and Descriptive Analyses of Policies

We examine the differences between school district transportation policies and transit pass offerings across the 119 sampled districts both spatially and descriptively. Section 4 of this report illustrates the different offerings geographically in maps, as well as details the differences in offerings across a variety of key socio-demographic characteristics of the sampled districts. To illustrate these, we consolidated the distance-based eligibility thresholds into categories and analyzed them across the three common school levels (elementary, middle, and high):

- 0–0.5 miles
- 0.6–1.0 miles
- 1.1–1.9 miles
- 2.0–2.9 miles
- 3.0+ miles (up to a 10-mile max.)

In cases where a given level within a district varied (e.g., the same distance-eligibility threshold did not hold for students in fourth grade as in fifth grade, such as 1.5 miles for 4th grade and 2.0 miles for 5th grade), we assigned that level the majority of the grades' policy within it. In instances of a tie, we assigned the longer distance.

We also created categories for fixed routes and no service offered. Additionally, some districts did not offer a given level we examined; some California districts serve only elementary students and others serve only secondary students. Finally, we also label schools without choice school programs when analyzing policies about choice program transportation.

Analysis of Trips

The second and third stages of this report consider the trip characteristics of California school students to and from school. In Stage 2, we examined the observed travel behaviors of students in the

NHTS. And in Stage 3, we simulated those trips had they been taken on other modes. In particular, we investigated which students are using school-sponsored travel modes (school bus and public transit), and in turn, if public transit would be a logical substitute mode for the school bus.

Travel Survey Trips

To begin, we identified all of the trips in both the public full NHTS and the California Add-on that listed school as the place type of the trip's destination (for morning trips) or origin (for afternoon trips), constrained by typical school hours (6:30 to 9:30 AM and 1:30 to 6:00 PM) to avoid counting trips that were out of regular character (e.g., mid-day trips to a doctor's office). We also isolated the exceedingly rare instances where any one individual had more than two school trips in a day and randomly selected one morning and one afternoon trip. Table 4 shows the sample size for morning and afternoon school trips for both the U.S. and California. Across both geographies, there are more morning trips than afternoon trips. We attribute this to a combination of trips occurring in the middle of the day and after the 6:00 PM cut-off, as well as afternoon trips leaving from school campuses but wherein the trip origin purpose has changed (e.g., a student who remains at school for band practice after the regular class schedule has concluded.)

Table 4: National Household Travel Survey School Trip Sample Size, California and U.S.

Geography	AM Trips	PM Trips
California	2,420	2,402
U.S.	16,150	15,144

For both the national and California data, we attached the available socio-demographic variables of interest from the NHTS to each of these trips, including household income, student race/ethnicity, and household structure (single parent/guardian or two parent/guardians). We also attached student's ages and used those to proxy for the three common school levels: elementary (ages 5-9), middle (ages 10-13), and high (ages 14-18). While for the national data we were not able to refine that proxy assignment, for the California data we used the school the student attends to correct any miscalculations (e.g., a 13-year-old student who is early in their ninth grade year at a high school).

For the California data only, we also attached several school and policy variables, including the type of school (neighborhood public, choice public, or private) a student attends, the school's built environment type, the school's start and dismissal times (divided evenly into early, middle, and late for each of the three school levels), the type of school bus service the district provides (with further-consolidated distance-eligibility categories), and the type of transit pass subsidy available in the district.

In each of these analyses, we use the person-level weights included in the NHTS. The NHTS constructs these weights to adjust for differences between the sample and the population. Weights are

available for both the California Add-on and the national sample. We use the weights to estimate standard errors and confidence intervals in order to determine categorical differences of statistical significance at the 95-percent confidence level. These standard error values are included in Appendix D.

Simulated Trips

Each trip in the NHTS includes data on the trip's distance and duration. The NHTS uses the Google Directions API to calculate trip distance, but the trip duration variables are self-reported by the respondent. Only characteristics of the trip on the observed travel mode are reported. To estimate how trips might hypothetically differ on other modes, we estimated each school trip on all available modes in the Google Directions API: walking, bicycling, public transit, and driving. We called the API to route between the origin and the destination (usually home to school in the morning, and school to wherever the student went next in the afternoon), with trip times constrained by the trip's end time in the NHTS in the morning and the trip's origination time in the afternoon. This last step was important because school bell schedules are fixed and students face consequences for tardiness; even one minute late walking or on public transit is detrimental.

For driving, walking, and bicycling, the total trip time (in minutes) and distance (in miles) was extracted from the API response. For public transit, the total trip time and distance were also extracted, in addition to the total access and egress walk time and distance, the total in-vehicle time and distance, and the total number of transit stages required to make the trip.

Notably, the travel times simulated by the Google Directions API were almost universally shorter than the travel times reported in the NHTS, and the gaps between these travel times varied by mode. To correct for this, we added an additional 5 minutes to all simulated travel times. This amount of additional time was approximately equal to the coefficient estimate for the estimated constant when we regressed the reported number of minutes for school trips on the simulated number of minutes from the Google API for the mode that the student actually used. We interpreted this extra 5 minutes to represent the additional time spent during a trip that is not accounted for by the Google API (e.g., time spent getting from the front door to a car, time spent locking up a bicycle at a bicycle rack, and time spent getting from the point that the Google API recognizes as the school's address to the actual school door).

We also added an extra additional 7 minutes to the simulated transit durations to account for the initial wait time that transit riders spend waiting at their first transit boarding stop. While the Google Directions API includes time spent waiting for transfers, it assumes the transit riders will arrive at their initial transit stop at the same time as the vehicle. We used 7 minutes as an estimate of a generalizable initial wait time, because this was the most consistent with the actual travel experiences of school trips made on transit in the NHTS. Reported transit wait times in the NHTS are not disaggregated by transit stage for trips that include one or more transfers, so *initial* wait times are only reported for trips that had a single stage (where the total wait time and initial wait time are equivalent). The median wait time for the 30 school trips that were completed through a single-stage public transit trip was 7 minutes, so this was determined to be the best estimate of an appropriate initial wait time to add to all transit itineraries.

Finally, we excluded simulated trips if the Google itinerary did not represent a reasonable option for making the trip by that mode. For all modes (driving, walking, bicycling, and transit), we excluded itineraries if the original, uncorrected travel time exceeded 2 hours. We also excluded "walk-only" transit itineraries that did not include any actual transit use. While the Google API typically returned an error if transit was unavailable in a given trip's location, it returned "walk-only" trips if transit were available but was much slower than walking.

4. School District Area Transportation Options

As mentioned earlier, until 2023 California lacked a statewide policy governing the provision of school bus and public transit services to most of its public school students. This allows districts to choose their own policies and programs in this area. As this section illustrates, eligibility for California school districts' school bus transportation offerings and transit pass programs vary widely across school level and a variety of other characteristics, including region, urbanization and enrollment size, student socio-demographics, and public transit infrastructure. Student transit passes are also frequently offered as a resource, which vary geographically and functionally. Notably, there are few districts without any student transportation resources.

School Bus Service Options

To examine school bus service variations, we constructed a series of descriptive tables that analyze the 119 sampled school districts. We generally disaggregate these by eligibility threshold for the service (the minimum distance a family must live from their school to receive service) and the school level to which a policy applies (elementary, middle, or high school). Each table includes both the raw number of districts in each category, as well as the percentage of districts at that level.

By School Level and Region

Among neighborhood school students, elementary students are more likely to be offered a district school bus than middle or high school students — and are more likely to be offered it at shorter minimum home-to-school distances. Table 5 illustrates that roughly 75 percent of districts offer some sort of school bus services, either based on distance or through fixed-route service. Meanwhile, about 71 percent of districts offered school bus transportation to middle school students, and about 67 percent of districts offered school bus service to high school students. Those districts that offer bus service to students within two miles from school tend to do so for elementary students and rarely do so for high school students. Notably, the percentage of districts that do not offer school bus service increases with age.

Table 5: Distribution of District School Bus Offerings by Distance-based Eligibility Thresholds and School Level, Neighborhood Public School Students

Eligibility Threshold	Elementary	Middle	High
0–0.5 mi.	3 2.7%	1 0.9%	2 2.5%
0.6–1.0 mi.	2 1.8%	0 0.0%	0 0.0%
1.1-1.9 mi.	26 23.6%	14 13.5%	2 2.5%
2.0–2.9 mi.	5 4.5%	17 16.3%	13 16.0%

3.0–10.0 mi.	0 0.0%	3 2.9%	10 12.3%
Fixed Route	45 40.9%	39 37.5%	27 33.3%
No service	29 26.4%	30 28.8%	27 33.3%
Total	110	104	81

Compared to neighborhood public school students, there is a notably lower percentage of districts that offer transportation to choice school students. Table 6 shows that very few districts use a distance-based threshold for choice students, and for those that do, they do so with fixed routes. Among choice program transportation eligibility criteria, there are minimal differences between elementary, middle, and high school offerings. (Note that in Table 5 the percentages relate to the total number of districts that offer choice schools at that level, rather than the total number of districts.)

Table 6: Distribution of District School Bus Offerings by Distance-based Eligibility Thresholds and School Level, Choice School Students

Eligibility Threshold	Elementary	Middle	High
0–0.5 mi.	1 1.3%	1 1.4%	2 3.0%
0.6–1.0 mi.	1 1.3%	0 0.0%	0 0.0%
1.1-1.9 mi.	10 13.2%	6 8.2%	1 1.5%
2.0–2.9 mi.	2 2.6%	6 8.2%	3 4.5%
3.0–10.0 mi.	1 1.3%	2 2.7%	7 10.4%
Fixed Route	22 28.9%	20 27.4%	22 32.8%
No service	39 51.3%	38 52.1%	32 47.8%
Total	76	73	67

No Choice Schools	34	30	21
Grade Not Included	9	16	36

Of course, California has rich spatial variation across its regions. To examine this, we mapped each of the 119 districts three times — once for each of the three school levels — and shaded each district based on its service eligibility. We repeated this process for neighborhood public schools and for choice public schools.

Figure 5 illustrates the spatial variation of district school bus transportation offerings across the state for neighborhood public schools. Most of the districts with distance-based eligibility thresholds lie in the Central Valley. Notably, most districts in the San Francisco Bay Area and the Los Angeles area offer no school bus transportation service. Districts that offer fixed route service, while the most frequent, are spread throughout California without much geographic concentration.

Figure 6 shows a similar series of three maps that illustrate the transportation offerings for choice school programs, using the same shading scheme. School bus service for choice students is rare in the state's four major metropolitan areas (Los Angeles, Sacramento, San Diego, San Francisco) — and even though notably both Los Angeles Unified and San Diego Unified themselves offer school bus service to choice students, most districts surrounding them do not. Where districts offer choice school transportation service in the other areas of the state, they generally do so with long distance-eligibility thresholds or fixed routes.

Figure 5: Maps of District School Bus Offerings by Distance-based Eligibility Thresholds and School Levels, Neighborhood Public Schools

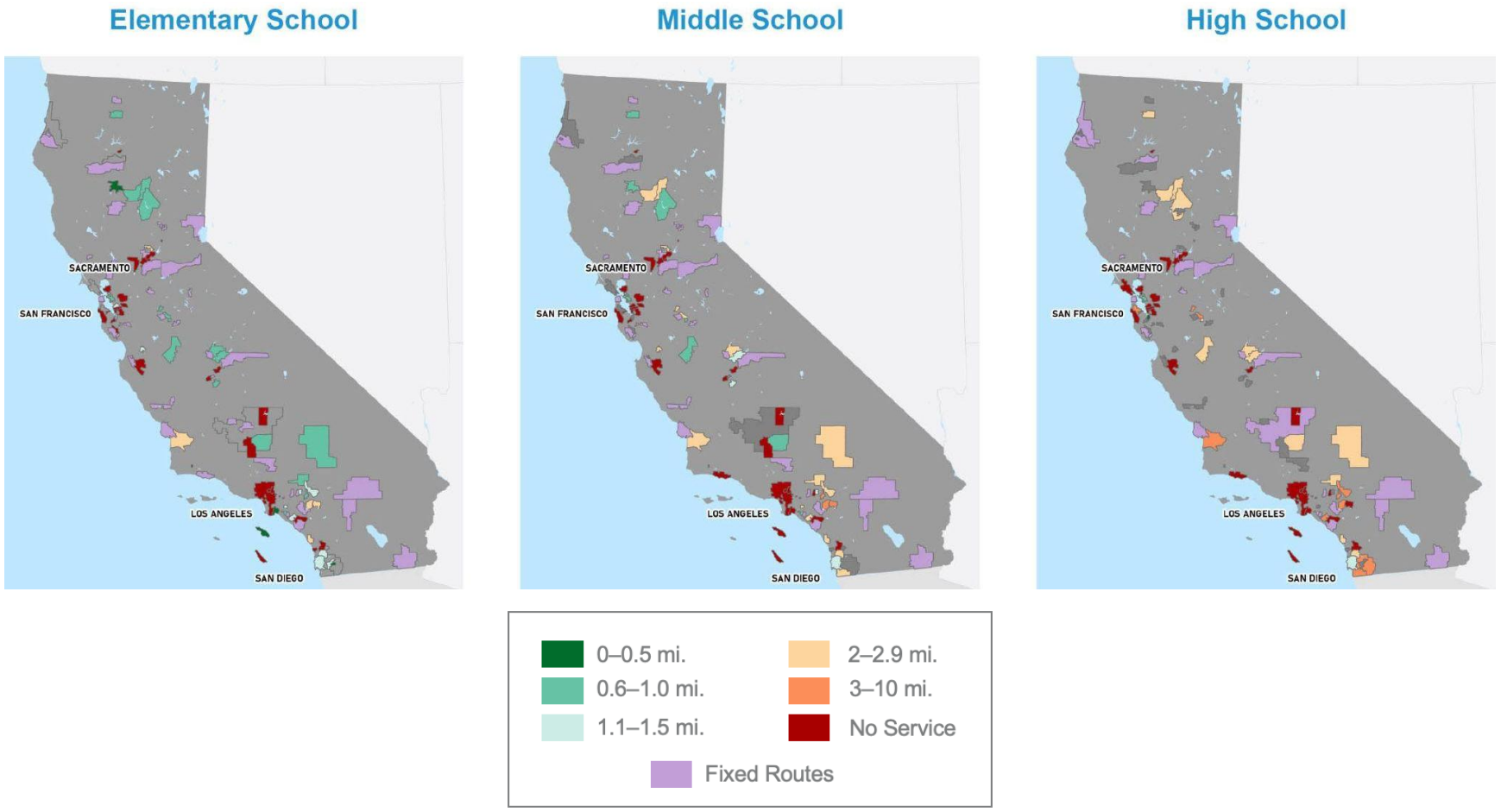
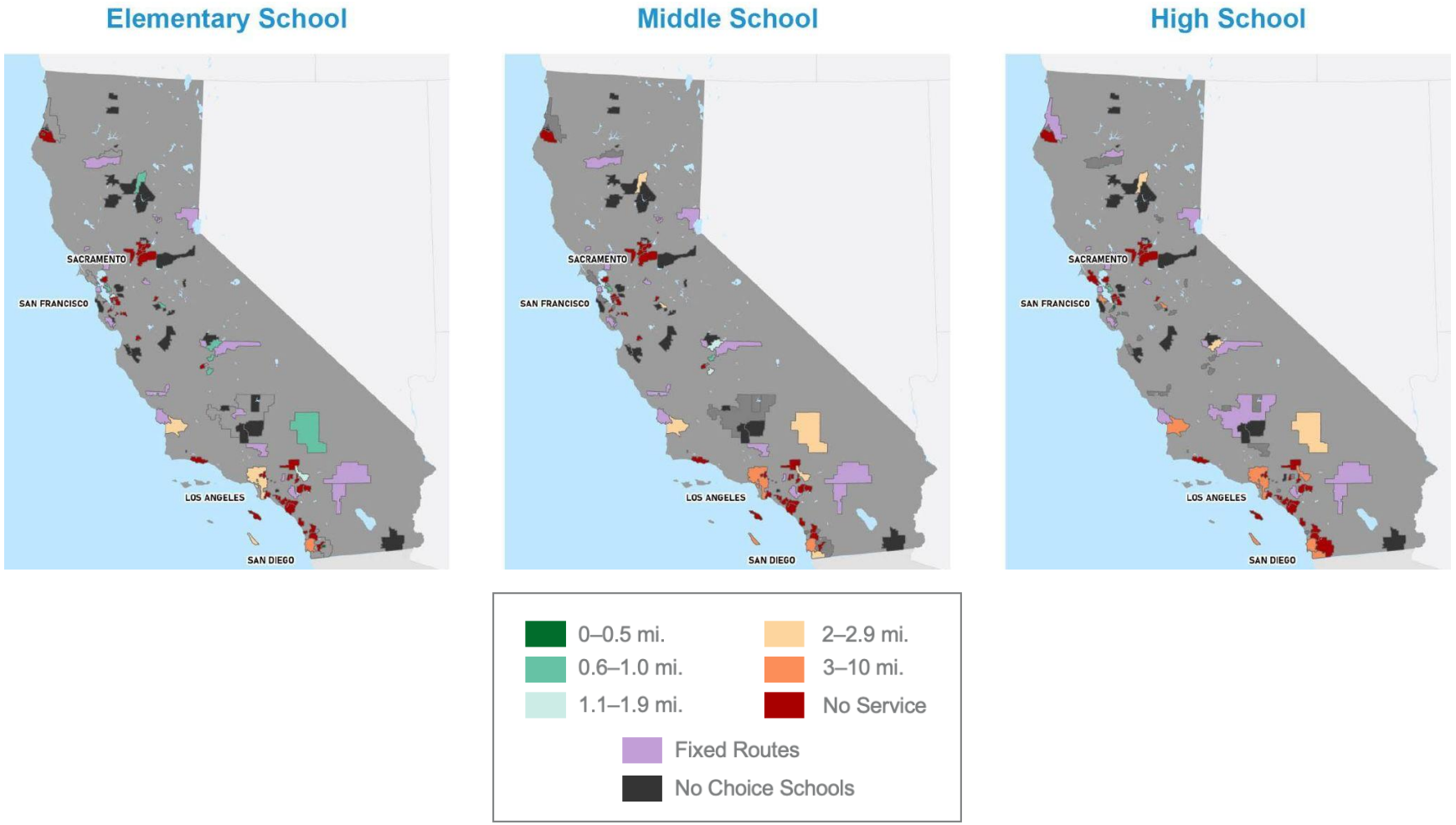


Figure 6: Maps of District School Bus Offerings by Distance-based Eligibility Thresholds and School Levels, Choice Public Schools



By Urbanization and Enrollment Size

Our sample of districts includes a roughly similar number of districts in rural, suburban, and urban/city settings. These vary across school level; many rural areas are served by a single elementary school district that then feeds into a larger secondary school district that serves many other elementary district areas. As Table 7 illustrates, while there is some variation in the percent of districts that do and do not offer school bus service across these lines, how this variation plays out is surprising. Our analysis here focuses on the bottom line: which districts *do not* have service. Predictably, rural elementary districts offer the most transportation resources — rural students tend to live further from school and have fewer options for walking and/or using public transit for school trips. But surprisingly, suburban districts — not urban districts where neighborhoods are more walkable and public transit is more frequent — are the most likely not to offer any transportation service. Nearly half of suburban districts do not offer school bus service to their high school students, and another quarter of them only offer it for students who live two or more miles from school.

Table 7: School Bus Services for Neighborhood Public School Students by Urbanization

	Elementary			Middle			High		
	Rural	**Suburb**	**City**	**Rural**	**Suburb**	**City**	**Rural**	**Suburb**	**City**
0–0.5 mi.	2 4.8%	0 0.0%	1 3.4%	1 2.6%	0 0.0%	0 0.0%	1 4.2%	0 0.0%	1 3.4%
0.6–1.0 mi.	2 4.8%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	8 19.0%	10 25.6%	8 27.6%	7 18.4%	4 10.8%	3 10.3%	0 0.0%	0 0.0%	2 6.9%
2.0–2.9 mi.	0 0.0%	3 7.7%	2 6.9%	4 10.5%	6 16.2%	7 24.1%	8 33.3%	3 10.7%	2 6.9%
3.0–10.0 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 5.4%	1 3.4%	0 0.0%	4 14.3%	6 20.7%
Fixed Route	20 47.6%	13 33.3%	12 41.4%	18 47.4%	11 29.7%	10 34.5%	10 41.7%	8 28.6%	9 31.0%
No service	10 23.8%	13 33.3%	6 20.7%	8 21.1%	14 37.8%	8 27.6%	5 20.8%	13 46.4%	9 31.0%
Total	42	39	29	38	37	29	24	28	29

The trend of the missing suburban school bus continues for choice school students. As Table 8 illustrates, options for choice programs vary by urbanization for choice students, with suburban districts

not offering transportation resources by a considerable margin—20 to 30 percent less than among city districts. For choice program participants, if a district offers any school bus transportation, it is usually of the fixed-route variety. Among the few districts that offer based on distance from home to school, that threshold similarly trends upward with age as it does with neighborhood schools.

Table 8: School Bus Services for Choice Public School Students by Urbanization

	Elementary			Middle			High		
	Rural	Suburb	City	Rural	Suburb	City	Rural	Suburb	City
0–0.5 mi.	1 2.4%	0 0.0%	0 0.0%	1 2.7%	0 0.0%	0 0.0%	1 4.0%	0 0.0%	1 3.3%
0.6–1.0 mi.	1 2.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	4 9.5%	3 7.7%	3 10.3%	3 8.1%	1 2.7%	2 6.9%	0 0.0%	0 0.0%	1 3.3%
2.0–2.9 mi.	0 0.0%	1 2.6%	1 3.4%	2 5.4%	2 5.4%	2 6.9%	3 12.0%	0 0.0%	0 0.0%
3.0–10.0 mi.	0 0.0%	0 0.0%	1 3.4%	0 0.0%	0 0.0%	2 6.9%	0 0.0%	2 7.1%	5 16.7%
Fixed Route	9 21.4%	6 15.4%	7 24.1%	8 21.6%	5 13.5%	7 24.1%	6 24.0%	3 10.7%	8 26.7%
No service	4 9.5%	23 59.0%	12 41.4%	4 10.8%	22 59.5%	12 41.4%	2 8.0%	19 67.9%	11 36.7%
No Choice Schools	23 54.8%	6 15.4%	5 17.2%	19 51.4%	7 18.9%	4 13.8%	13 52.0%	4 14.3%	4 13.3%
Total	42	39	29	37	37	29	25	28	30

Tables 9 and 10 consider these same variations by the size of the school districts in terms of student enrollment.

For neighborhood school students, Table 9 indicates that there are variations across district size. Of note, there are many more small districts than there are medium-sized and larger districts, but they serve many fewer students. Across all levels, smaller districts tend to operate with fixed routes, while medium-sized and larger districts tend to establish distance-based eligibility thresholds. This may be a function of scale; small districts can shift routes as new students enter their systems without needing to formally establish distance thresholds. Medium-sized districts—perhaps in line with suburban

districts—are most likely to not offer any service at all for middle and high school students, though all three enrollment size groups are roughly equal among elementary-aged students.

The variations in choice school transportation programs across enrollment sizes vary with choice school offerings in mind. That is, small districts are far less likely to offer any choice schools at all (46%) compared with medium-sized (85%) and large (92%) districts — shown as the inverse of the bottom line of Table 10. Among those that do, at least half offer only fixed route service to their choice students across all sizes and age levels.

Table 9: School Bus Services for Neighborhood Public School Students by Size

	Elementary			Middle			High		
	Small (<9K)	Medium (9K-30K)	Large (>30K)	Small (<9K)	Medium (9K-30K)	Large (>30K)	Small (<9K)	Medium (9K-30K)	Large>(>30K)
0–0.5 mi.	2 3.3%	0 0.0%	1 4.3%	1 1.9%	0 0.0%	0 0.0%	2 6.3%	0 0.0%	0 0.0%
0.6–1.0 mi.	1 1.7%	1 3.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	11 18.3%	7 25.9%	8 34.8%	9 17.0%	2 7.4%	3 12.5%	0 0.0%	0 0.0%	2 8.0%
2.0–2.9 mi.	0 0.0%	3 11.1%	2 8.7%	4 7.5%	8 29.6%	5 20.8%	8 25.0%	3 12.5%	2 8.0%
3.0–10.0 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 12.5%	0 0.0%	5 20.8%	5 20.0%
Fixed Route	29 48.3%	9 33.3%	7 30.4%	25 47.2%	7 25.9%	7 29.2%	12 37.5%	6 25.0%	9 36.0%
No service	17 28.3%	7 25.9%	5 21.7%	14 26.4%	10 37.0%	6 25.0%	10 31.3%	10 41.7%	7 28.0%
Total	60	27	23	53	27	24	32	24	25

Table 10: School Bus Services for Choice Public School Students by Size

	Elementary			Middle			High		
	Small (<9K)	Medium (9K-30K)	Large (>30K)	Small (<9K)	Medium (9K-30K)	Large (>30K)	Small (<9K)	Medium (9K-30K)	Large (>30K)
0–0.5 mi.	1 1.7%	0 0.0%	0 0.0%	1 1.9%	0 0.0%	0 0.0%	2 6.1%	0 0.0%	0 0.0%
0.6–1.0 mi.	0 0.0%	1 3.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	5 8.3%	3 11.1%	2 8.7%	3 5.8%	2 7.4%	1 4.2%	0 0.0%	0 0.0%	1 4.0%
2.0–2.9 mi.	0 0.0%	1 3.7%	1 4.3%	2 3.8%	2 7.4%	2 8.3%	2 6.1%	1 4.0%	0 0.0%
3.0–10.0 mi.	0 0.0%	0 0.0%	1 4.3%	0 0.0%	0 0.0%	2 8.3%	0 0.0%	3 12.0%	4 16.0%
Fixed Route	13 21.7%	5 18.5%	4 17.4%	11 21.2%	5 18.5%	4 16.7%	8 24.2%	4 16.0%	5 20.0%
No service	13 21.7%	13 48.1%	13 56.5%	11 21.2%	14 51.9%	13 54.2%	6 18.2%	13 52.0%	13 52.0%
No Choice Schools	28 46.7%	4 14.7%	2 8.7%	24 46.2%	4 14.8%	2 8.3%	15 45.5%	4 16.0%	2 8.0%
Total	60	27	23	52	27	24	33	25	25

Notably, districts are less likely to offer any transportation service at all to choice students in medium-sized and larger districts — which are the districts most likely to have choice programs in the first place. On the one hand, this seems counterintuitive — and, from the student and family perspective, it is. As mentioned in the literature review, students attending choice schools are more likely to require transportation because they are likely to live further from school than students who attend their neighborhood school. On the other hand, from the school district's perspective, this may reflect the complexities associated with transporting choice students. In smaller-sized districts, choice programs may consist of only one specialized magnet or charter school; any student can sign up to attend those schools, and districts can run a series of fixed-route buses to serve those students. However, in larger school districts, families may have dozens of choice schools to choose from, and it would be exceedingly difficult — even impractical — for districts to provide school bus service to each of those families.

By Student Socio-Demographics

We also investigated variations in school bus offerings across the levels of student poverty and student racial/ethnic diversity in the sampled school districts.

District school bus offerings and eligibility vary across levels of student poverty for neighborhood school students. As illustrated in Table 11, districts with medium (33%-67%) or high (>67%) percentages of students living in poverty, as measured by eligibility for free- or reduced-lunch programs, are more likely to be offered district transportation services. Across all districts regardless of student poverty levels, students are unlikely to be offered a bus if they live less than a mile from their school. The districts that do not offer bus services tend to be low-poverty districts—about half of these districts.

District school bus offerings for choice students follow similar variations as neighborhood schools, as shown in Table 12. However, districts with high student poverty are less likely to offer bus service to choice students than to traditional public school students by over 10 percentage points each for all three school levels. These differences are greater if we exclude districts that do not provide any school choice.

Even though state and federal laws do not require districts to offer transportation, it seems that districts understand the socioeconomic status of their students and set up transportation systems to benefit those who would not have a ride to school otherwise. Often, students with no available transit services have low levels of poverty, live close to the school, or live greater than three miles from the school.

Table 11: School Bus Services for Neighborhood Public School Students by District Poverty Levels

	Elementary			Middle			High		
	Low (<33%)	Medium (33%-67%)	High (>67%)	Low (<33%)	Medium (33%-67%)	High (>67%)	Low (<33%)	Medium (33%-67%)	High (>67%)
0–0.5 mi.	0 0%	2 4.4%	1 2.7%	0 0.0%	1 2.2%	0 0.0%	1 5.6%	1 3.0%	0 0.0%
0.6–1.0 mi.	0 0%	1 2.2%	1 2.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	3 13.6%	12 26.7%	11 29.7%	1 4.5%	5 11.1%	8 21.6%	0 0.0%	1 3.0%	1 3.3%
2.0–2.9 mi.	1 4.5%	1 2.2%	3 8.1%	3 13.6%	9 20.0%	5 13.5%	1 5.6%	5 15.2%	7 23.3%
3.0–10.0 mi.	0 0%	0 0%	0 0%	0 0%	0 0.0%	3 8.1%	2 11.1%	4 12.1%	4 13.3%
Fixed Route	7 31.8%	22 44.4%	16 40.5%	7 31.8%	18 40.0%	14 37.8%	4 22.2%	12 36.4%	11 36.7%

No service	14 50%	8 17.8%	7 16.2%	11 50.0%	12 26.7%	7 18.9%	10 55.6%	10 30.3%	7 23.3%
Total	25	46	39	22	45	37	33	33	30

Table 12: School Bus Services for Choice Public School Students by District Poverty Levels

	Elementary			**Middle**			**High**		
	Low (<33%)	**Medium (33%-67%)**	**High (>67%)**	**Low (<33%)**	**Medium (33%-67%)**	**High (>67%)**	**Low (<33%)**	**Medium (33%-67%)**	**High (>67%)**
0–0.5 mi.	0 0.0%	1 2.2%	0 0.0%	0 0.0%	1 2.2%	0 0.0%	1 5.3%	1 2.9%	0 0.0%
0.6–1.0 mi.	0 0.0%	0 0.0%	1 2.8%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1–1.9 mi.	1 4.5%	4 8.9%	5 13.9%	1 4.5%	1 2.2%	4 11.1%	0 0.0%	0 0.0%	1 3.3%
2.0–2.9 mi.	0 0.0%	1 2.2%	1 2.8%	0 0.0%	4 8.9%	2 5.6%	0 0.0%	1 2.9%	2 6.7%
3.0–10.0 mi.	0 0.0%	1 2.2%	0 0.0%	0 0.0%	1 2.2%	1 2.8%	1 5.3%	4 11.8%	2 6.7%
Fixed Route	3 13.6%	12 24.4%	7 19.4%	3 13.6%	11 24.4%	6 16.7%	3 15.8%	8 23.5%	6 20.0%
No service	12 50.0%	16 35.6%	11 27.8%	10 45.5%	17 37.8%	11 30.6%	9 47.4%	12 35.5%	11 36.7%
No Choice Schools	9 31.8%	11 22.2%	14 33.3%	8 36.4%	10 22.2%	12 33.3%	5 26.3%	8 23.5%	8 26.7%
Total	25	46	39	22	45	36	19	34	30

Often in matters of public policy, income/poverty and race/ethnicity are closely related; lower household income of a given area is often associated with a higher percentage of residents of color. So it is unsurprising that school bus services vary for students at neighborhood public schools based on the district's percentage of students of color; however, it is surprising that they vary differently from district levels of poverty. As shown in Table 13, districts with medium (50%-75%) or high (>75%) percentages of students of color have a *lower* likelihood of being offered transportation services — especially for middle and high school students. Distance-based eligibility thresholds again escalate with age across the categories.

Table 13: School Bus Services for Traditional Public School Students by Percentage of Students of Color

	Elementary			Middle			High		
	Low (<50%)	Medium (50%-75%)	High (>75%)	Low (<50%)	Medium (50%-75%)	High (>75%)	Low (<50%)	Medium (50%-75%)	High (>75%)
0–0.5 mi.	0 0.0%	1 2.9%	2 4.0%	0 0.0%	1 3.0%	0 0.0%	0 0.0%	2 8.0%	0 0.0%
0.6–1.0 mi.	1 3.8%	0 0.0%	1 2.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	5 19.2%	8 23.5%	13 26.0%	4 18.2%	3 9.1%	7 14.3%	0 0.0%	0 0.0%	2 5.0%
2.0–2.9 mi.	0 0.0%	2 5.9%	3 6.0%	2 9.1%	7 21.2%	8 16.3%	4 25.0%	4 16.0%	5 12.5%
3.0–10.0 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 6.1%	0 0.0%	4 16.0%	6 15.0%
Shuttle-Style	13 50.0%	12 35.3%	20 40.0%	12 54.5%	10 30.3%	17 34.7%	8 50.0%	5 20.0%	14 35.0%
No service	7 26.9%	11 32.4%	11 22.0%	4 18.2%	12 36.4%	14 28.6%	4 25.0%	10 40.0%	13 32.5%
Total	26	34	50	22	33	49	16	25	40

This gap between more bus service among districts with higher percentages of white students and less service among districts with higher proportions of students of color expands for choice program transportation, shown in Table 14. For all three school levels, while predominantly-white school districts are less likely to offer choice schools at all, when they do, it typically comes with transportation. As the percentage of students of color increases, so too does the percentage of districts that do not offer transportation to choice students. This lack of school bus services for choice schools in districts that are not predominantly white may prevent students of color from being able to participate in choice school programs at all.

Table 14: School Bus Services for Choice Public School Students by Percentage of Students of Color

	Elementary			Middle			High		
	Low (<50%)	Medium (50%-75%)	High (>75%)	Low (<50%)	Medium (50%-75%)	High (>75%)	Low (<50%)	Medium (50%-75%)	High (>75%)
0–0.5 mi.	0 0.0%	1 2.9%	0 0.0%	0 0.0%	1 3.0%	0 0.0%	0 0.0%	2 7.7%	0 0.0%
0.6–1.0 mi.	0 0.0%	0 0.0%	1 2.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	3 11.5%	3 8.8%	4 8.0%	2 9.5%	2 6.1%	2 4.1%	0 0.0%	0 0.0%	1 2.4%
2.0–2.9 mi.	0 0.0%	1 2.9%	1 2.0%	1 4.8%	2 6.1%	3 6.1%	1 6.7%	0 0.0%	2 4.8%
3.0–10.0 mi.	0 0.0%	0 0.0%	1 2.0%	0 0.0%	0 0.0%	2 4.1%	0 0.0%	3 11.5%	4 9.5%
Shuttle-Style	7 26.9%	6 17.7%	9 18.0%	7 33.3%	5 15.2%	8 16.3%	6 40.0%	3 11.5%	8 19.0%
No service	4 15.4%	11 32.4%	24 48.0%	3 14.3%	11 33.3%	24 49.0%	3 20.0%	10 38.5%	19 45.2%
No Choice Schools	12 46.2%	12 35.3%	10 20.0%	8 38.1%	12 36.4%	10 20.4%	5 33.3%	8 30.8%	8 19.0%
Total	26	34	50	21	33	49	15	26	42

By Public Transit Infrastructure in Area

Regardless of whether a student transit pass exists in a given district area, the quality of public transit service may help to explain whether or not schools provide school bus service. If transit offers an alternative, districts may choose to focus their resources elsewhere. To proxy for transit quality, we use the percentage of adults in the district area who use public transit as their means of transportation to and from work, and we group districts into two categories: those with lower adult transit use and those with higher adult transit use. Because there are so few districts in the higher adult transit use category — because there are so few areas in California and indeed the United States where transit is an oft-used commute mode — we provide tables 15 and 16 for illustrative purposes only and highlight only the differences between service being offered or not. At least preliminarily, it appears that districts in higher transit use areas are indeed less likely to offer school bus service than those in lower transit use areas.

Table 15: School Bus Services for Neighborhood Public School Students by Percentage of Adults in the Area Commuting by Public Transit

	Elementary		Middle		High	
	Low Transit	Transit	Low Transit	Transit	Low Transit	Transit
0–0.5 mi.	3 3.0%	0 0.0%	1 1.1%	0 0.0%	2 2.9%	0 0.0%
0.6–1.0 mi.	2 2.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	23 23.2%	3 27.3%	12 12.9%	2 18.2%	1 1.4%	1 8.3%
2.0–2.9 mi.	5 5.1%	0 0.0%	17 18.3%	0 0.0%	13 18.8%	0 0.0%
3.0–10.0 mi.	0 0.0%	0 0.0%	3 3.2%	0 0.0%	9 13.0%	1 8.3%
Fixed Route	44 44.4%	1 9.1%	38 40.9%	1 9.1%	26 37.7%	1 8.3%
No service	22 22.2%	7 63.6%	22 23.7%	8 72.7%	18 26.1%	9 75.0%
Total	99	11	93	11	69	12

Table 16: School Bus Services for Choice Public School Students by Percentage of Adults in the Area Commuting by Public Transit

	Elementary		Middle		High	
	Low Transit	Transit	Low Transit	Transit	Low Transit	Transit
0–0.5 mi.	1 1.0%	0 0.0%	1 1.1%	0 0.0%	2 2.8%	0 0.0%
0.6–1.0 mi.	1 1.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	7 7.1%	3 27.3%	4 4.3%	2 18.2%	0 0.0%	1 8.3%
2.0–2.9 mi.	1 1.0%	1 9.1%	6 6.5%	0 0.0%	3 4.2%	0 0.0%
3.0–10.0 mi.	1 1.0%	0 0.0%	1 1.1%	1 9.1%	5 7.0%	2 16.7%
Fixed Route	21 21.2%	1 9.0%	19 20.7%	1 9.1%	16 22.5%	1 8.3%

No service	35 35.4%	4 36.4%	33 35.9%	5 45.5%	25 35.2%	7 58.3%
No Choice Schools	32 32.3%	2 18.2%	28 30.4%	2 18.2%	20 28.2%	1 8.3%
Total	99	11	92	11	71	12

Transit Pass Options

Similarly to school bus program offerings, we analyzed the variation of public transit program offerings. However, as mentioned in Section 3, we found much less variation in program eligibility based on distance from home to school and on school level, so for these analyses we consolidated into one kindergarten through Grade 12 analysis and across three types of programs: fully-subsidized (no cost to the family/student), partially subsidized (the family/student pays some amount of money but not as much as a standard passenger), or no program offered.

By School Level and District Type

Across the 119 sampled school districts, over 80 percent offer some sort of transit program. Table 17 illustrates the three categories. Over half of districts offer a partially-subsidized program; about three in ten offer a fare-free program.

Table 17: Distribution of Type of Transit Pass Offerings Available in Sample School Districts

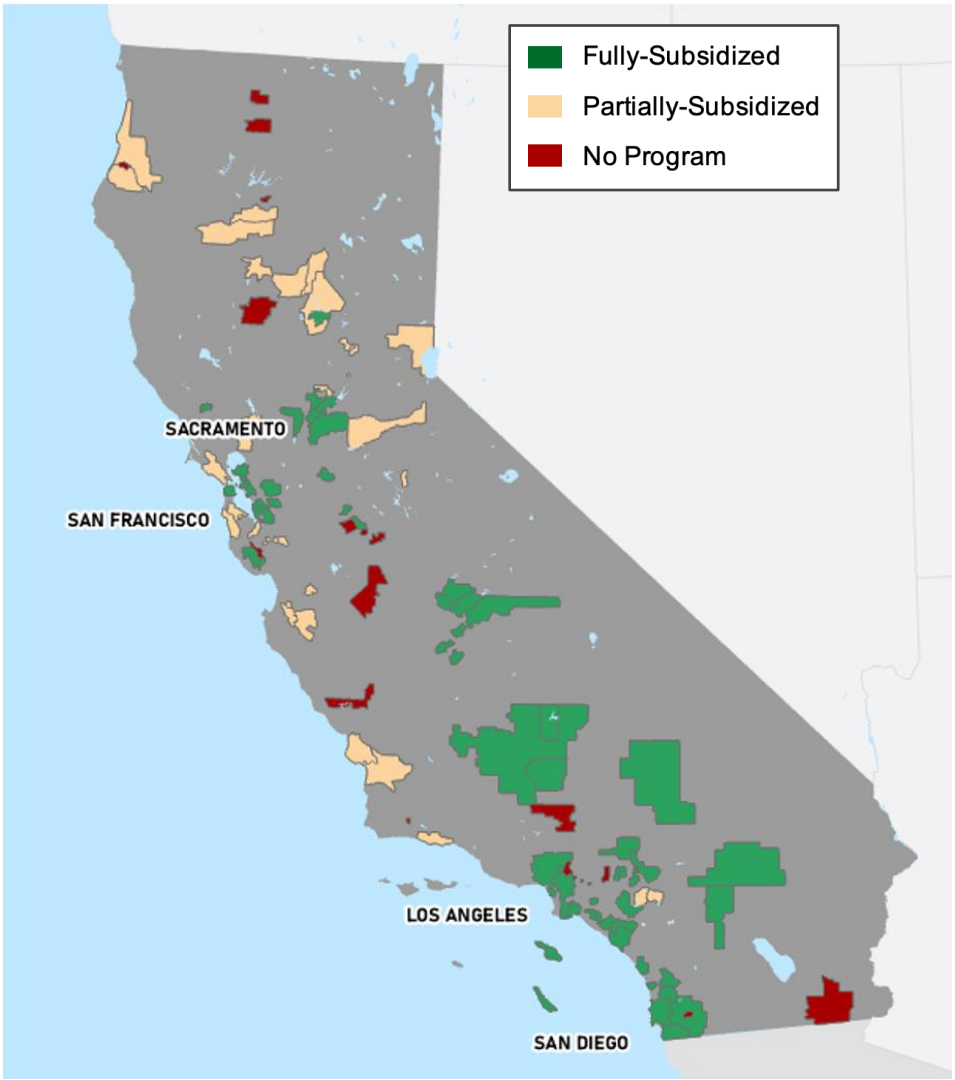
Types of Transit Pass	K-12
Free (Fully-Subsidized)	37 31.1%
Discounted (Partially-Subsidized)	62 52.1%
No Pass/Program	20 16.8%
Total	119

The spatial distribution of these programs is generally logical. Figure 7 illustrates that the district areas that do not offer any subsidized transit program for students are generally in sparsely-populated areas of the state, like the deserts, northern areas, and Central Coast. Nevertheless, many

districts in these areas still offer programs — typically with partial subsidy in northern California and with full subsidy in the southern part of the state.

Most of urbanized Southern California (both the Los Angeles and San Diego areas), Sacramento, and the San Francisco Bay Area offer fully-subsidized student transit pass programs. These areas also have the most robust transit infrastructure, and they have strong unified fare payment programs like Los Angeles's TAP cards and the Bay Area's Clipper Card. Interestingly, the inland areas of Southern California also offer fully-subsidized transit passes, which is surprising because the transit infrastructure is less dense.

Figure 7: Map of Type of Transit Pass Options Available in Sample School Districts



Tables 18 through 22 illustrate the variation between districts across the same key socio-demographic and other characteristics as previously analyzed: urbanization, enrollment size, poverty levels, percentage of students of color, and adult transit use. In general — perhaps because we have far fewer categories across which to analyze for transit passes — we found less variability for student transit passes than we found for school bus offerings.

We found that district areas with expectedly higher levels of transit availability — cities (Table 18), large districts (Table 19), and places where adults use transit for work commutes (Table 22) — were almost assuredly offering a transit pass to students. For example, only one city district out of 29 did not have a transit pass program.

Conversely, we saw little variation across the districts by socio-economic status and race/ethnicity. Table 20 shows that about half of districts offer free transit and roughly a quarter offer no program. In all three categories of student poverty level, the lowest option (or tied for it) is not having a transit pass. Table 21 shows similarly steady trends, with a slight uptick among predominantly-white school districts not offering public transit.

Table 18: Public Transit Services for Traditional Public School Students by Urbanization

	All School Levels		
Transit Pass Status	**Rural**	**Suburb**	**City**
Free	13 31.0%	26 66.7%	19 65.5%
Discounted	17 40.5%	6 15.4%	9 31.0%
No Pass	12 28.6%	7 18.0%	1 3.5%
Total	42	39	29

Table 19: Public Transit Services for Public School Students by Size

	All School Levels		
Transit Pass Status	**Small**	**Medium**	**Large**
Free	18 30.0%	19 70.4%	21 91.3%
Discounted	24 40.0%	6 22.2%	2 8.7%
No Pass	18 30.0%	2 7.4%	0 0.0%
Total	60	27	23

Table 20: Public Transit Services for Public School Students by District Poverty Levels

	All School Levels		
Transit Pass Status	**Low Poverty (<33%)**	**Medium Poverty (33%-67%)**	**High Poverty (>67%)**
Free	13 52.0%	24 52.3%	21 53.9%
Discounted	7 28.0%	16 34.8%	9 23.1%
No Pass	5 20.0%	6 13.0%	9 23.1%
Total	25	46	39

Table 21: Public Transit Services for Public School Students by Percentage of Students of Color

	All School Levels		
Transit Pass Status	**Low (<50%)**	**Medium (50%-75%)**	**High (>75%)**
Free	8 30.8%	18 52.9%	32 64.0%
Discounted	12 46.2%	10 29.4%	10 20.0%
No Pass	6 23.1%	6 17.7%	8 16.0%
Total	26	34	50

Table 22: Public Transit Services for Public School Students by Percentage of Adults in the Area Commuting by Public Transit

	All School Levels	
Transit Pass Status	**Low Transit**	**Transit**
Free	48 48.5%	10 90.9%
Discounted	31 31.3%	1 9.1%
No Pass	20 20.2%	0 0.0%
Total	99	11

How to Use a Student Transit Pass

While offering student transit passes is the first step to transportation accessibility through a public transit system, the process of acquiring, paying for, and using these passes on a regular basis is crucial to students' use. Requiring a student application, monthly payment, per-ride fees, or complicated payment methods can pose barriers for students trying to take advantage of fully- or partially-subsidized transit passes. We identified several trends in acquisition process, acquisition cost, cost per ride, and payment methods for the 99 programs we analyzed. (In a few instances, districts had more than one policy; for example, older students may be opted in automatically while younger students may not. In those cases, we counted the district more than once.)

For acquisition process type (Table 23), around half the programs require families to complete an online application to qualify for a student transit pass. Conversely, approximately a quarter of the programs automatically opt all students into the transit pass program, whether requested or not. Further, 17 percent of districts allow students to opt in through their school, while the remaining 7 percent of districts require an in-person application at a place other than the student's school (usually a transit agency building).

We break down cost into two categories: the cost for acquiring the transit pass or card, and the cost per-ride. (For a program to be fully-subsidized, it needs to have *neither* an acquisition cost nor a per-ride fare.) For acquisition cost (Table 24), 73 percent of districts are free, 22 percent charge greater than or equal to $20 per month, and 4 percent require a one-time $10 fee. The maximum cost of acquisition was $45. For cost per ride (Table 25), students did not pay any per ride costs in 90 percent of districts; 7 percent of districts charge less than or equal to $1 per ride, and the remaining 7 percent charge greater than $1.

Table 23: Acquisition Process for a Transit Pass

Acquisition Process	Number of Districts	Percentage of Districts
Online Application	49	48.5%
Student is automatically opted in	28	27.7%
Student elects to opt in through their school	17	16.8%
In person application	7	7%
Total	101	100%

Table 24: Acquisition Cost for a Transit Pass

Acquisition Cost	Number of Districts	Percentage of Districts
$0	73	73%
Greater than or equal to $20 per month	22	21.8%
1-Time $10 payment	4	4%
Total	101	100%

Table 25: Cost per Ride Using Transit Pass

Per Ride Cost	Number of Districts	Percentage of Districts
$0	90	85.7%
Less than or equal to $1	5	4.9%
Greater than $1	5	4.9%
Varies	4	3.8%
Total	104	100%

The method of payment also varies across these programs. Shown in Table 25, around 90 percent of student transit passes require some form of payment media, even if the pass itself and per ride cost are free. Payment methods often include tapping a preloaded transit agency card or student ID, or requiring students to have a combination of methods. Most transit agencies have different payment methods rules, which can lead to confusion and inability to use student passes.

Table 25: Payment Methods

Payment Method	Number of Districts	Percentage of Districts
Transit Agency Card	48	45.7%
Transit Agency Card AND Student ID	4	3.8%
Student ID	16	15.2%
Student ID AND Payment Method	4	3.8%
Debit OR Credit Card	2	1.9%
Cash	3	2.9%
Debit OR Credit OR Cash	15	14.3%
No method required	11	10.5%
Total	103	100%

Transit agencies rarely have a one-size-fits-all solution, which leads to inconsistent policies on pass acquisition, pass use, and ride payment. These inconsistencies are left to students to understand and work within, which can quickly become confusing. Providing one standardized student pass with one set of rules would greatly reduce the complexity the current transit infrastructure offers throughout California.

District Areas with No/Very Limited Transportation Options

Most school districts have some form of district-provided transportation or student transit pass, but five of our sampled 119 districts offer neither. We identified two categories of districts lacking student transportation resources: rural districts without sufficient infrastructure for public transit options and districts within Los Angeles County that would otherwise be eligible for Los Angeles Metro's GoPass but which chose to not opt into the program.

Note that these are for the general student population, enrolled either in a neighborhood public school or a choice public school. As with all public schools, these districts offer transportation to students for whom federal law requires it.

Rural Districts with Limited Infrastructure

Lakeside Joint School District and North Cow Creek Elementary are both small, rural districts without transportation resources from their districts or transit agencies. These communities are too small to have a local transit agency and likely lack adequate school funding to transport all students.

Lakeside Joint School District

Lakeside Joint School District is a single-school elementary district with approximately 100 TK-5 students in the Santa Cruz Mountains. Of those students, only 4 percent are living in poverty. With five teachers and a minute student population, school buses would likely be expensive and logistically impractical to operate and maintain. While Santa Cruz Metro operates public transit services in many areas around the district boundaries, Lakeside Joint School District itself is not served. Since there is no public transit available, a student transit pass would not be useful even if it was offered. Despite the district's sparse offerings, it is probably not reasonable to expect robust or traditional transportation resources.

North Cow Creek Elementary

North Cow Creek Elementary is also a single-school elementary district that serves around 260 students in transitional kindergarten (TK) through eighth grade in rural northern California. Similarly to Lakeside, only 9 percent of North Cow Creek's population experience poverty. The district's makeup is also unusual where the majority of its students travel from neighboring districts. Around 70 percent of students reside in the boundaries of a different school district, often traveling lengthy distances to school each day. Students mainly commute from Antelope Elementary, Black Butte Union Elementary, Cottonwood Union Elementary, Gateway Unified, and Igo Ono Platina Union Elementary. These schools experience higher percentages of poverty, respectively. Offering school bus transportation here would present both economic challenges (because students come from far away) and political challenges (because it would involve negotiations between the school districts of residence and the school district of attendance). Offering public transit passes is not feasible, either; no fixed-route, fixed-schedule public transit agencies serve the area. ShastaConnect, a paratransit service, serves the area but is not designed or available for regular commutes.

Districts in Los Angeles County without School Buses or Transit Passes

While it is reasonable for rural districts without transit infrastructure to lack student transportation resources, the rationale for any school districts in greater Los Angeles not offering transportation services of any kind to its neighborhood school general education or public school choice program students is less clear. The area's transit infrastructure is more substantial than rural areas, and Los Angeles Metro offers the student GoPass to schools that opt into the program. The GoPass program provides K-12 students a fare-free TAP card for most services offered by Los Angeles Metro and myriad other area transit operators, with no time or place-based restrictions. While the GoPass has wide reach, there are many students who cannot participate because their school is not opted in, leaving many

students to pay their full fare in addition to not being offered a school bus. The districts in Los Angeles County without any form of school-sponsored transportation offering are Rosemead Elementary, Glendale Unified, and South Pasadena Unified.

Rosemead Elementary

Rosemead Elementary, a TK-8 district comprising six suburban schools, does not offer district school bus transportation or a transit pass. The district has low transit infrastructure (as proxied by adult transit commuting) and is a small district with around 3,000 students. Rosemead Elementary's student body is 75 percent or more students of color. More than 67 percent of students qualify for free or reduced lunch. None of the schools in the district opted into the GoPass Program, meaning if students ride public transit to school, they pay a base fare of $0.75, a 1-Day Cap of $2.50, or a 7-Day Cap of $6 (*Students (K-12) Metro Fares*, 2024).[6]

The City of Rosemead is served by transit buses operated by Los Angeles Metro, Foothill Transit, Montebello Bus Lines, and Bell Gardens Transit, as well as by the Rosemead Explorer. While none of the schools are part of the umbrella GoPass program, there are some options — although they are complex to navigate. Depending on which of the myriad agencies that serve both the student's home and school, a family may apply for various low-income and/or K-12 discount programs. However, simply participating in GoPass would allow for clearer access.[7]

With nearly no district transportation resources, students are left to navigate these complicated agencies' individual fare discounts and processes. Planning a route, purchasing passes, and remembering required documents to ride can quickly become cumbersome. Being able to use GoPass would alleviate many of these issues by providing a standardized way to ride local agencies without having to pay for each individual ride.

Glendale Unified

Glendale Unified is the third largest school district in Los Angeles County and serves approximately 25,000 K-12 students across 32 schools. None of those 32 schools are opted into the GoPass and no other forms of transportation to-and-from school are available. The district's student body is below the state average for its percentage of students living in poverty. Over 60 percent of its students are white. Glendale Unified does not operate school bus service.

Similarly to Rosemead, Glendale's schools do not participate in GoPass, but smaller agencies serving the area offer some student discounts. In addition to Los Angeles Metro, Glendale Unified is served by Transportation Glendale and the Glendale Beeline. Transportation Glendale offers a $22

[6] Los Angeles Metro provides a queryable database on its website that indicates if a school has or has not opted into GoPass. For Los Angeles area schools, we queried each school within a district (or a sample for the very largest districts).

[7] Foothill Transit offers K-12 students a discount of $40 for a 31-day pass, $8.00 for a 10-trip pass, $4 for a Day Pass, and $1 for a single trip (*Fares and Passes*, 2023). Montebello Bus Lines offers a $30 monthly student pass for K-12 (*Fares*, 2025) while Bell Gardens Transit charges $0.25 for people under age 18 (*Transportation*, n.d.). The Rosemead Explorer has no student discount and is $0.50 a ride (*Public Transportation*, 2017).

monthly pass for students, which can be waived with a Reduced Fare TAP card. However, signing up for this program is a potentially time-consuming application process and requires government or school documents (*Reduced Fare TAP Card for K-12 Students*, n.d.). The Glendale Beeline operates twelve routes through and around Glendale and charges $1 in cash per ride, without a publicly-announced student fare program.

South Pasadena Unified

South Pasadena Unified serves a 3.4 square-mile suburb in Los Angeles County (*South Pasadena City, California*, 2023). The district educates around 27,000 students and comprises three elementary schools, one middle school, and one high school (*South Pasadena Unified School District*, 2025). The area is relatively high-income (the median household income was over $127,000 in 2022) (*South Pasadena, CA*, 2022).

The district does not operate school bus service for its general education students. And while the area is served by Los Angeles Metro, the district's five schools do not participate in GoPass. (Pasadena Transit and Foothill Transit offer very limited service into the city but largely serve other areas.)

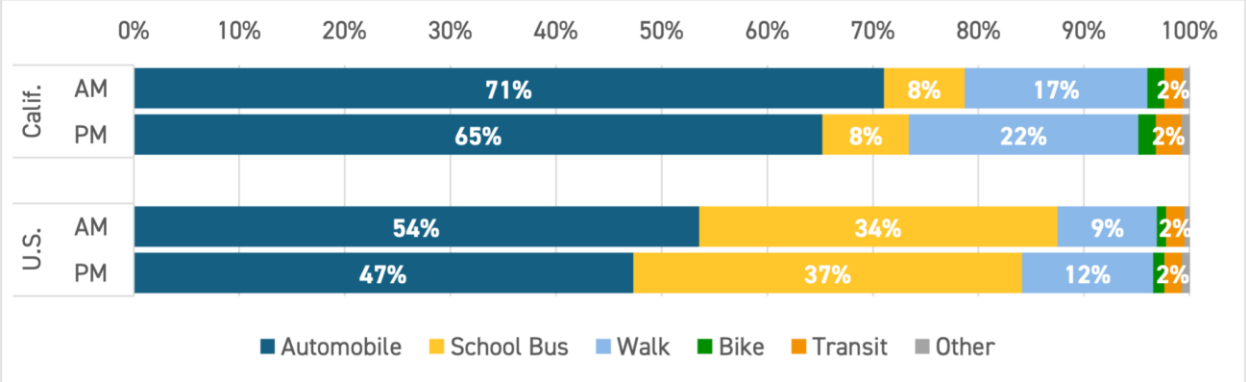
5. Student Travel Analysis

Amid the wide range of school transportation policies among California school districts, how do students travel to and from school? Does this differ from how the rest of the United States makes these trips? Do these vary by key socio-demographic or school characteristics? And how would they be different if taken on an alternate mode? This section of the report answers these questions. For some variables, we are able to compare California with the United States on the whole; for others, the estimates rely on the match between school and student, and only the confidential spatial data in California allow for those comparisons.

Observed Travel Behaviors & Household Characteristics: California and U.S.

At its most basic root, we estimated the share of each of the five principal travel modes for school trips — separating morning from afternoon — for California and the United States. The most glaring difference is in the share of students who ride the school bus, as shown in Figure 9: in the U.S. on the whole (including California), 34 percent of students are school bus riders in the morning, and 37 percent ride it in the afternoon. In California, that figure drops to just 8 percent, both morning and afternoon. To plug this gap, Californians drive or are driven to/from school at a clip nearly 20 percentage points higher than the county at-large, and walk to/from school at rates nearly double that of the entire U.S. In both California and the U.S., the automobile dwarfs walking. Public transit use, both in California and the U.S., sits at about two percent.

Figure 9: Travel Mode Share, School Trips 2016–2017, California and U.S.



While not quite as dramatic as the vast differences in mode choice, the observed travel behaviors of California students do differ in some meaningful and significant ways from those of the rest of the country. This top line comparison is shown in Table 27. First, despite California's diversity of built environments, on average California students live significantly closer to their schools than the rest of the country by nearly a mile — a shade over 3 miles in California vs. nearly 4 miles nationally — and the share of students who live within a mile of their school is nearly ten percentage points higher in the Golden State.

The variations between modes on these variables are predictable: automobile trips are significantly shorter than other modes in duration for both morning and afternoon (except for the few bicycle trips), and transit is significantly longer than all other modes — including the school bus. There is only minimal difference between California and the U.S. The only significant differences between the geographies are in afternoon trip duration: California students who leave school on foot or in an automobile average significantly longer durations than the U.S. (The differences in the morning are not statistically significant.)

Table 27: Distance and Duration for School Trips 2016–2017, California and U.S.

	Mean Distance (mi.)		% Students w/in 1 mi.		Mean AM Duration (min)		Mean PM Duration (min)	
	California	*U.S.*	*California*	*U.S.*	*California*	*U.S.*	*California*	*U.S.*
All Modes	3.1	3.9	30.6%	21.0%	15.6	18.6	21.6	21.4
Auto	3.6	4.0	20.6%	17.9%	13.5	12.7	20.3	15.8
School Bus	4.3	4.4	14.5%	8.7%	26.7	27.2	28.0	29.0
Walk	0.7	0.7	79.7%	81.5%	16.4	14.3	20.7	18.1
Bike	1.2	1.4	48.6%	52.9%	13.2	15.5	12.9	19.4
Transit	4.7	6.1	8.7%	6.0%	39.5	35.6	48.6	45.0
Other	6.3	4.5	22.4%	26.1%	25.9	17.3	22.8	22.0

Household Income

In both California and the United States, as shown in figures 10 and 11, students from families in the lowest household income category (incomes of less than $25,000) are less likely to rely on private automobiles for school trips and, in turn, are more likely to ride the school bus, walk, or use public transit. This flows logically from literature suggesting that low-income families are less likely to own automobiles in the first place (Blumenberg & Pierce, 2012).

But while both trends are similar, the magnitudes of difference are not. In California, despite its low school bus use, the share of school bus users among those from families with incomes below $25,000 is *four times* that of children from families with incomes between $100,000 and $199,000. Again despite the smaller size, the percentage point difference between these groups in California (13 points among afternoon trips) is greater than that of the U.S. (12 points). By this measure, it appears that school bus service is important to most Americans at any income level, but that in California, it is most important for lower-income families.

Public transit sees a muted version of this trend. While transit use is higher for lower-income students, it still remains 4 percent or less of the overall travel mode share. Among wealthier students, it sits between 0 and 2 percent.

Differences in observed travel behavior by family income suggest that wealthier families are willing and/or able to send their children further to school than lower-income families. Table 28 shows these differences. As income rises, so too generally does the distance to school. In California and nationally, students who come from families with over $200,000 in annual income travel significantly longer distances than those from families earning less than $50,000 annually. Notably, however, we see the exact *opposite* trend in duration: children from that same lower-income group have longer duration trips than those from higher-income categories. This relationship is somewhat U-shaped; the highest-income category rises back up, likely owed to distances to private schools (see below).

Race Ethnicity

There are differences in school trip mode shares across student race and ethnicity, but the differences are more muted than those for income. And as illustrated by comparing figures 12 and 13, the trends in California differ from those in the nation on the whole. In California, Black and Latino/a students are less likely to be driven or drive to school and are more likely to rely on walking, the school bus, and public transit. In the U.S., this is true for Black students but not for Latino/a students, who are more likely to rely on the private automobile than any other racial/ethnic group.

The one notably large difference among race/ethnicity groups is in public transit use in California. White and Asian students very seldomly make use of transit for school trips, while Latino students sit at roughly the statewide and national averages. Black students, however, are more likely nationally to rely on public transit, especially for morning trips. In California, this difference is more pronounced — and is the only situation where public transit use outpaces the school bus: 9 percent of Black California students rely on public transit to school regardless of trip direction, while only 8 percent are on yellow buses.

Observed travel behavior estimates also differ by race/ethnicity, but the relationships are nuanced. These are again shown in Table 28. In California, none of the distances are significantly different from all other groups, but nationally, white students travel significantly further to school than all other race/ethnicity categories. Trip durations see more — and concerning — differences in California: Black and Latino students spend significantly more minutes per day on school travel than white and Asian students. This comes despite higher shares of Black and Latino students living within a mile of school, suggesting this may be a function of mode choice and availability. Nationally, this trend persists only for Black students.

Figure 10: Travel Mode Share by Household Income, School Trips 2016–2017, California

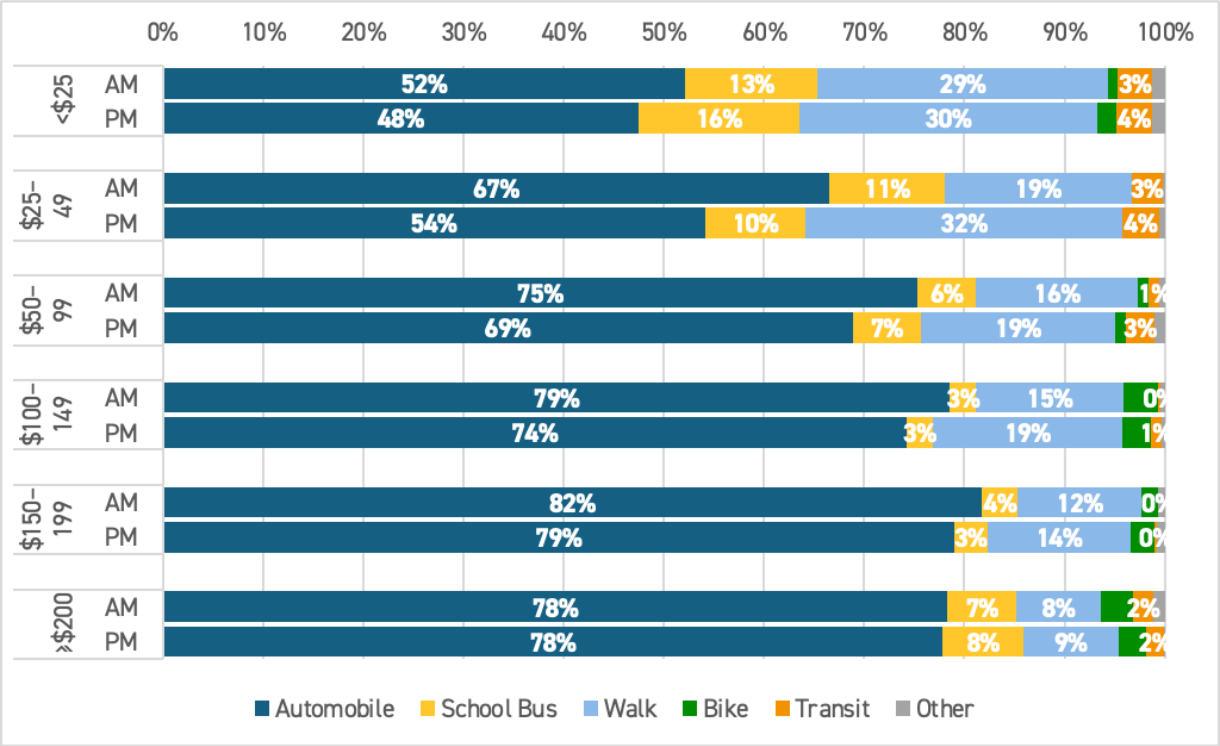


Figure 11: Travel Mode Share by Household Income, School Trips 2016–2017, U.S.

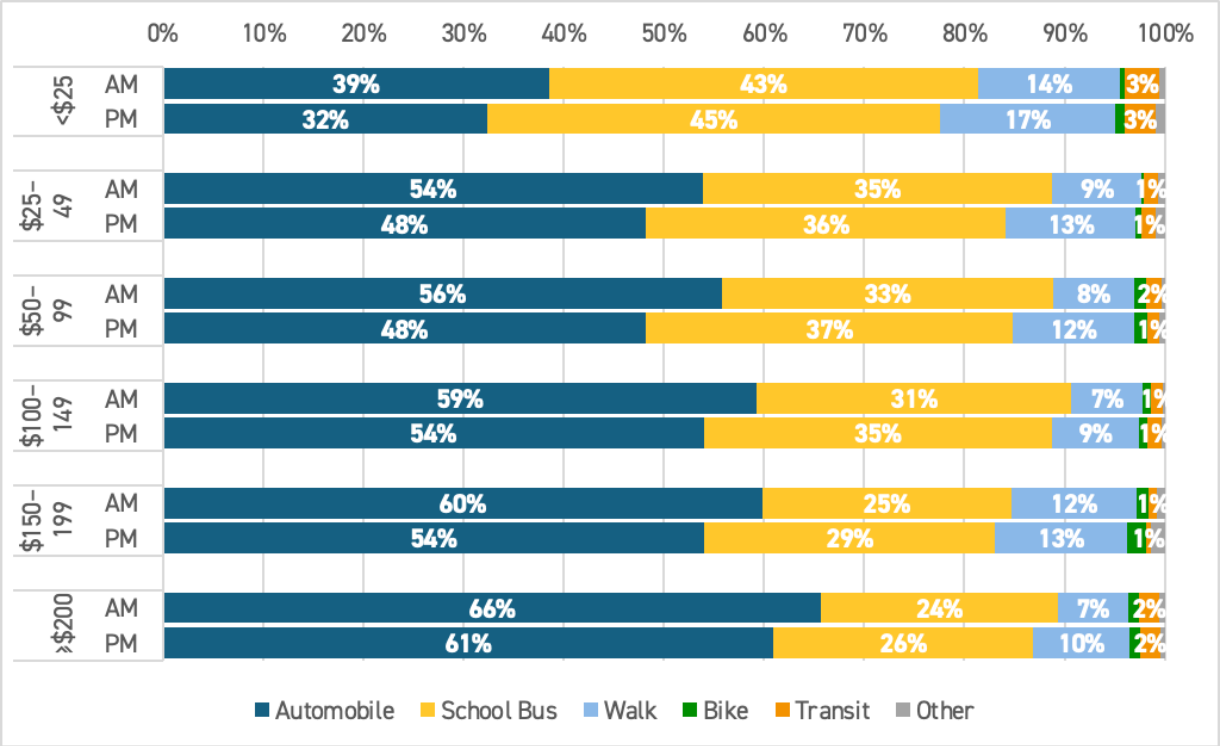


Figure 12: Travel Mode Share by Race/Ethnicity, School Trips 2016–2017, California

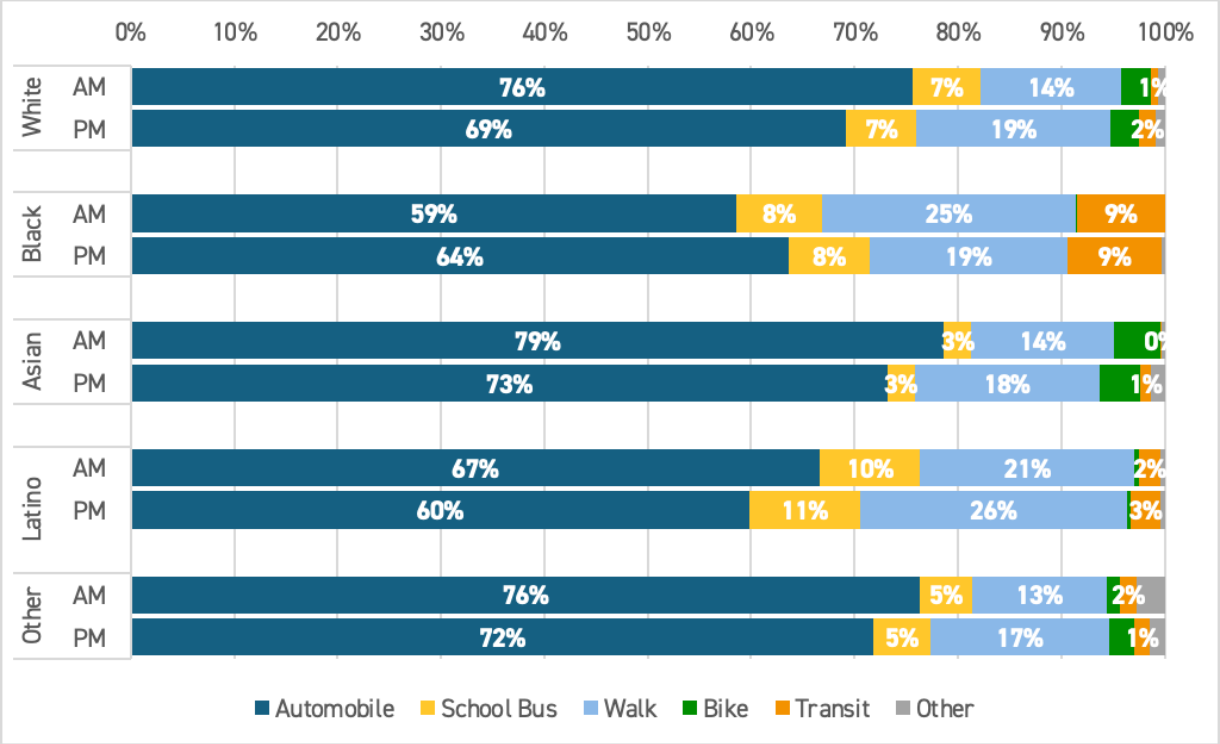


Figure 13: Travel Mode Share by Race/Ethnicity, School Trips 2016–2017, U.S.

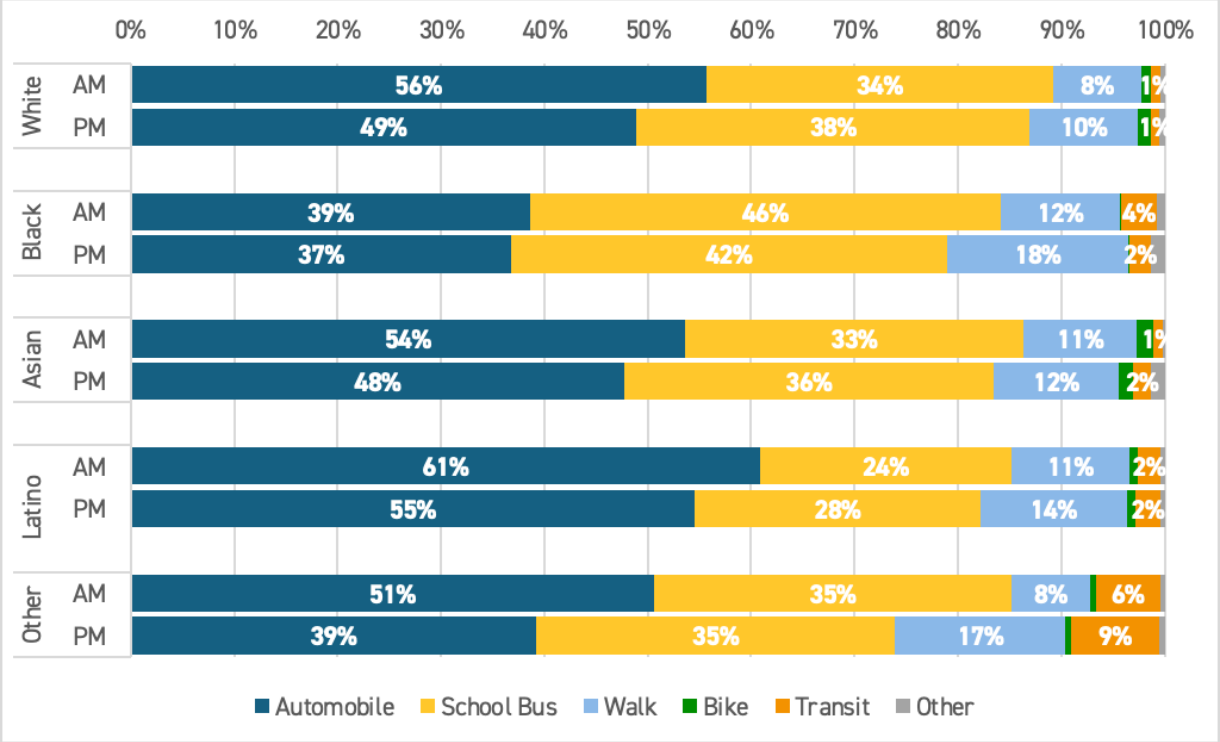


Table 28: Distance and Duration for School Trips 2016–2017, California and U.S.

	Distance (mi.)		% Students w/in 1 mi.		AM Duration (min:sec)		PM Duration (min:sec)	
	California	*U.S.*	*California*	*U.S.*	*California*	*U.S.*	*California*	*U.S.*
Household Income								
<$25k	2.7	3.5	34.4%	22.3%	17.0	22.2	26.5	25.4
$25–49k	2.4	3.8	39.5%	23.0%	15.6	18.9	19.9	2.2.0
$50–99k	3.5	3.9	30.5%	20.7%	14.5	17.6	23.0	20.5
$100–149k	3.1	4.0	24.6%	20.3%	15.0	17.6	19.1	20.1
$150–199k	3.2	3.7	25.3%	19.6%	14.6	15.6	16.1	19.0
≥$200k	4.4	4.4	23.2%	16.7%	17.4	17.0	22.1	18.8
Race/Ethnicity								
Asian	2.7	3.6	28.2%	21.1%	14.0	17.3	15.8	19.9
Black	3.5	3.8	30.3%	19.6%	19.1	22.5	23.5	25.7
Latino/a	3.0	3.2	33.0%	26.7%	16.2	16.6	23.8	19.8
White	3.2	4.1	29.2%	18.6%	14.8	18.1	17.6	20.6
Other	4.1	3.9	25.2%	30.7%	14.6	21.5	27.0	25.4
School Level								
Elementary	2.7	3.3	38.8%	27.0%	13.1	16.8	19.0	20.0
Middle	2.9	4.1	27.1%	15.6%	17.0	20.8	24.6	23.7
High	4.2	5.0	18.2%	11.7%	19.0	20.8	24.0	22.8
Household Structure								
1 Adult	3.0	4.0	29.0%	20.7%	16.9	21.3	20.5	24.4
2+ Adults	3.2	3.8	31.0%	21.0%	15.4	18.0	21.8	20.9

School Level

Trends across age levels — displayed in Figure 14 (California) and Figure 15 (U.S.) — follow established trends in the literature: middle school children rely less on the automobile and more on the school bus than their younger and older counterparts. This is likely because at younger ages parents are more likely to chauffeur their children and at older ages high school teenagers are more likely to drive themselves or hitch a ride with a classmate with a car. In both the U.S. and California, the share of walkers increases with age.

Additionally, the share of public transit users increases with age, though not to any sort of large presence — in California or the country on the whole. While the independence associated with being in high school does appear to have some association with transit use, it does not appear to be enough to overtake the school bus even in California — and nowhere close to doing so in the rest of the U.S.

The relationships between these levels — and across geographies — coincide with classic school site planning (Table 28). As students age, the distance between home and school grows significantly, both in California and across the U.S. Correspondingly, trip durations grow from elementary to middle school. Those durations remain steady between middle and high school students; although distances grow, that increased percentage of automobile use among high schoolers likely leads to shorter durations than walking, biking, the school bus, or transit.

Household Structure

A lesser explored part of the literature, there is theoretical reason to believe that single-parent households face different travel decisions than dual-parent households. In particular, this might be because there is one fewer adult available to chauffeur or escort their child(ren) to school. This appears to be the case nationally: higher shares of children are driven to school in dual-parent households than single-parent households (Figure 15), and their trip durations are in turn significantly lower (Table 28). However, in California, these differences are muted; travel mode choices hardly vary (Figure 14), and trip durations are not significantly different (Table 28).

Figure 14: Travel Mode Share by School Level, School Trips 2016–2017, California

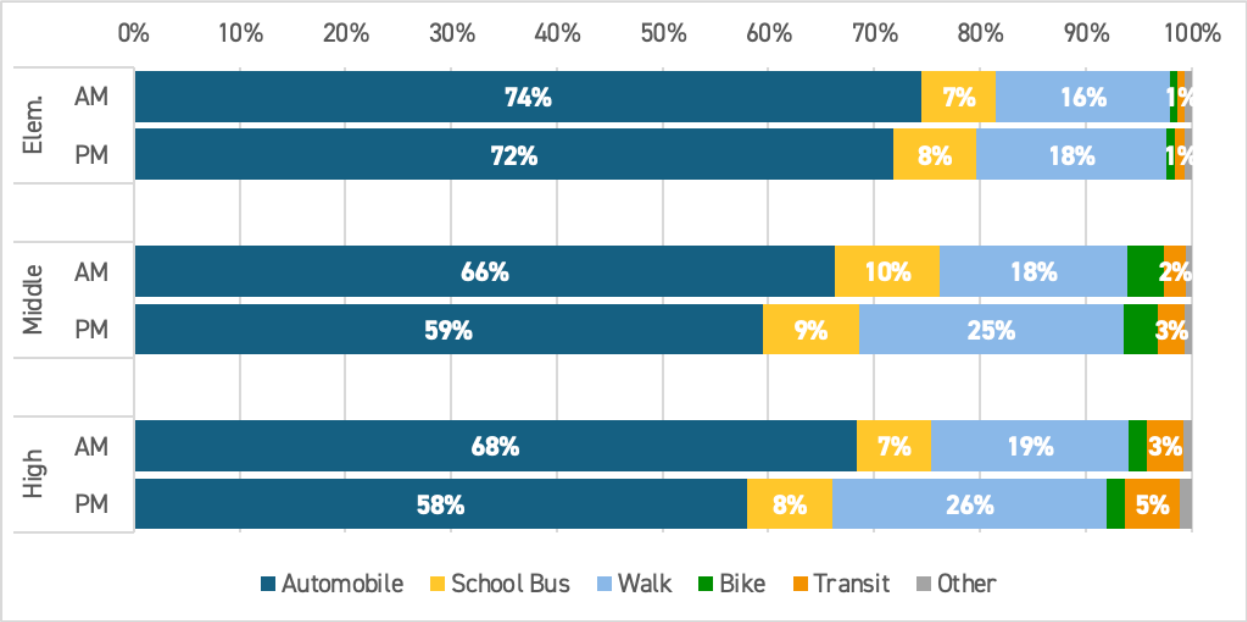


Figure 15: Travel Mode Share by School Level, School Trips 2016–2017, U.S.

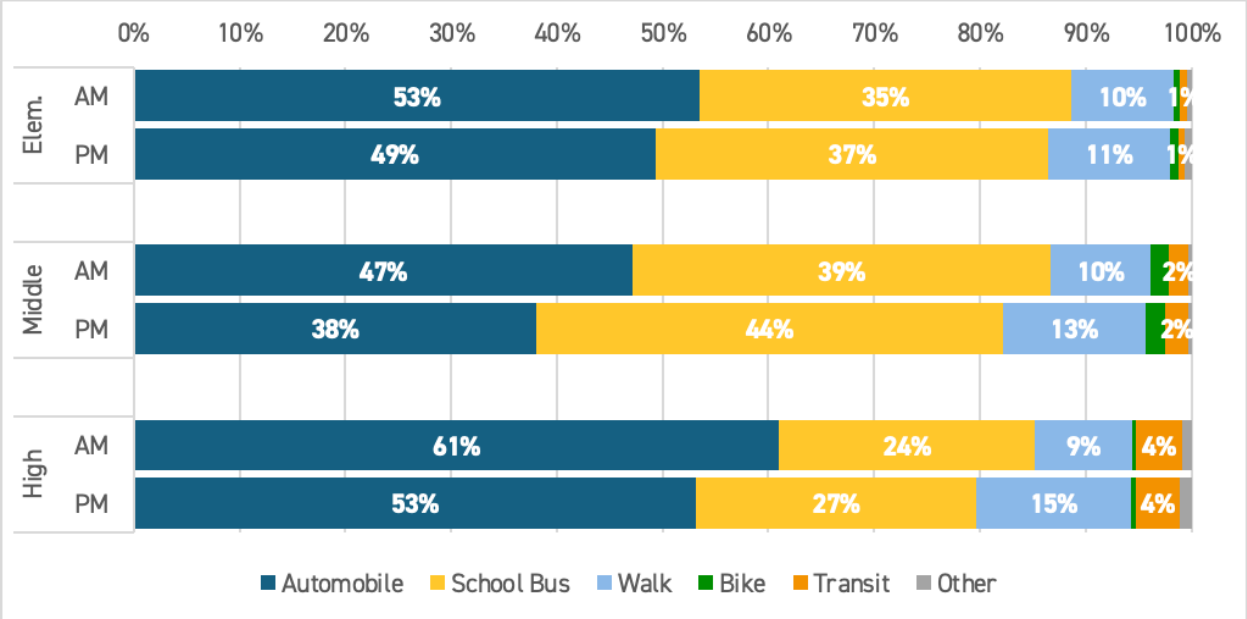


Figure 16: Travel Mode Share by Household Structure, School Trips 2016–2017, California

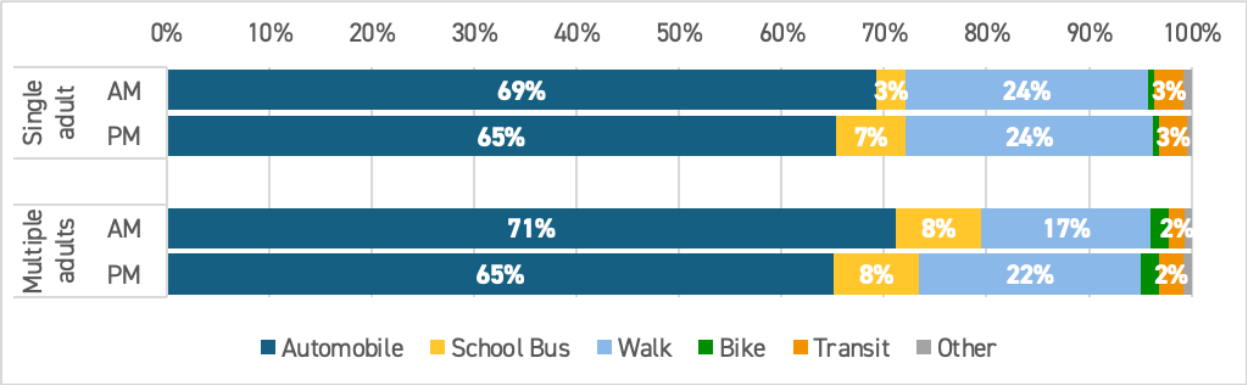
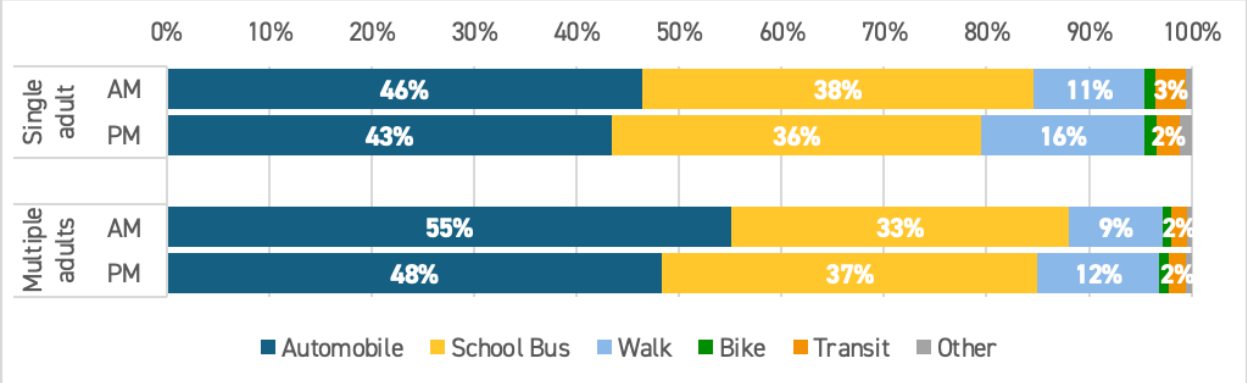


Figure 17: Travel Mode Share by Household Structure, School Trips 2016–2017, U.S.



Observed Travel Behaviors: California Students & Schools

The detailed nature of our California data allows us to match students to the school they attend, which enables a host of other analyses that are not possible with the less-detailed national data. These include school choice program enrollment, the built environment around the school site, and the relative time of school start and dismissal. The mode choice differences are shown in figures 18 through 20, and the trip characteristics are shown in Table 29.

Table 29: Distance and Duration for School Trips 2016–2017, California

	Mean Distance (mi.)	% Students w/in 1 mi.	Mean AM Duration (min.)	Mean PM Duration (min.)
School Choice Program Enrollment				
Neighborhood Public	1.7	44.4%	12.4	17.9
Choice Public	4.3	15.5%	18.3	25.0
Private	7.4	5.9%	24.1	31.0
School Built Environment				
City	3.2	32.7%	16.6	22.9
Suburb	2.7	31.3%	14.1	20.8
Town	2.7	37.7%	14.2	18.6
Rural	4.5	9.3%	20.0	18.8
Relative Time of School Start & Dismissal				
Earlier	3.1	29.0%	14.0	26.7
Middle	3.3	30.9%	16.1	20.1
Later	2.9	32.2%	16.3	19.9

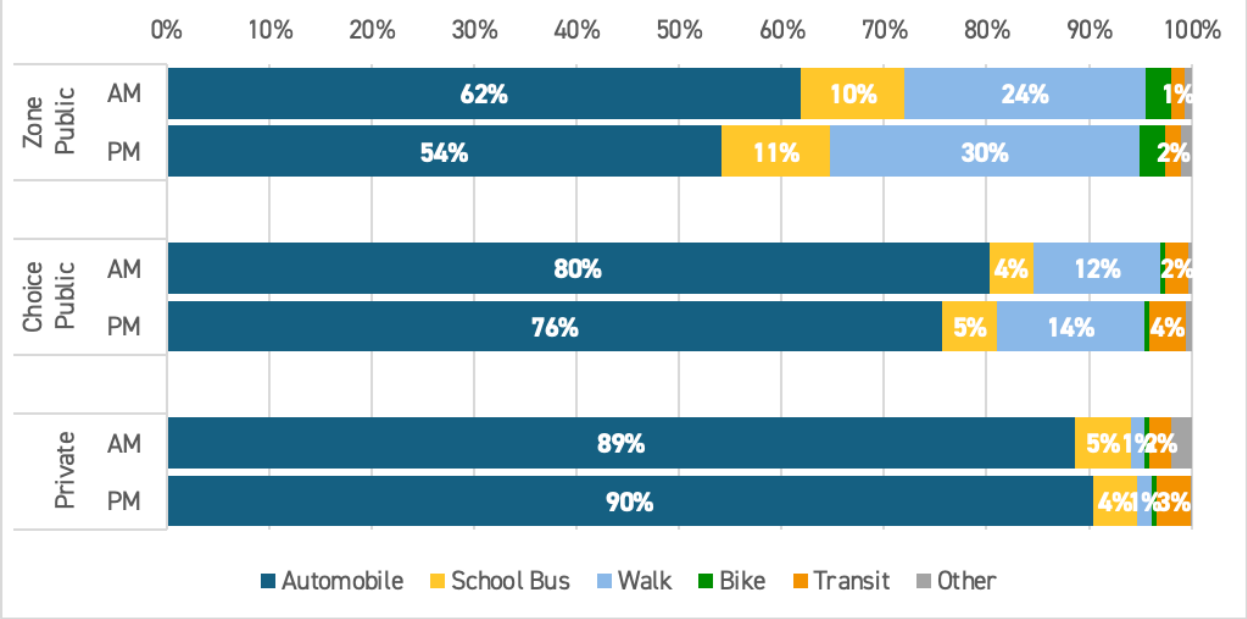
School Choice Programs

Although a key part of the school choice process is transportation, this is a relatively underexplored aspect of school transportation. Our data allow us to draw conclusions about this because we know both the school the student attended and the school to which they were likely assigned by their district. Figure 18 displays the differences between students attending the neighborhood public school, a public choice school (like magnet and charter schools and intra-distrct choice offerings), or a private school.

The share of students who attend neighborhood public schools in California walk and use the school bus at rates just over double those of students in public school choice programs . In turn, students in those choice programs were substantially more likely to arrive at school in a private automobile, and slightly more likely to arrive by public transit. There is logic in this pattern, as we mentioned earlier when discussing transportation policies for choice school students: many students travel from many different neighborhoods to attend choice schools, so school buses and walking are functionally less ideal. Private school students overwhelmingly travel by automobile.

Student trip characteristics (shown earlier in Table 29) are significantly different for all three school type categories. Students attending their neighborhood public school have the shortest trips by distance and duration. Students attending public choice schools have significantly longer trips in comparison, but private school students have trips that are longer still. Less than 6 percent of private school students live within a mile of school, and the average is over 7 miles.

Figure 18: Travel Mode Share by Type of School Choice Program (if any) Student Attends, School Trips 2016–2017, California



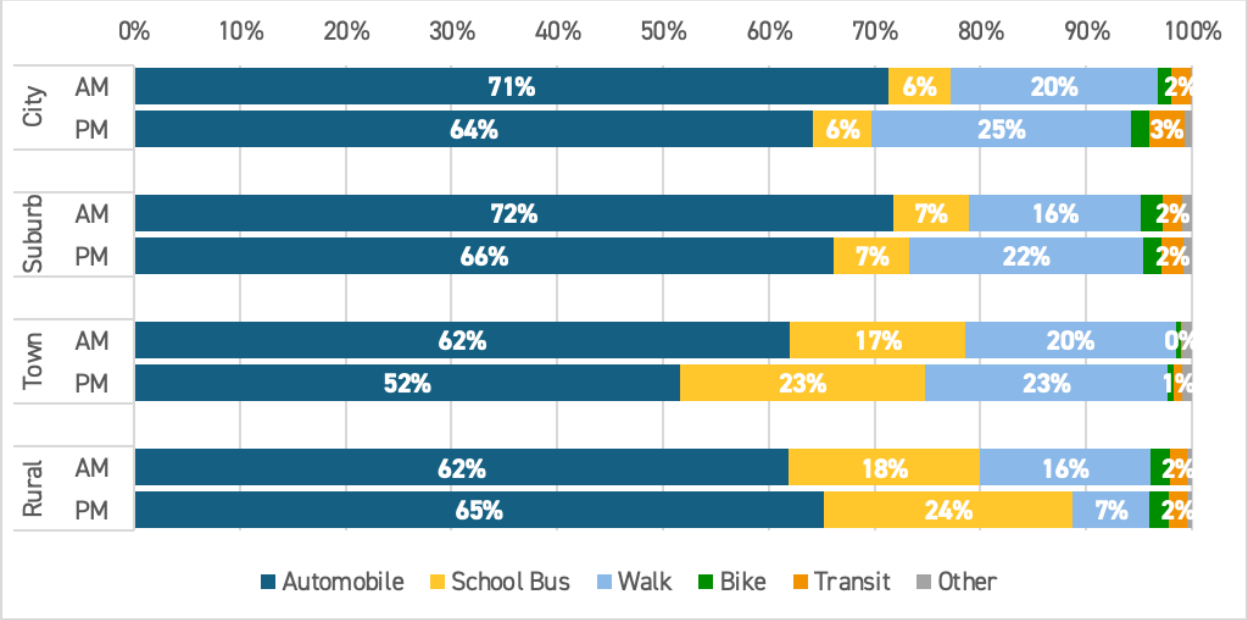
School Built Environment

School level and choice program type following logical patterns for school travel mode choice and trip characteristics; the built environment of the school does not. As Figure 19 shows, the share of students who arrive at school in the morning by automobile or school bus remains constant across the four built environment types, with towns and rural areas relying more on the school bus than cities and

suburbs and, in turn, less on the school bus. Surprisingly, walking in the morning is roughly similar; this is especially surprising for rural students. Even the share of transit is relatively similar, with 2 percent each in the city, suburbs, and rural areas.

There are two big differences between these place types in trip characteristics (Table 29 earlier). First, logically, rural students live significantly further from school than all other types. Surprisingly, city school students tend to live further from school than suburban and small town students. Second, the relationships between trip durations invert; that is, rural students spend more time traveling to school in the morning, but city and suburban students spend more time traveling in the afternoon.

Figure 19: Travel Mode Share by the Built Environment of the School the Student Attends, School Trips 2016–2017, California



School Start and Dismissal Times

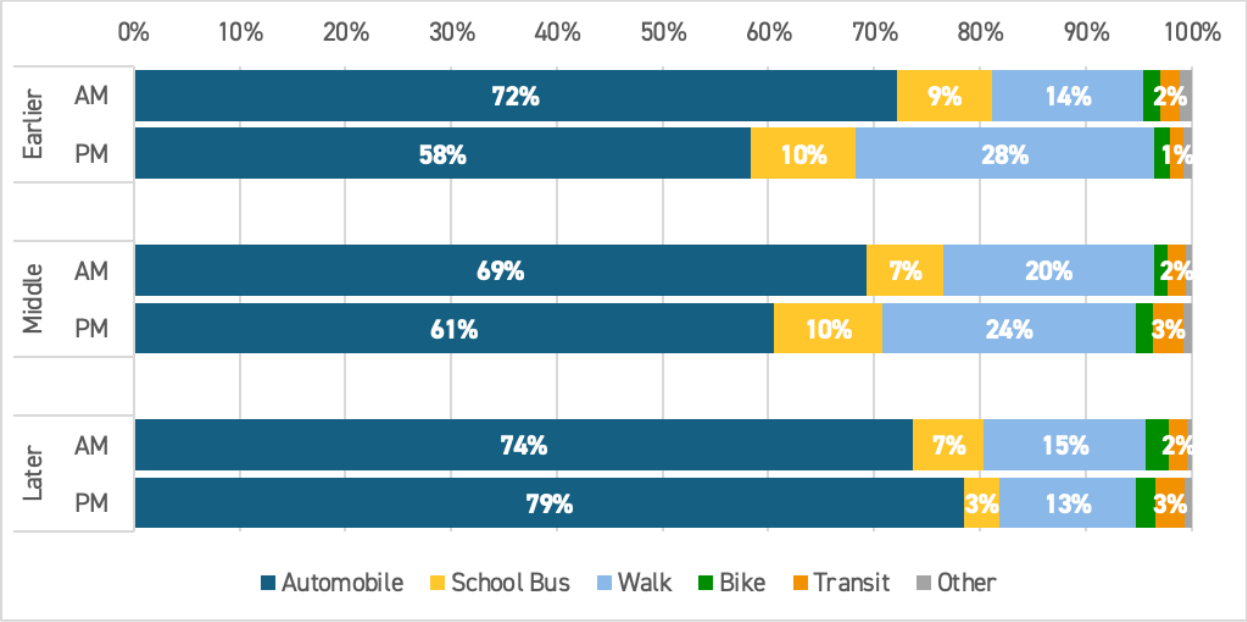
Another possibility is that schools with relatively earlier or later start times may see differences in mode choice or trip characteristics. This may be due to traffic congestion at different times, or it could be due to convenience in parental schedules and the relative ease of dropping children off or picking children up at school on the way to or from work. However, despite these hypotheses, there is little evidence to suggest such differences exist.

Students who attend schools with relatively earlier start times for their respective school levels were about as likely to arrive by automobile as later-start school students. The chief difference in mode choice is among students who have later dismissal times: those students are more likely to leave in a private automobile or slightly more likely to leave on public transit, and comparatively much less likely

to walk. This is likely owed to parents being able to chauffeur students home on their own ways home from work.

Trip characteristics also lack much meaningful difference. The only significant difference in means is between students who arrive earlier to school and leave earlier from school; early morning trips are significantly shorter than others, and — surprisingly — early-departing afternoon trips are significantly longer. This may be due to a higher share of students who have earlier departure times not going directly home but rather to some other activity.

Figure 20: Travel Mode Share by Relative Time of School Start (AM) and Dismissal (PM), School Trips 2016–2017, California



School Bus Service

School bus service is naturally more prevalent in districts where it is offered to students in the general education population and among students who are eligible to ride the school bus. (This is not a prerequisite for service. As we mentioned earlier in the report, all districts by federal law must provide transportation to students with disabilities, foster youth, and students experiencing homelessness. Some districts also provide transportation to otherwise-ineligible students by waiver request.)

Figure 21 shows the school trip mode share for morning and afternoon trips by the distance of the district's bus service eligibility threshold. In other words, the first dark blue bar represents the students who travel to school in an automobile and live in a district where students who live within 2 miles of school are offered a school bus. Logically, school bus service is concentrated in districts with some sort of bus offering, and public transit use is strongest in districts without any school bus service.

Fixed route school bus service districts have the highest share of ridership, suggesting that it may be more that the service is offered in some form compared with the guarantee of home-to-school transportation. Table 30 shows the distance and duration estimations for these categories. Students in districts with shorter home-to-school bus eligibility distance thresholds have significantly shorter trips by distance and duration than do students in other districts. This may suggest that districts have relative views on how far is *far* for their students to travel.

Naturally, students who are eligible for some sort of service directly — determined by their school trip exceeding their district's school bus eligibility threshold for their school level and school choice program type if applicable — have a much greater share of school bus use. Distance-based eligibility students also have a higher share of automobile use and almost zero walking, because they naturally live farther from their schools (Table 30). While public transit use is comparatively high in both directions for students excluded from school bus service, it is highest among school-bus-eligible students in the afternoon, speaking to transit's temporal flexibility in providing rides beyond just the initial wave of school buses at dismissal time.

Figure 21: Travel Mode Share by School Bus Offerings in the Student's School District, California Public School Students

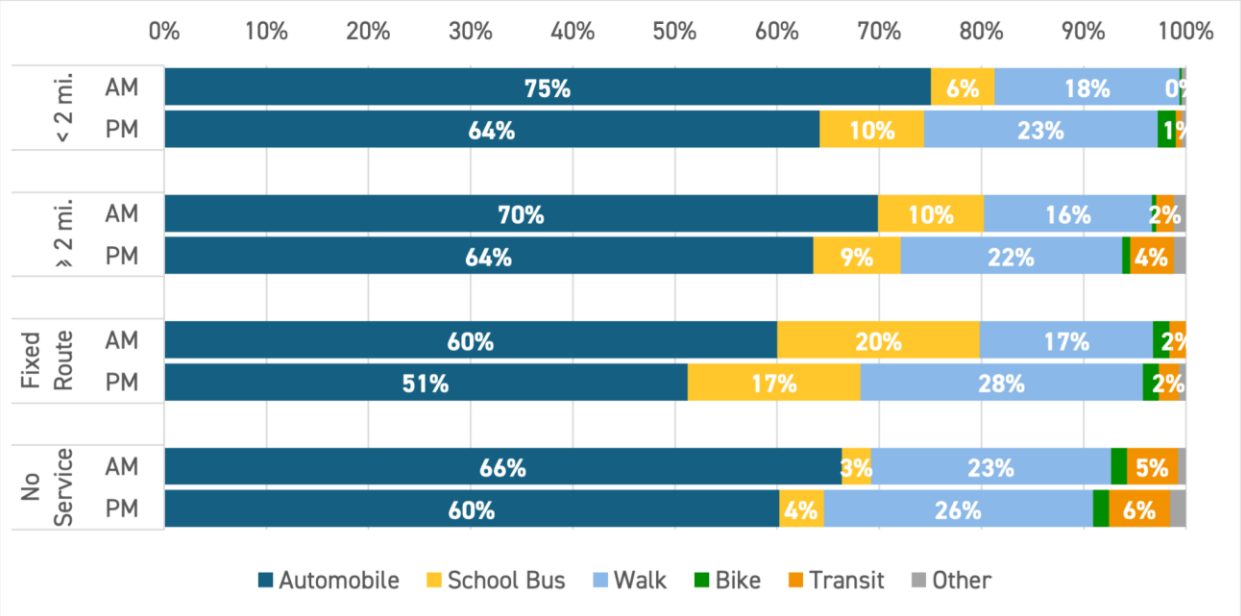


Figure 22: Travel Mode Share by School Bus Service Eligibility, California Public School Students

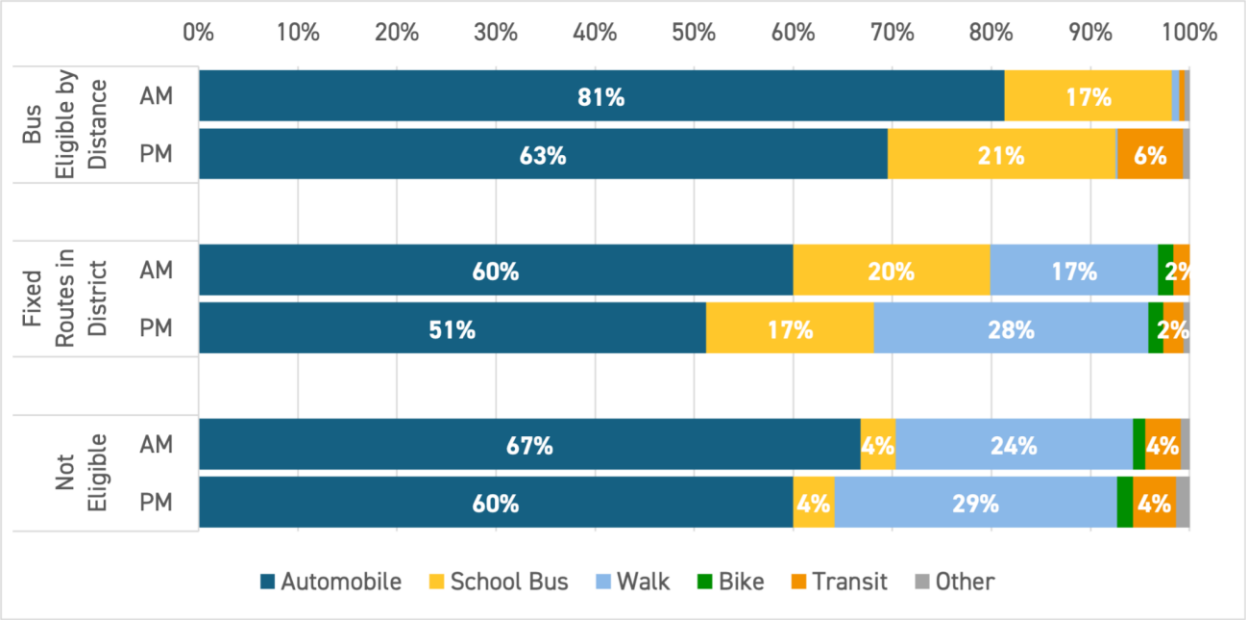


Table 30: Distance and Duration for School Trips 2016–2017, California Public School Students

	Mean Distance (mi.)	% Students w/in 1 mi.	Mean AM Duration (min.)	Mean PM Duration (min.)
School Bus Offerings in District				
Bus if < 2 mi. from School	1.6	46.8%	9.9	12.4
Bus if ≥ 2 mi. from School	2.8	29.8%	14.4	19.4
Fixed Routes in District	2.6	35.8%	15.1	17.1
No Service	2.4	35.7%	14.2	18.3
Student School Bus Eligibility				
Bus Eligible by Distance	4.4	2.5%	17.3	22.8
Fixed Routes in District	2.6	35.8%	15.1	17.1
Not Eligible	2.0	42.0%	12.8	16.6
Transit Pass Type Available in District				
Free	2.4	35.6%	14.2	15.9
Discounted	2.7	37.8%	11.8	18.1

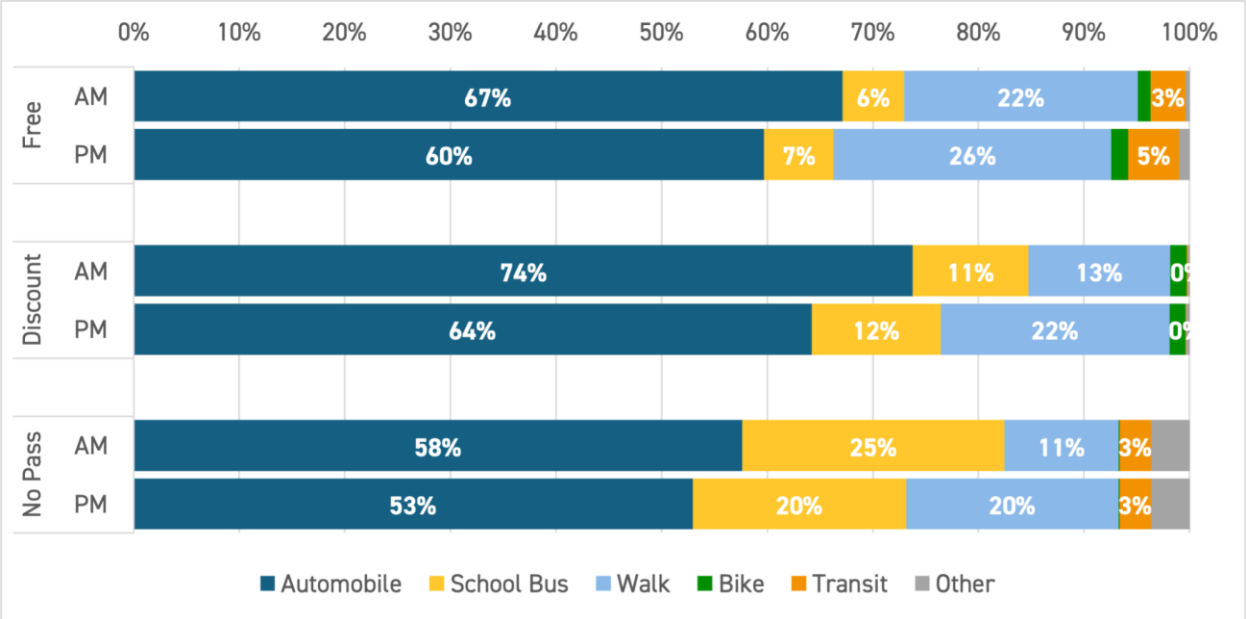
No Pass Available	1.7	38.9%	12.7	14.0

Transit Pass Availability

While the lion's share of school bus use logically happens among students who are eligible under their school district's relevant transportation policies, the same association does not appear to exist between public transit passes and use. Of course, transit is still *available* to students without a subsidy, so the logical connection is weaker, but Figure 23 shows that on morning trips, the same share of students who live in districts with free public transit (3%) ride transit to school as those living in districts without any transit pass. The bigger difference in districts without a transit pass is that school bus use is much higher, suggesting that districts without transit passes recognize the need to fulfill the transportation obligation in-house.

Students living in districts without a transit pass also tend to live significantly closer to school than those in districts with pass options, as shown in Table 30. (This may be in part due to elementary-only districts being less likely to offer transit passes to young students.) However, there are no significant differences in trip durations between districts in the three transit pass categories.

Figure 23: Travel Mode Share by Transit Pass Availability in the Student's School District, School Trips 2016–2017, California



Simulated Travel Behaviors

As our findings above have made clear, the school bus is a lesser player in California but nevertheless an important one, especially for some demographics and other categories of students. But education budgets are often squeezed, and districts may look to public transit as an option for replacing

traditional bus service. But should they? What would happen to school bus riders if their districts eliminated their school bus offerings? We turned to trip simulations using Google Directions to estimate these differences.

In short, students losing school bus service would be tremendously costly in terms of their time if their parents were unable instead to drive them or they were unable to drive themselves. Figure 24 shows how that change would unfold across the four alternative modes — driving, walking, biking, and public transit — across the three different school levels. Due in part to distance increasing with age, so too would the time penalty with losing the school bus. Using public transit would cost high school students in California an additional 38 minutes each way. In fact, the bicycle would be substantially more efficient for these students than transit — by nearly a half hour. The differences are similar across school types, as public choice students travel longer distances and thus face a larger time penalty for non-automobile school bus alternatives than do neighborhood school students. (As shown earlier in Figure 18, private school students are unlikely to do anything but drive.)

In all, this suggests that public transit is *not* an alternative for the school bus. Rather, earlier findings suggest that there may be a role for it in more unusual trips.

Figure 24: Median Change in Trip Duration (min.) if All School Bus Riders Chose an Alternative Mode, by School Level (Age)

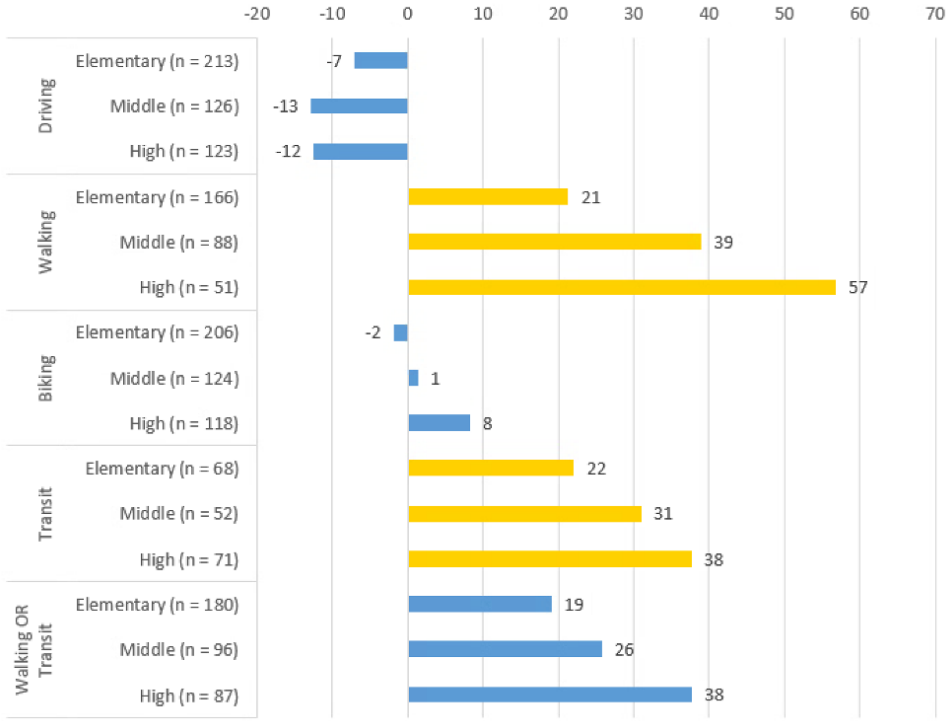
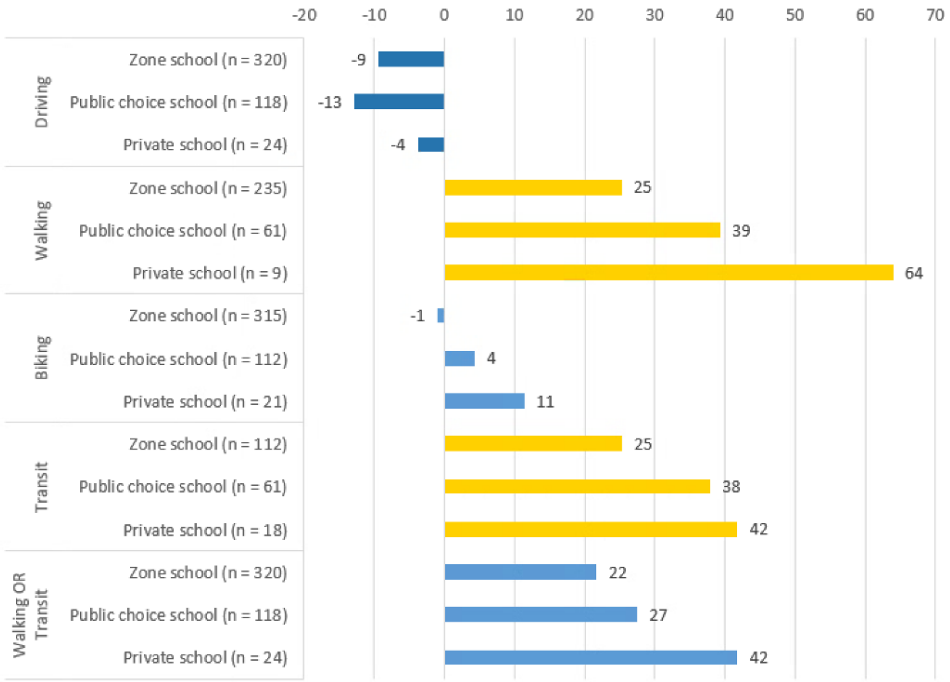
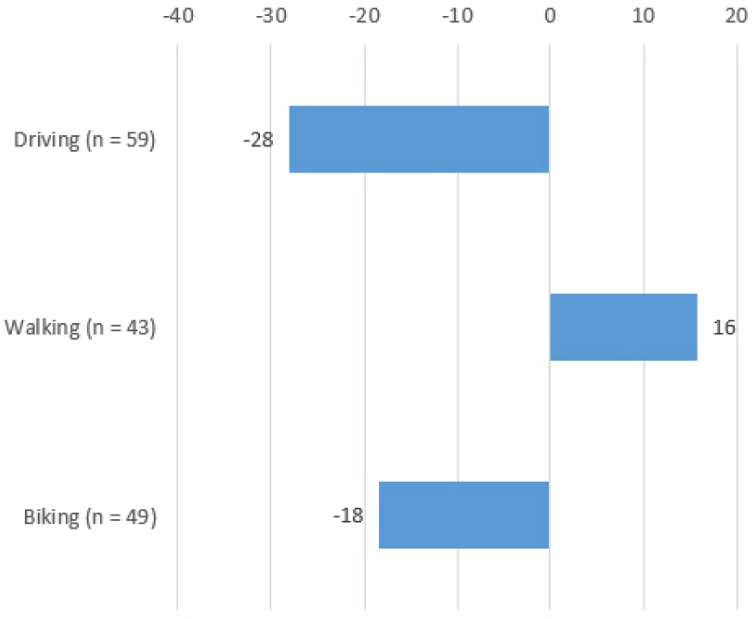


Figure 25: Median Change in Trip Duration (min.) if All School Bus Riders Chose an Alternative Mode, by School Attendance Type



For those who are left to use public transit, how does this mode choice compare with other modes? There are not many students to test this question on, but for those who did use transit to travel to/from school, they would save nearly a half hour if they could get a ride in a private automobile. While this may be impractical or infeasible for their families, school districts might consider ways of providing these rides for vulnerable or struggling students. For transit users without automobility, walking would impose a 16-minute penalty each way, which may not seem steep on its face — but remember that transit is already the longest-duration mode, by far. In fact, the best non-automobile option for transit users would be the bicycle, which could shave off 18 minutes of their transit commute. However, we acknowledge that bicycle infrastructure is severely lacking in many parts of California, and that some transit users may lack the means of purchasing a bicycle and/or the physical abilities to ride one. This again presents an opportunity for district administrators to intervene and assist students in acquiring a bicycle.

Figure 26: Median Change in Trip Duration (min.) if All Transit Riders Chose an Alternative Mode (Excludes School Bus)



6. Conclusion

As California enters its new era of school transportation policy, it is important to take stock of how the landscape stands upon the conclusion of the previous era. This report has sought to do that by collecting data on school district school bus transportation offerings and student transit pass programs, which we have synthesized with school data and travel survey data to uncover a variety of analyses that examine district policies, student eligibility, student mode choice, and student trip characteristics. We also simulated trips had they occurred on alternative modes. This was all in search of answering a central question: Is public transit a potential substitute for school bus service? Our answer is a resounding no, but with a caveat that there are some clear situations where transit can play a role. We offer five conclusions that synthesize this finding.

First, California may be the Golden State, but it lacks the same presence of golden yellow school buses that the rest of the United States has. While 70 percent of school districts in California provided some sort of school bus service to some portion of their students, we found that only 31 percent of California public school students were actually eligible for the school bus. That figure falls short of even the usage share of the rest of the country, with untold numbers of students in the other 49 states and D.C. having eschewed the option of riding the school bus. This in turn leads to Californians driving and walking more to school — and while transportation planners might view the latter as normatively good, more vehicles on the road during peak hours and around crowded school zones is hardly an ideal.

Second, building on the topic of eligibility, we found that the grass is school bus yellow where districts water it — that is, students used the school bus when it was given to them. California public school students who were eligible for a school bus had between four and five times a higher school bus ridership share than those who were ineligible (which largely consists of students in protected federal groups and those who request waivers). Those who were ineligible for the bus appeared to do a great deal of substituting that travel for walking; however, it is important for future research to investigate potential socio-demographic inequities in that walking.

To that end, third, race appeared to play a divergent role in school bus service offerings and usage. Districts with higher percentages of students of color were *less* likely to offer school bus service to their students. In conflict with that, Black and Latino/a students in California were *more* likely to use the school bus. (Nationally, Black students are also more frequent school bus riders.) This suggests a potential disconnect between services offered and services used for key minority groups.

Fourth, although school choice programs served nearly a third of students in our sample, providing transportation to these students seems like a secondary priority for many districts. Only 50 percent of districts provided school bus service for choice programs. And of the students in our sample who attended choice schools, only 23 percent were eligible for school bus service — which includes behemoth districts Los Angeles and San Diego. However, these are the very students who may need transportation most: choice school students travel significantly farther than neighborhood public school students by both distance and duration. Transit provides little substitute here; choice students rely on it even less.

And fifth, transit does not appear to be an adequate substitute for school bus service. In addition to the findings from the literature both qualitative and quantitative, transit is a poor time cost performer and would cost the median student who presently rides the school bus upward of 90 minutes per day to switch. School buses are roving school houses designed by school districts and purpose-specific providers to serve this very specific purpose; public transit, on the other hand, aims appropriately to serve a broad base and thus often serves students poorly or inadequately. However, our findings highlighted a few potential roles for public transit for students, especially for older students and for students who might rely on the school bus for morning travel but need more flexible travel in the afternoon, either temporally or spatially.

Finally, we encourage state and local education and transportation policymakers to consider the following policy recommendations as we transition into an era of greater state financial investment in school transportation but without much statutory guidance on eligibility.

1. California should require its districts to provide school bus transportation based on students' distance from home to school. Such a change in policy could be phased in over time as the current younger cohorts age up, or across different schools and districts as units. While California districts are free to provide transportation without guidance or requirements, only 31 percent of students statewide found themselves eligible for a school bus under the old program; we know for certain that the share in the country as a whole is higher (if not much higher) than this.

2. School districts that choose to implement choice programs — especially as interventions toward ameliorating educational inequality — must consider transportation as a core part of the program to ensure access is available for all students.

3. School districts should view subsidized transit pass programs for students as a compliment, not a substitute, to school bus service. Transit passes help students fulfill needs for infrequent trips that require spatial and/or temporal flexibility — like trips home from band practice or trips to a friend's house. Except in circumstances where schools can verify that the typically large time cost does not apply to their students, transit should not be used as general school transportation.

This report is not without limitations. Several are covered in our methods section. But broadly, we acknowledge that the collection of district-level data and our application of it to individual students is hardly perfect. Without district student-level data, we cannot confirm with certainty a student's enrollment in a choice program, nor can we confirm their eligibility for school bus service. District means of determining and measuring both these key constructs vary. We also recognize our collection efforts are not immune to human error, both on the side of our data collectors and on the side of district and transit agency information purveyors; to the best of our abilities, we sought to access all the publicly-available information we could as if we were seeking transportation options for students of our own. And finally, our estimates are limited in sample size in some categories. Despite these limitations, we believe that this data assembly is among the finest-grain available from the combined viewpoint of district policies and observed travel behaviors.

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Data Management Plan

Products of Research

This project relied principally on two datasets: (1) an original data collection that systematically gathers information about the school transportation offerings (school bus and public transit) across a 119-district sample of school districts in California; and (2) the National Household Travel Survey's 2017 California Add-on. The collected data are available in a public repository. The travel survey data and associated companion datasets are not publicly available.

Data Format and Content

School district school bus and transit pass data for the sample of 119 school districts are available as a published Google Sheet in the repository, which can be downloaded as an Excel spreadsheet file or a CSV. These are also available as GIS shapefiles.

Data Access and Sharing

The general public can access the publicly-shareable data for this project in this data repository.
The public-use version of the National Household Travel Survey are available from the Federal Highway Administration for national data (here) and the National Renewable Energy Laboratory (here) for the California Add-on. Our data are the confidential spatial data, housed in NREL's Transportation Secure Data Center and available only upon approval from NREL.

Reuse and Redistribution

We encourage public use of the school district school bus and transit pass data, with attribution to the authors, this report, and to the UCLA Institute of Transportation Studies. Suggested citation for the dataset:

> Speroni, S., M. Reginald, S. Derrick, and E. Blumenberg. (2024) *School Transportation Offerings from a 119-District Sample in California* (UCLA Institute of Transportation Studies) [Dataset].

Appendix

Appendix A: List of School-Provided Transportation

Available for download here:

https://docs.google.com/spreadsheets/d/e/2PACX-1vT--MTrs4moy1G0tqCYtNXwsWcmkbj2_5uep6yJ21ULx8beOw9nG9uZTumSaxq_AKrTQJqbetWugB1Y/pubhtml

Appendix B: List of Student Transit Pass Program Information

Available for download here:

https://docs.google.com/spreadsheets/d/e/2PACX-1vT--MTrs4moy1G0tqCYtNXwsWcmkbj2_5uep6yJ21ULx8beOw9nG9uZTumSaxq_AKrTQJqbetWugB1Y/pubhtml

Appendix C: Data Collection Examples from School District Websites

Figure C1: School Bus Program Website Example (Abundant Information)

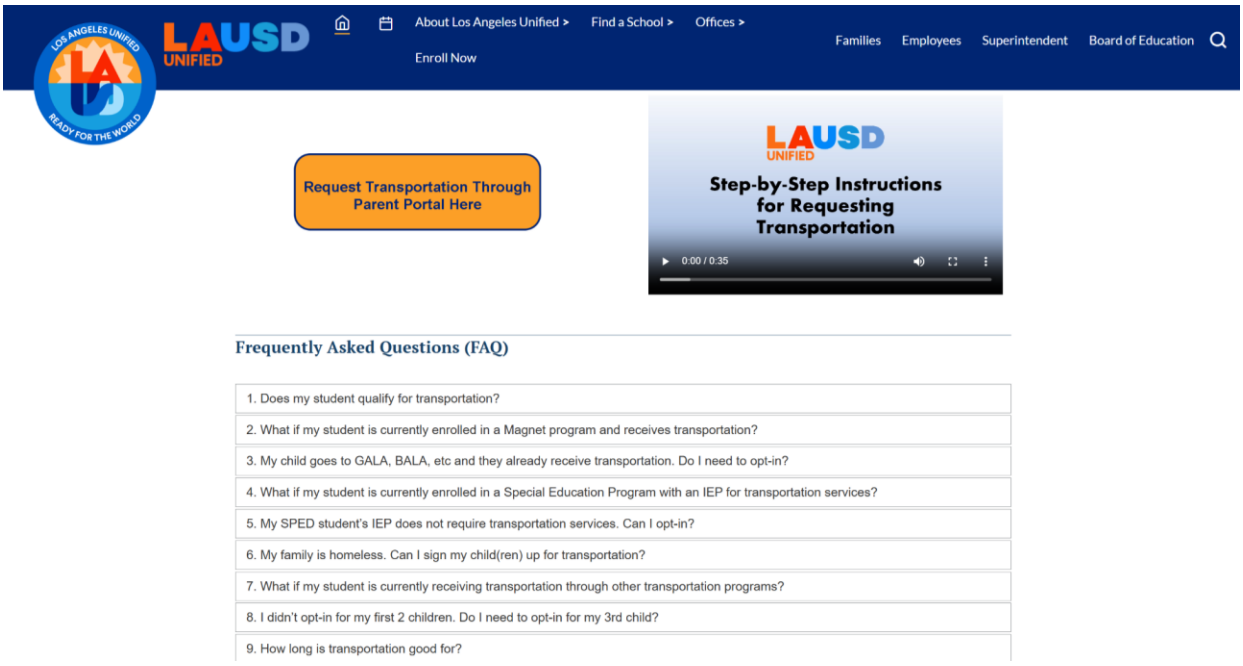


Figure C2: School Bus Program Website Example (Medium Information)

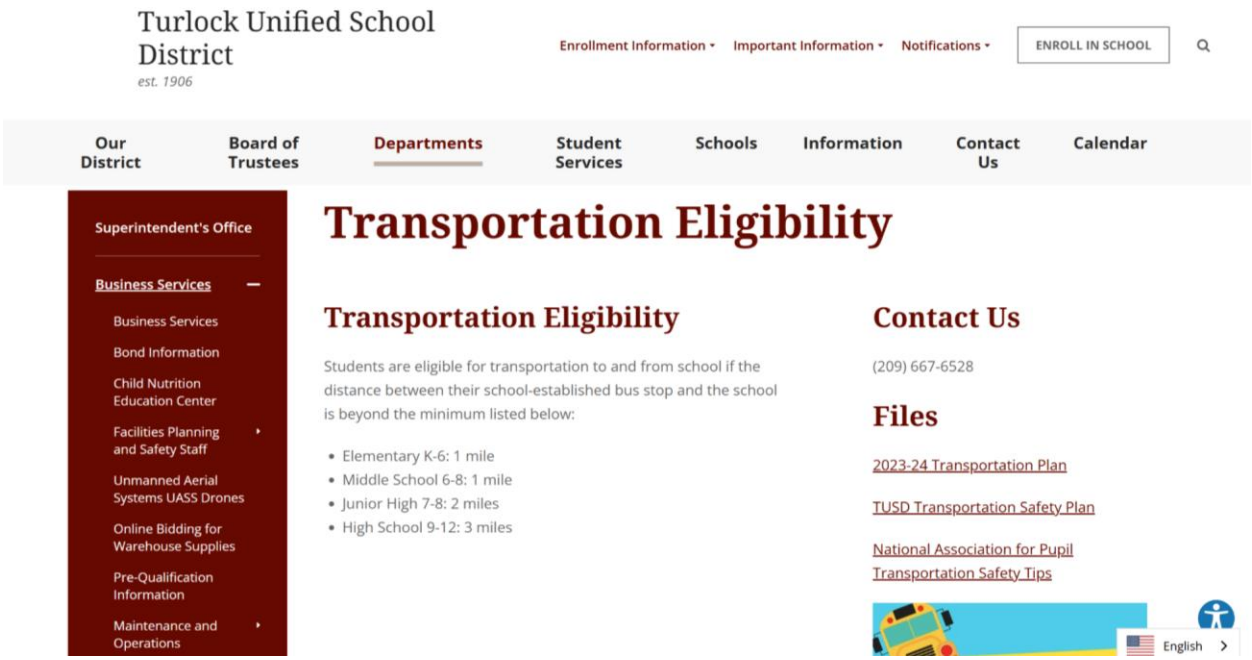


Figure C3: School Bus Program Website Example (Little/No Information)

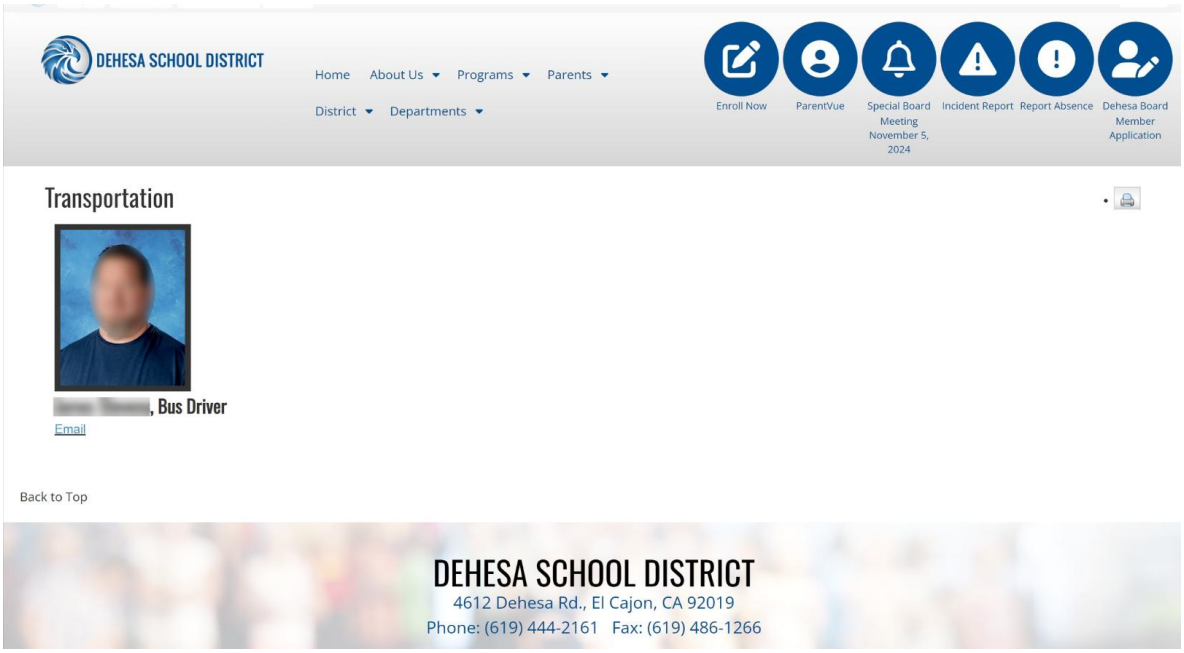


Figure C4: Transit Program Website Example (Abundant Information)

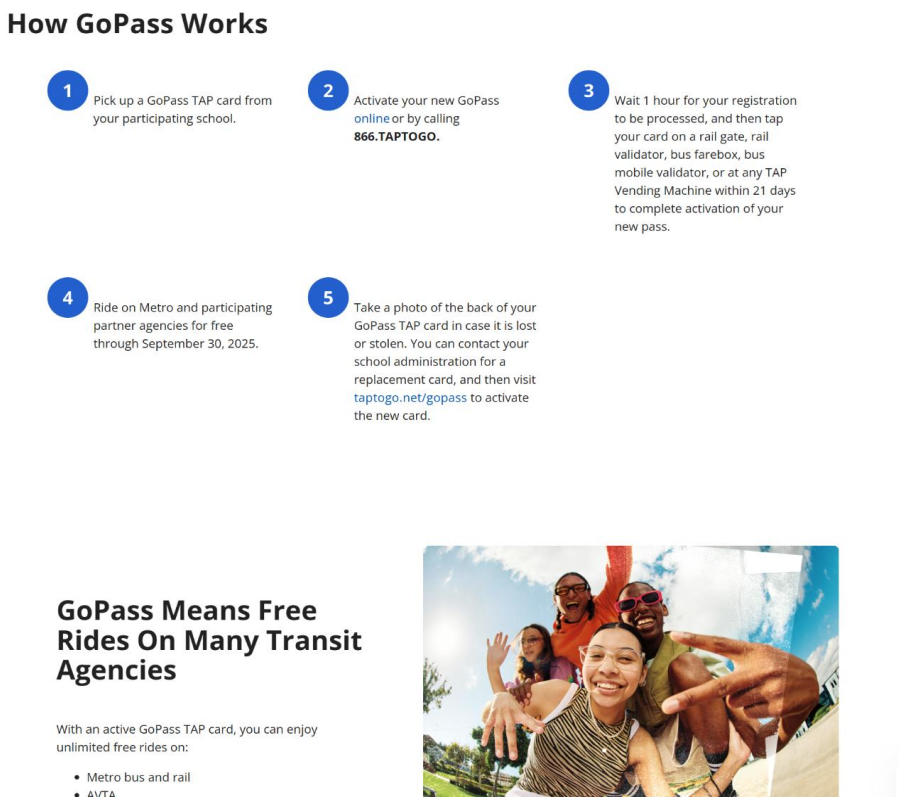


Figure C5: Transit Program Website Example (Medium Information)

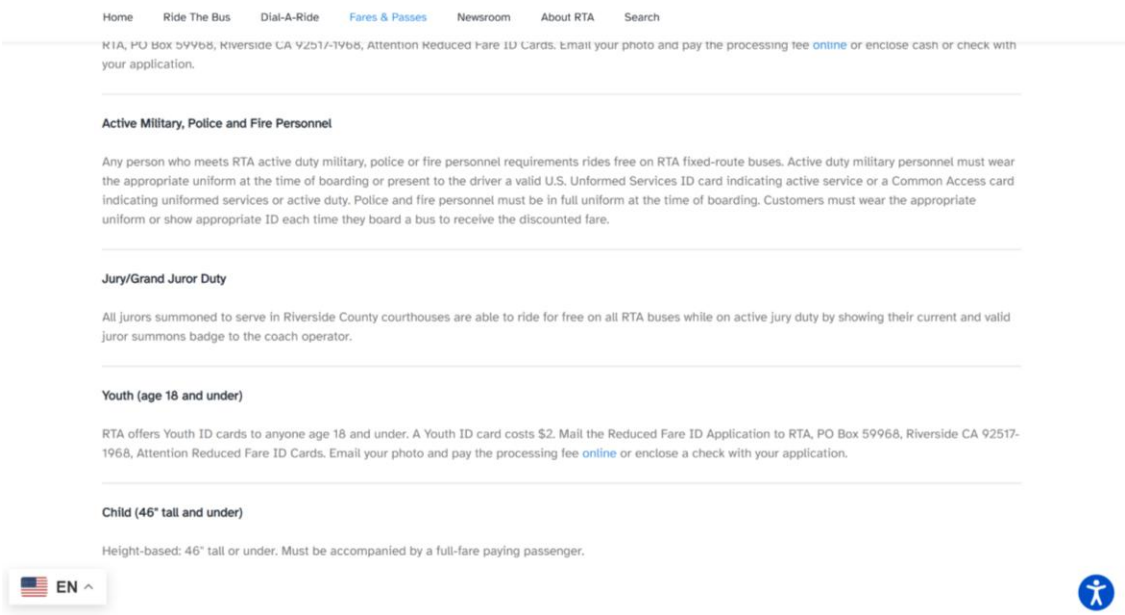
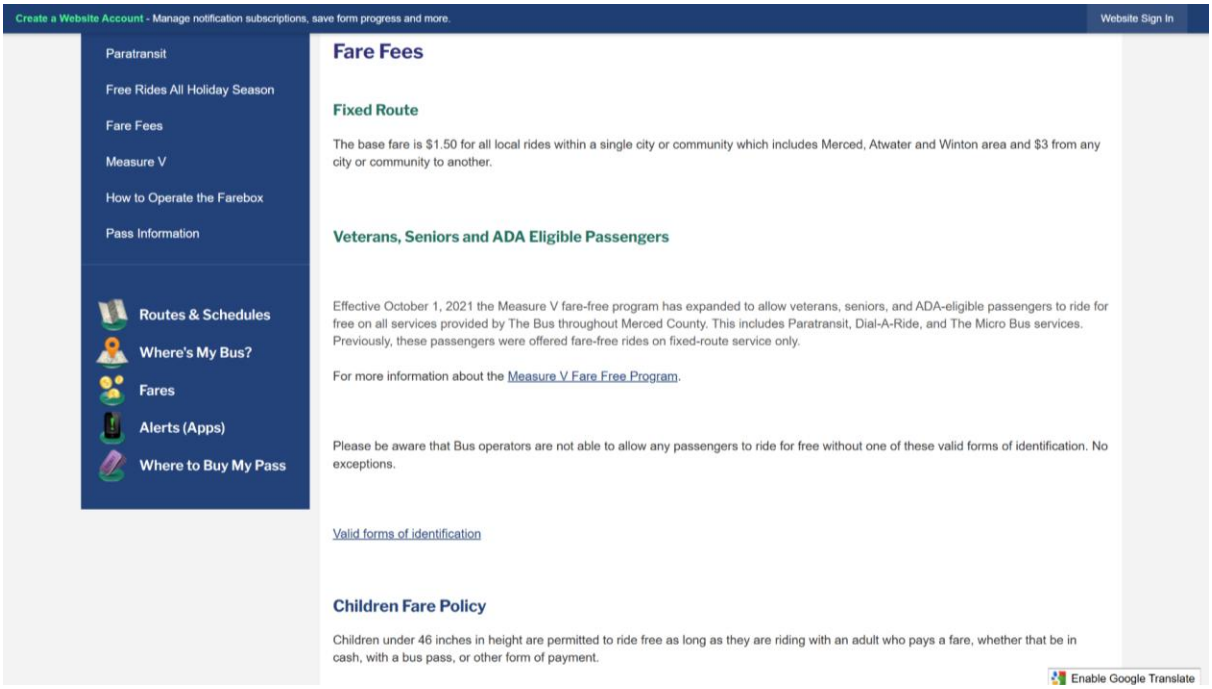


Figure C6: Transit Program Website Example (Little/No Information)



Our sample selection strategy included the ten census regions for California. Because this divides the sample districts into very small categories, we do not include district regions in the analysis in the main body of the report. Tables C1 through C3 display these data. However, we caution the use of these data because of the small sample size in each region; these tables are for illustrative purposes only.

Table C1: School Bus Services for Traditional Public Elementary School Students by Region

Elementary										
	Central Coast	Inland Empire	Los Angeles	North Coast	Northern San Joaquin Valley	Orange County	San Diego / Imperial Valley	San Francisco Bay Area	Southern San Joaquin Valley	Superior California
0–0.5 mi.	0 0.0%	0 0.0%	1 11.1%	0 0.0%	0 0.0%	0 0.0%	1 11.1%	0 0.0%	0 0.0%	1 5.0%
0.6–1.0 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 15.4%	0 0.0%
1.1-1.9 mi.	1 9.1%	5 45.5%	0 0.0%	0 0.0%	4 44.4%	3 50.0%	4 44.4%	3 18.8%	1 7.7%	5 25.0%
2.0–2.9 mi.	1 9.1%	2 18.2%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 11.1%	0 0.0%	0 0.0%	1 5.0%

3.0–10.0 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Shuttle-style	7 63.6%	4 36.4%	3 33.3%	6 100.0 %	5 55.6%	2 33.3%	1 11.1%	4 25.0%	5 38.5%	8 40.0%
No service	2 18.2%	0 0.0%	5 55.6%	0 0.0%	0 0.0%	1 16.7%	2 22.2%	9 56.3%	5 38.5%	5 25.0%
Total	11	11	9	6	9	6	9	16	13	20

Table C2: School Bus Services for Traditional Public Middle School Students by Region

	Middle									
	Central Coast	**Inland Empire**	**Los Angeles**	**North Coast**	**Northern San Joaquin Valley**	**Orange County**	**San Diego / Imperial Valley**	**San Francisco Bay Area**	**Southern San Joaquin Valley**	**Superior California**
0–0.5 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 11.1%	0 0.0%	0 0.0%	0 0.0%
0.6–1.0 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	0 0.0%	1 9.1%	0 0.0%	0 0.0%	2 22.2%	1 16.7%	2 22.2%	2 13.3%	2 16.7%	4 20.0%
2.0–2.9 mi.	2 22.2%	3 27.3%	0 0.0%	0 0.0%	2 22.2%	2 33.3%	4 44.4%	0 0.0%	1 8.3%	3 15.0%
3.0–10.0 mi.	0 0.0%	3 27.3%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Shuttle-style	5 55.6%	3 27.3%	2 25.0%	5 100.0%	5 55.6%	2 33.3%	1 11.1%	4 26.7%	4 33.3%	8 40.0%
No service	2 22.2%	1 9.1%	6 75.0%	0 0.0%	0 0.0%	1 16.7%	1 11.1%	9 60.0%	5 41.7%	5 25.0%
Total	9	11	8	5	9	6	9	15	12	20

Table C3: School Bus Services for Traditional Public Middle School Students by Region

	High									
	Central Coast	**Inland Empire**	**Los Angeles**	**North Coast**	**Northern San Joaquin Valley**	**Orange County**	**San Diego / Imperial Valley**	**San Francisco Bay Area**	**Southern San Joaquin Valley**	**Superior California**
0–0.5 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 12.5%	1 7.7%	0 0.0%	0 0.0%

0.6–1.0 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
1.1-1.9 mi.	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 12.5%	1 7.7%	0 0.0%	0 0.0%
2.0–2.9 mi.	0 0.0%	2 20.0%	0 0.0%	0 0.0%	2 33.3%	0 0.0%	2 25.0%	0 0.0%	3 33.3%	4 30.8%
3.0–10.0 mi.	1 16.7%	3 30.0%	0 0.0%	0 0.0%	2 33.3%	1 20.0%	2 25.0%	1 7.7%	0 0.0%	0 0.0%
Shuttle-style	3 50.0%	3 30.0%	1 14.3%	4 100.0%	2 33.3%	3 60.0%	1 12.5%	1 7.7%	4 44.4%	5 38.5%
No service	2 33.3%	2 20.0%	6 85.7%	0 0.0%	0 0.0%	1 20.0%	1 12.5%	9 69.2%	2 22.2%	4 30.8%
Total	6	10	7	4	6	5	8	13	9	13

Appendix D: Standard Errors for Trip Characteristics

To determine if differences between different groups of students and/or between California and the U.S. were statistically significant, we used standard errors derived from the weights included in the NHTS to construct 95-percent confidence intervals.

Table D1: Standard Errors for Distance and Duration for School Trips 2016–2017, California and U.S.
Corresponds to Table 27 and Table 28

	Distance (mi.)		AM Duration (min:sec)		PM Duration (min:sec)	
	California	*U.S.*	*California*	*U.S.*	*California*	*U.S.*
All	0.081	0.036	0.291	0.115	0.709	0.130
Household Income						
<$25k	0.183	0.090	0.737	0.355	3.325	0.397
$25–49k	0.157	0.095	0.739	0.315	0.907	0.338
$50–99k	0.193	0.065	0.463	0.202	1.688	0.238
$100–149k	0.146	0.073	0.461	0.216	0.733	0.253
$150–199k	0.236	0.111	1.594	0.309	0.698	0.388
≥$200k	0.271	0.151	0.710	0.321	1.486	0.349

Race/Ethnicity						
Asian	0.188	0.173	0.697	0.447	0.753	0.518
Black	0.478	0.131	1.576	0.422	1.946	0.495
Latino/a	0.151	0.081	0.654	0.291	1.551	0.375
White	0.106	0.044	0.340	0.136	0.472	0.147
Other	0.356	0.193	0.726	0.595	3.715	0.712
School Level						
Elementary	0.102	0.047	0.286	0.148	1.043	0.175
Middle	0.157	0.070	0.612	0.236	1.948	0.264
High	0.178	0.083	0.743	0.258	0.792	0.283
Household Structure						
1 Adult	0.191	0.105	0.681	0.341	0.933	0.381
2+ Adults	0.088	0.038	0.319	0.120	0.807	0.137

Table D2: Standard Errors for Distance and Duration for School Trips 2016–2017, California

Corresponds to Table 29

	Mean Distance (mi.)	Mean AM Duration (min.)	Mean PM Duration (min.)
School Choice Program Enrollment			
Neighborhood Public	0.051	0.269	0.775
Choice Public	0.152	0.458	1.520
Private	0.399	1.807	1.986
School Built Environment			
City	0.137	0.592	1.186
Suburb	0.108	0.320	1.196
Town	0.210	0.758	0.849
Rural	0.312	1.027	1.076
Relative Time of School Start & Dismissal			
Earlier	0.163	0.449	2.623

Middle	0.113	0.334	0.560
Later	0.161	0.953	0.740

Table D3: Standard Errors for Distance and Duration for School Trips 2016–2017, California Public School Students

Corresponds to Table 30

	Mean Distance (mi.)	Mean AM Duration (min.)	Mean PM Duration (min.)
School Choice Program Enrollment			
Bus if < 2 mi. from School	0.177	0.668	0.817
Bus if ≥ 2 mi. from School	0.203	0.716	0.985
Fixed Routes in District	0.199	0.769	0.912
No Service	0.151	0.498	0.752
School Built Environment			
Bus Eligible by Distance	0.308	1.013	1.243
Fixed Routes in District	0.199	0.769	0.912
Not Eligible	0.104	0.376	0.564
Relative Time of School Start & Dismissal			
Free	0.116	0.415	0.563
Discounted	0.191	0.621	0.911
No Pass Available	0.204	0.907	1.145