INTERVENTION TABLE 16

Safe Routes to School

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
United States						
Staunton, Hubsmith (2003) California	Promotion of the Safe Routes to School Program to increase walking and biking to school 1. Funding of traffic infrastructure changes 2. Supervised Walking School Buses and Bike Trains (groups of children walking or biking together to school) ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Traffic changes to promotes safety *Complex:* 1. Classroom education: safety training (videos, discussions, presentations), toolkit developed for schools (guidelines for teaching pedestrian and biking safety) 2. In-school activities: "Frequent Rider Miles Contest" awarded prizes for children receiving a certain amount of points on tally cards 3. Establishing and mapping safe routes: routes identified at town meeting; safety issues identified by volunteers walking routes, solutions designed 4. Organized walking activities: "Walk and Bike to School Days" (monthly, weekly, or yearly walking/biking to schools) with drinks/treats provided by schools; children living far from school could be dropped off at staging area to walk to school 5. Walking school bus and bike train programs	***DESIGN:*** Before and after study ***DURATION:*** From 2000- onward (the program was currently in 3rd year at time of publication) ***SAMPLE SIZE:*** Students from 15 elementary and middle schools in Marin County, CA *Fall 2000:* n=1743 students from 6 schools *Spring 2001:* n=1756 students from 6 schools *Fall 2001:* n=2097 students from 7 schools *Spring 2002:* n=1611 students from 7 schools ***PRIMARY OUTCOME:*** Walking behavior to school ***MEASURES:*** 1. Student surveys (students' mode of transportation to school) ***DATA COLLECTION:*** Student surveys were administered for 3 consecutive days—in the fall, prior to the start of the program, and in the spring, prior to the end of school. Results from the 3 days were averaged. Student responded to questions by a show of hands. ***LIMITATIONS:*** Surveying relied on inexperienced volunteers; results were often incomplete; some schools did not conduct surveys and others did not survey all classrooms; 6 of 9 schools participated in the fall 2000 and spring 2001 surveys; 7 of 15 schools participated in the fall 2001 and spring 2002 surveys; of 3 private schools, data collected in only 2 schools and only during the 2nd year of the program	5-13 year olds Marin County: middle/upper class community north of San Francisco, CA with 35,000 school-aged children Efforts to create safe routes to school for children can facilitate safe walking and biking for people of all ages (potential impact) ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** During the 2000-01 school year, the program served about 3500 students in 9 schools (7 public, 2 private); by the 2001-02 school year, 4665 students in 15 schools (12 public, 3 private) were enrolled; in the 2002-03 school year, 7609 students in 21 schools (17 public, 4 private) were participating (schools include both elementary and middle).	***LEAD AGENCY:*** Community members and organizations ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ADAPTATION:*** Not reported ***ADOPTION:*** In 1999, two local residents began working to increase the number of Marin County children walking and biking to school and to decrease the number of school trips made by private vehicle. By 2000, the Marin County Safe Routes to School Program was established. ***IMPLEMENTATION:*** The program was implemented by 4 paid staff including the 2 founding members, one of whom is the program director and the other assists in supervising and promoting the program. A full-time educator developed the program's school curriculum and supervised classroom education. A traffic engineer assisted in identifying and creating safe routes. A private consulting firm evaluated the program. Parents, teachers, and community volunteers carried out a broad range of activities (e.g., "Walk to School Days," supervising "walking school buses" and "bike trains," distributing newsletters). The program distributed several promotion materials throughout the community for the Safe Routes to School Program (e.g., flyers, fact sheets, posters). Local newspapers featured articles about the program. The program sponsored an email listserv and website, and held an annual countywide forum. ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** 1. Staff (Program Director, part-time supervisor, educator, traffic engineer) 2. Parents, teachers, and community volunteers 3. Funds for traffic infrastructure changes and staff 4. Safety training materials 5. Maps 6. Tally cards and prizes 7. Drinks and treats 8. Promotional materials (posters, flyers, newsletters, email listservs, website) ***FUNDING:*** Grants from the Marin Community Foundation, the National Highway Traffic Safety Administration, the City of San Rafael, and the California Departments of State Services and Transportation; and donations from local foundations and businesses. ***STRATEGIES:*** By spring 2002, more than $1 million in additional funding had been received from local foundations, local businesses, and grants. Funding for the 2002-03 school year is expected to exceed $2 million; much of this funding is earmarked for infrastructure changes to decrease traffic dangers to walking and biking.	***PHYSICAL ACTIVITY:*** 1. From fall 2000 to spring 2002, there was a 64% increase in the number of children walking, a 114% increase in the number of students biking, a 91% increase in the number of students carpooling, and a 39% decrease in the number of children arriving by private car carrying only one student in the participating public schools. 2. Restricting analysis to 2 private schools (enrollment from both schools=401 students), which draw students from a wider geographic area, led to much more modest results (1% increase in walking, 5% increase in carpooling).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Boarnet, Anderson (2005); Boarnet, Day (2005) California	California Safe Routes to School (SRTS) Program to increase traffic safety to promote active commuting to school **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Construction of traffic calming devices 2. Addition of sidewalks 3. Addition of bike lanes *Complex:* Not reported	**DESIGN:** Before and after study **DURATION:** From 2001 onward; evaluation analyzes projects constructed between Spring 2002 and Fall 2003 **SAMPLE SIZE:** 862 parents of children from 10 elementary schools **PRIMARY OUTCOME:** Walking and biking to school behavior **MEASURES:** 1. Parental survey (child's method of travel to and from school, parent's walking and bicycling in the neighborhood, perception of driving behavior around school, perceptions of safety and crime near school, attitudes towards walking and bicycling to school, estimated distance from schools, length of residence within their neighborhoods, whether or not child passed the improvement project on usual route to school, parent awareness of the improvement project, demographics); the second parental survey included all listed measures and added one more (parent's opinion of the effectiveness of the improvement project) 2. Observations (traffic patterns at each school; number of adult and child pedestrians and bicyclists at site of proposed traffic improvement projects; yielding behavior of drivers, pedestrians, and bicyclists; behaviors and perceptions linked to pedestrian safety [e.g., vehicle speeds]) 3. Audit instrument (urban design within 0.25-mi of the school [e.g., length of blocks, amount of graffiti]) **DATA COLLECTION:** Observers collected data during 2-day periods before and after construction of the improvement projects at each site from 30 minutes before to 15 minutes after the beginning of the school day, and from 15 minutes before to 30 minutes after the end of the school day. Days when students had irregular class schedules and during the first or last week of the school session were avoided. Urban design was recorded through observations using an instrument developed as part of the evaluation. Teachers at schools linked to improvement projects sent surveys home with students in grades 3-5 for parents to complete and return within 1 week prior to construction. Parents were instructed to respond pertaining only to the child bringing home the survey. Surveys were printed in English and Spanish; all students received a ruler or pencil as an incentive. *(continued next page)*	5-13 year olds **ELIGIBILITY:** Not reported. Evaluation was excluded to elementary schools funded during rounds 1 and 2 of Safe Routes to School funding as elementary schools comprised 70% of all project locations as of 2001. Schools selected had to ensure teachers were willing to distribute the parent survey to their students and then collect and return surveys to the research team. **EXPOSURE/ PARTICIPATION:** In fall 2003, the California Safe Routes to School program had approved funding for more than 270 projects. The first 2 rounds of funding was provided for improvements at 186 sites throughout the state.	**LEAD AGENCY:** The California legislature, the California Department of Transportation (Caltrans), and researchers from the University of California-Irvine and the University of Texas-Austin **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ADAPTATION:** The California SRTS program has been adapted in different states (e.g., Oregon, Washington, Texas). **ADOPTION:** In October 1999, California Assembly Bill 1475 created the first SRTS statewide construction program in the U.S., authorizing the set-aside of a third of the state's federal Surface Transportation Program safety funds over 2 years ($40 million). The California SRTS program was re-authorized by California Senate Bill 10 in 2001 for an additional 3 years and $75 million. By fall 2002, the program had completed 3 application cycles and approved funding for more than 270 projects. Each project is eligible for up to $450,000 in funding, requiring a 10% minimum local match. Over $66 million of federal funds had been used to support the program through fall 2003. **IMPLEMENTATION:** The SRTS projects constructed were classified into 3 types: sidewalk improvements (e.g., construction of new sidewalks, filling gaps in the sidewalk network, construction of a walking path, installation of curbs and curb cuts), crossing improvements (e.g., adding crosswalks, installing in-pavement crosswalk lighting, installing a pedestrian-activated, "count-down" street-crossing signal), and traffic control (e.g., installation of a traffic signal). Educators in the schools may have provided supplemental lessons in order to teach the importance of walking/ biking. **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** 1. Funding and materials for traffic improvements 2. Planners, engineers, construction workers, and other professionals to implement improvements **FUNDING:** California Senate, U.S. House and Senate, Evaluation funding from Caltrans with additional funds from the University of California Transportation Center through the federal and California state departments of Transportation **STRATEGIES:** As of March 2005, both the U.S. Senate and House versions of the 2004 federal transportation bill re-authorization included a national SRTS program, with the Senate version funded at $70 million/fiscal year and the House version funded at $150 million for the first fiscal year (with increases in subsequent years; U.S. House of Representatives, 2005).	**PHYSICAL ACTIVITY:** 1. More parents stated that their child walked or biked less (18.0%) than stated that their child walked or biked more (10.6%) following construction of the projects. 2. A significantly greater proportion of students passing improvement projects on their route to school walked/biked more after construction (15.4%) than children not passing a project on their route to school (4.3%, t=5.71, p<0.01). 3. At 4 of the 5 schools that received nearby sidewalk improvements, the proportion of children who passed improvement projects on their route to school walked/biked more after construction, this was significantly more than the proportion of children who walked/biked more but did not pass these improvements (Murrieta: 13.7% vs. 2.4%, n=93, t=2.12, p=0.04; Sheldon: 15.6% vs. 0%, n=57; t=2.43, p=0.02; Valley: 11.6% vs. 0%, n=89, t=3.01, p<0.01; West Randall: 28.6% vs. 7.4%, n=117, t=3.15, p<0.001). 4. Sidewalk projects led to a statistically significant decrease in the number of observed children walking on a street or shoulder, from before to after construction (Sheldon: from 66% to 35% [-31%], t=5.55; Valley: from 42% to 4% [-38%], t=6.79; West Randall: from 75% to 5% [-70%], t=39.23: Juan Cabrillo: from 7% to 2% [-5%], t=2.70; no p-values). 5. At both schools receiving traffic control improvements, the proportion of children passing improvements on their route to school walked/biked more after construction, this was significantly more than the proportion of children who walked/biked more but did not pass these improvements (Cesar Chavez: 20.6% vs. 6.2%, n=133, t=2.52, p=0.01; Newman: 10.9% vs. 0%, n=94; t=2.8, p=0.01). **ENVIRONMENT CHANGE:** 6. Traffic control improvements caused decreased vehicular speed during the morning off-peak (-7% [-11, -3]), afternoon peak (-19% [-23,-15]), and afternoon off-peak (-6% [-10, -2]) periods at Cesar Chavez Elementary and during the afternoon off-peak period (-15% [-18, -12]) at Newman Elementary. *(continued next page)*

(Continued from previous study)						
		Teachers returned surveys to the researchers via pre-addressed, prepaid envelopes. A second survey was distributed to parents after the construction of the improvement projects. ***LIMITATIONS:*** Study design was unable to capture impacts of SRTS at all 186 sites; not-easily measured behaviors contributing to safety were not captured successfully; other events/programs could confound impacts of these projects; most schools funded in the first 2 cycles were located in suburban settings limiting variation; the ranking of "evidence" of success may understate the success of the California's SRTS program; parents may have noticed the favorable opinion of SRTS and reported child's increased walking/biking regardless of child's behavior; a nearby child abduction may have altered parent's normal tendency to allow their children walk/bike to school; projects may have altered normal walking paths during construction forcing children to take motorized transport to school which could have become habit; measures were based on parent's perception minimizing accuracy; total physical activity was not objectively measured; some schools may have provided students with a teaching component for active transport, altering normative behavior in regards to walking frequency; study lacked a true control group due to funding and thus children not passing SRTS improvements became the control				7. The number of vehicles yielding to pedestrians increased after construction of traffic control improvements at Cesar Chavez Elementary (from 95.42% to 100%, t=5.42) and Newman Elementary (from 94.86% to 99.62%, t=3.44). 8. Crosswalk improvements led to an increase in vehicles yielding to pedestrians at Glenoaks Elementary—1 of the 3 schools where these improvements were made (from 94.14% to 97.71%, t=1.78, p=0.10).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Mendoza, Levinger (2009) Washington	Promotion of a walking school bus (WSB) program as alternative transportation to school 1. Routes were 0.3-1.5 miles long 2. WSBs occurred once or twice per week and took 15-40 minutes **OTHER INTERVENTION COMPONENTS:** *Multi-component:* Not reported *Complex:* 1. In-school activities: awareness of routes and safety (bulletin board, newsletters, presentations) 2. Establishing Walking School Bus routes 3. Organized walking activities: "Two-Feet Tuesdays" (weekly walk to school), walking workshops, and annual walk to school community celebration.	**DESIGN:** Before and after study **DURATION:** March 2005-March 2006 (excluding holidays and summer break) **SAMPLE SIZE:** K-5th grade students from 3 public elementary schools (1 intervention and 2 control) in the central district of Seattle, Washington *Baseline:* 653 students (281 intervention, 372 control) *1-month:* 738 students (291 intervention, 447 control) *6-month:* 729 students (323 intervention, 406 control) *1-year:* 643 students (303 intervention, 340 control) **PRIMARY OUTCOME:** Walking and biking to school behavior **MEASURES**: 1. Student surveys (percent of students walking, biking, metro bus, school bus, carpooling, and arriving in a private car carrying only one student). Survey was adapted from the Marin County Safe Routes to School evaluation. **DATA COLLECTION:** Data were collected through a series of 1-day, cross-sectional surveys at baseline (November 2004), one-month follow-up (April 2005), 6-month follow-up (November 25), and 1-year follow-up (March 2006). Data were collected on the same day at all three schools, in the classrooms by the homeroom teachers. Teachers conducted the assessment by reading from a standard script; students agreed by raising their hands. Data collection did not occur on days with a planned a walking school bus or walk-to-school promotion event. **LIMITATIONS:** Non-randomized study design; transport was assessed by public self-report; intervention occurred in a single urban, public elementary school; the study only involved three schools; measurements were taken only one day per assessment point limiting participants; mode of transport was assessed by the teacher not the research staff; the authors did not conduct repeated measures on individual subjects or socio-demographic data; the schools did not have active Parent Teacher Organizations and parent involvement at the schools was generally low as per the schools' principals and key faculty members	5-11 year olds 4% American Indian, 21% Asian, 50% African American, 20% Latino, 5% Caucasian, 91% Free or reduced lunch (intervention school) 1% American Indian, 8% Asian, 72% African American, 14% Latino, 5% Caucasian, 83% Free or reduced lunch (both control schools) 2% American Indian, 23% Asian, 22% African-American, 11% Latino, 41% Caucasian, 49% female, 40% received free or reduced price lunch (District-demographics) **ELIGIBILITY:** Not reported. Schools were identified based on their diverse and socio-economically disadvantaged populations. **EXPOSURE/ PARTICIPATION:** 1. 820 children in the intervention and control schools were exposed to the study. 2. On average, 20-25 students regularly participated in a WSB at least once a week.	**LEAD AGENCY:** The WSB coordinator and Feet First (a pedestrian advocacy organization in Seattle) **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ADAPTATION:** Not reported **ADOPTION:** The Seattle Public Schools and Feet First obtained funding for a single WSB program. Feet First hired a WSB coordinator to oversee activities. **IMPLEMENTATION:** The coordinator was trained by Feet First and dedicated 10-15 hours per week throughout the evaluation period (except summer break) on the project in order to implement the program (e.g., school-wide activities). Police officers provided safety education, and volunteers led walking trips. The intervention and control schools all received standard information on preferred walking routes from the Seattle Public Schools, access to a district-wide school traffic and safety committee, and assistance with school safety patrols. **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** The coordinator tracked WSB student attendance weekly, and conducted face-to-face interviews with WSB parent -leaders and volunteers.	**RESOURCES:** 1. WSB informational material (newsletter, safety guidelines, bulletin board) 2. Materials and funding for "Two-Feet Tuesdays" and community celebration 3. WSB coordinator 4. Parent volunteers and police officers 5. Funding to conduct criminal background checks for volunteers **FUNDING:** Washington State Department of Transportation and the United States Department of Agriculture - Agricultural Research Services **STRATEGIES:** Not reported	**PHYSICAL ACTIVITY:** 1. At 1-month, a higher proportion of intervention students walked to school (25% ± 3% vs. 11% ± 2%, p=0.0012) compared to control students. 2. At 6-months, a higher proportion of intervention students walked to school (24% ± 2% vs. 11% ± 2%, p=0.0011) compared to control students. 3. At 1-year, a higher proportion of intervention students walked to school (25% ±2% vs. 7% ± 1%, p=0.001), compared to control students. 4. The differences in the proportion of students transported by car did not differ between groups at baseline, 1-month, 6-month, or 1-year follow-up. 5. From baseline to 1-year, the number of students at the intervention school walking to school increased (from 56 to 75 students) while the number of students using other forms of transport did not change (from 225 to 228 students using other transport, p<0.0001). 6. From baseline to 12-months, the number of control students walking to school decreased (from 54 to 24 students) while the number of control students using other forms of transport did not change (from 318 to 316 students using other transport, p<0.0001).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Babey, Hastert (2009) California	Perceptions of active commuting to school **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Neighborhood design and distance *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 3,451 adolescents and one randomly selected adult from each of these households. **PRIMARY OUTCOME:** Active commuting to school **MEASURES:** 1. 2005 California Health Interview Survey (adolescent survey [ethnic composition, presence or absence of parents, supervision and awareness from parents, name of school, frequency and mode of active commute to school], parent survey [income, address, frequency of transportation walking in past week, perceptions of neighborhood safety]) 2. CLARITAS Urbanicity measure (population density, level of urbanicity) 3. Geographic Information System [GIS] (distance between home and school) **DATA COLLECTION:** Data was taken from the 2005 California Health Interview Survey which was conducted in 5 languages: English, Spanish, Chinese, Vietnamese, and Korean. School names were matched to publicly available databases from the California Department of Education to determine school location and type (public or private). Distance to school was calculated based on the shortest Euclidean distance between home and school using GIS software. The two items assessing active commute to school are similar to measures previously used, which have had acceptable test-retest reliability. **LIMITATIONS:** Active commuting modes were combined into a single question; using Euclidean, or straight line, distance likely underestimated the actual distance; research published in languages other than English was not reviewed; the current study did not account for vehicle access	14.4 years old (average), 12-17 years old (range), 49% Female, 40% White, 34% Latino, 11% Asian, 9% African-American, 5% Mixed ethnic composition, 13% Rural dwellers 19% Suburban dwellers 68% Urban dwellers (evaluation sample) **ELIGIBILITY:** Parental consent and child assent were obtained prior to conducting interviews. Adolescents who were not institutionalized, attended school outside of their home, and were between the ages of 12 and 17 were eligible for the study. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** The research team was from the University of California-Los Angeles. **THEORY/ FRAMEWORK:** Social ecological model **EVIDENCE-BASED:** Several U.S. and Australian studies found that objectively measured distance to school was a significant barrier to active commuting and has been a key contributor to the decline in active commuting over time. Studies have consistently found that adolescents and children living in more densely populated areas were more likely to walk or bike to school. **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Grant from the Robert Wood Johnson Foundation **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Using a logistic regression model, distance to school was most strongly associated with active commuting. Adolescents who lived within 800 m or about 1/2 mile (OR=11.99, 95% CI= 6.79-20.63), between 800 and 1,600 m (OR=5.01, 95% CI= 3.71-6.79), or between 1,600 and 3,200m (OR=1.86. 95% CI= 1.44-2.40) from school were more likely to walk, bike, or skateboard to school than those who lived more than 3,200 m (~2 miles) from school (all significant p<0.01). 2. Adolescents who had an adult present after school some or none of the time (OR=1.77, 95% CI=1.33-2.35, p<0.01) were more likely to actively commute than those who had an adult present after school most of the time. 3. Adolescents in urban areas were more likely than those in rural (OR=0.58, 95% CI=0.43-0.79) or suburban (OR=0.69, 95% CI=0.52-0.91) areas to walk or bike to school (p<0.01 for both). 4. Neither parental walking for transportation nor parental perceptions of neighborhood safety was associated with active commuting to/from school.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
McMillan (2007) California	Active commuting to school **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Neighborhood safety from crime 2. Traffic safety 3. Neighborhood design and distance to locations *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** Caregivers of students in16 elementary schools (13 southern California, 3 in northern California) **PRIMARY OUTCOME:** Active commuting to school (walking and biking) **MEASURES:** 1. Surveys (child's travel to school, demographic data, walking behavior, perceptions of safety, neighborhood design influence, driving behavior around the school and social norms related to walking) 2. Urban form measurement (perceived; traffic safety, crime safety; actual traffic safety, aesthetics; number of windows on houses facing the street, proportion of street segments with a diverse land-use mix) **DATA COLLECTION:** The current study examined data on children's travel behavior and urban form factors from the California SR2S (Safe Routes to School) preconstruction data period. The survey was distributed in both English and Spanish. Observations of urban form were done on each street segment within a quarter mile radius of the elementary school. The proportion of street segments with a given urban form characteristic was calculated for each study sight (no additional weighing was applied to the urban form scales). **LIMITATIONS:** The school sample size was small and clustered; data was self-reported	5-13 years old (3-5 grade students) 7 schools had Hispanic enrollment at >80%, 11 of the 16 municipalities used fell into "urban fringe of a large city", 50% of the schools were in areas where median incomes fell within ± $15,000 of the California state median ($47,493) (target sample) **ELIGIBILITY:** Not reported **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers from the University of Texas at Austin **THEORY/ FRAMEWORK:** McMillan's conceptual framework (2005) was used and proposes that child mode choice to school is a function of caregiver decision-making. Several factors important to this; neighborhood safety, traffic safety, household transportation options, social/cultural norms, attitudes, socio-demographics, and as suggested in policies like Safe Routes to School, urban form. **EVIDENCE-BASED:** An urban form measurement instrument was developed from literature reviews focusing on 4 different elements; perceived traffic safety, perceived crime safety, actual traffic safety and aesthetics. **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Grants from the California Department of Transportation and the University of California Transportation Centers funded the investigation. **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Child walking/bicycling to school is influenced by urban form (proportion of street segments within 1/4 mile radius of school with >50% of houses with windows facing the street, coefficient =0.036; p<0.001 and proportion of street segments within 1/4 mile radius of school with land use mix; coefficient= 0.015, p<0.001). 2. Concerns about neighborhood safety decreased the probability of a child walking/bicycling to school (factors model; coefficient= -0.135, p=0.005 and urban form model; coefficient= -0.160, p<0.001). 3. Traffic speed greater than 30 miles per hour along the route to school decreased the probability of a child walking/bicycling to school (factors model; coefficient= -1.133, p=0.001 and urban form model; coefficient= -1.029, p=0.002). 4. If the distance from home and school was less than one mile, the probability of walking/bicycling increased (factors model: coefficient=1.473, p<0.001 and urban form model; coefficient=1.406, p<0.001). Children living within one mile of school were 3 times more likely to walk to school rather than being driven. 5. For each unit increase in either reported traffic speed, reported driving convenience, or caregiver's birthplace, the odds of walking/bicycling to school decreased over 60%. 6. For each unit increase in reported not safe neighborhood, the odds of non-motorized travel to school decreased only 13% (p<0.05). 7. Family's approval of the child walking to school (APRVFAM) (factors coefficient= 0.395, p<0.001) (urban form coefficient= 0.392, p<0.001) increased the likelihood of walking/bicycling to school. 8. While 2 (land-use mix and windows on houses) of the 3 urban form variables were significant in the logit models and added to significant fit of overall model, individually they have little relative influence on mode choice to school.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Schlossberg, Greene (2006) Oregon	Active commuting to school ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Intersection density, dead end density, and street connectivity 2. Distance to school from residence *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 287 middle school students from four middle schools in 2 cities; two in Bend and two in Springfield, Oregon. (Each city had a new school, with few interconnected streets on the urban fringe and an older school with greater street connectivity) ***PRIMARY OUTCOME:*** Active commuting to school ***MEASURES:*** 1. Survey (demographic data, primary modes of travel and frequency of use, urban form factors [e.g., complete sidewalks], convenience factors for driving [e.g., backpack too heavy]) 2. Geographic Information System (GIS) data (street network, density, route directness, intersection information) 3. Topological Integrated Geographic Encoding System (TIGER) data (arterial roads, railroad intersects, walking zone) ***DATA COLLECTION:*** The survey was based on one previously developed by Smart Ways to School, a program in Lane County, Oregon. The survey was mailed to parents of each child in four middle schools. Route directness was calculated as the distance of a straight line from home to school. Researchers calculated the other measures with 1/8 mile buffer on either side of the shortest network path between each student's geo-coded home address and school. ***LIMITATIONS:*** The sample is not widely representative; respondents may have differed systematically from non-respondents because of low response rate; this study was cross sectional, it is difficult to establish causality	11-13 year olds, 89% White Non-Hispanic, 7% Hispanic (evaluation sample) Households from Springfield were slightly poorer than the city average, while those from Bend were slightly wealthier. The respondents were overwhelmingly White non-Hispanic. ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of Oregon and WRG Design. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** The survey was refined by reviewing the literature, obtaining input from practitioners, and talking with families at various schools about transportation issues. ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Those who live within one mile of school are by far the most likely to walk (ever walk to/from 76.2%, p<.001, primary to 31.7%, p<.001, primary from 52.4%, p<.001), followed by those living 1 to 1.5 miles (not significant). Beyond 1.5 miles, fewer than 4% walk to or from school. 2. Students living less than 1 mile from school were the most likely to walk (no statistic), followed by those living 1 to 1.5 miles away (ever walk OR= 0.21, p<0.01, primary mode OR=0.27, p<0.05). 3. Individuals walking in areas with low intersection density were less likely to walk (OR=0.16 to 0.19, p<0.05 and p<0.01) compared to those in high areas. Students walking in high intersection densities had a 10% probability of walking, compared to 3% and 2% if they had medium or low intersection densities, respectively. 4. Individuals walking to and from school in areas with high dead-end densities (to school: OR= 0.28 (p<0.05), from school: 0.19 (p<0.01) were less likely to walk to school when compared to children in low dead-end densities. Those with low dead-end densities had an 8% probability of walking to school, compared to 3% and 2% for those with medium and high dead-end densities, respectively. 5. Students living farther than 2.5 miles from school were less likely (ever: OR = 0.20, p<0.01, to school: OR= 0.05, p<0.05, from school: OR=0.04, p<0.05) to ride their bicycles to and from school compared to those living closer. ***OTHER:*** 6. Neighborhood walkability concerns were expressed by some, with almost one quarter (23%) complaining of dangerous traffic conditions (not significant), 15% of high speed vehicles (not significant) and 13% of lack of complete sidewalks (not significant). 7. Distance and urban form factors predicted between 32% and 41% of the variation in whether a student ever walked to school or whether walking was the primary mode to and from school.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Zhu, Arch (2008) Texas	Active commuting in the community to school **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Distance to school 2. Sidewalk quality 3. Neighborhood safety concerns 4. Busy road barriers *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1281 students in 8 elementary schools from the Austin Independent School District (AISD) classified into 3 groups: Group 1 (small attendance, grid-like street networks, small street block/ land parcels), Group 2 (cul-de-sac street networks, larger attendance, larger street blocks/land parcels), Group 3 (schools farther north and west of the interstate, combination cul-de-sac and superblock, grid-like street networks). **PRIMARY OUTCOME:** Walking to school behavior **MEASURES:** 1. Geographic information systems -GIS (neighborhood walkability and safety) 2. Field audits (street-level walkability) 3. Survey (child's school travel mode; personal, social, and physical environmental correlates of travel mode for parent and students; ethnicity; parents' education level; household's car ownership). The survey was developed based on previously validated instruments including the questionnaire from the University of California at Irvine's Safe Routes to School study, the Parent-Adolescent Survey, the PedsQL Family Information Form. **DATA COLLECTION:** In April 2007 the survey was administered in Spanish and English in collaboration with the city's Child Safety Program and the AISD, as part of the city's efforts to create a Safe Routes to School Plan. The variables were measured on a 5-point Likert scale or through binary measures. GIS and field audit data was obtained from a previous study. **LIMITATIONS:** Self-reported data	Hispanic Lower-Income 5-10 year olds 55.4% Hispanic (in AISD) 60.3% free/ reduced lunch (in AISD) With-in groups, schools shared relatively similar socio-demographic and physical environmental characteristics. In group 2, Hispanics were slightly over-represented and African Americans were somewhat under-represented. 5th-grade students were slightly under-represented in the sample. **ELIGIBILITY:** Not reported **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from Texas A&M University **THEORY/ FRAMEWORK:** Socio-ecological theory **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not reported **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** The final 3-page survey was developed from cognitive interviews and revisions. **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Not reported **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. The sidewalk quality factor and overall walking environment factor did not show significant associations with walking. 2. Four insignificant variables from the pooled model became significant in the individual models. Among personal variables, age became positively associated with increased odds of walking in the Zavala model (data not shown). Single-parent status decreased the likelihood of walking (data not shown). The busy road barrier (Blanton; n=114, OR=0.203, p<0.05) and sidewalk quality (Harris: n=117, OR=0.477, p<0.05) decreased the likelihood of walking. 3. Having school bus services lowered the odds of walking by 67% (OR=0.333, β=-1.100, p<0.01). 4. Positive peer influences increased the odds of walking by 19% (data not shown). 5. Distance to school was the strongest predictor of walking, where the child was about 4 times more likely to walk if the parent perceived the distance to be close enough for their child to walk (OR=4.918, β =1.593, p<0.01). 6. A 1-unit increase in the safety concern factor (range: -2.6 to 1.9) reduced the odds of walking by 22% (OR=0.776, β =-0.253, p<0.01). 7. The presence of highway or freeway barrier decreased the likelihood of walking by 52% (OR=0.483, β =-0.727, p<0.01). 8. The presence of convenience stores (OR=0.588, β =-0.531, p<0.01) and office buildings (OR=0.52, β=-0.654, p<0.05) was associated with decreased likelihood of walking after controlling for other variables. 9. In the analysis using 8 separate models for individual schools, the distance to school was the most significant predictor in 6 of the 8 schools [Group 1: Zavala (n=106, OR=7.467, p<0.05), Sanchez (n=150, OR=11.735, p<0.01), Metz (n=153, OR=9.177, p<0.01); Group 2: Blanton (n=114, OR=10.384, p<0.01), Andrews (n=215, OR=11.68, p<0.01); Group 3: Wooten (n=193, OR=9.441, p<0.01)]. 10. This analysis model showed that parental barriers were the second most important correlate for schools independently and was significant in 5 of the schools [Group 1: Zavala (n=106, OR=0.183, p<0.01), Metz (n=153, OR=0.453, p<0.05); Group 2: Harris (n=117, OR=0.593, p<0.05), Andrews (n=215, OR=0.436, p<0.01); Group 3: McBee (n=137, OR=0.354, p<0.01)]. **OTHER:** 11. Analysis using a regression model of the pooled data from all 8 schools indicated that of the socio-demographic variables, only parents' highest education level was negatively correlated with walking to or from school. Every 1-unit increase in education level was associated with a 19% decreased likelihood of a child walking to or from school. A similar relationship was found for car ownership (data not shown). 12. Parents personal barriers were negatively associated with walking (OR=0.566, β= -0.569, p<0.01), while the factor capturing children's and parents' positive walking behaviors/attitudes was positively associated with walking (OR=1.461, β=-0.379, p<0.01). 13. Among social factors, students attending Blanton elementary school were less likely to walk than students from the other 7 schools (β=-1.127, OR=0.324, p<0.01).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
International						
Rowland, DiGuiseppi (2003) England	A policy providing a travel coordinator to promote safe walking to school practices was implemented in each of the intervention schools. **OTHER INTERVENTION COMPONENTS:** *Multi-component:* Not reported *Complex:* 1. Meetings and focus groups with teachers, governors, parents, and pupils (identification of road safety problems and solutions) 2. Establishment of school travel working group 3. Meetings with teachers and governors 4. Drafts and recommendations for safe routes	**DESIGN:** Group randomized trial **DURATION:** 1 school year **SAMPLE SIZE:** 1386 children in 21 primary schools (11 intervention, 10 control) in the London boroughs of Camden and Islington **PRIMARY OUTCOME:** Active commuting to school (walking, biking, public transit) **MEASURES:** 1. Surveys (proportion of children walking, cycling, or using public transit to travel to school; the proportion of parents who worried about travel safety) 2. Identical survey from 1997 (baseline data for each school [proportions of children walking to school and proportions of parents very or quite worried about each specific safety concerns]) 3. Written travel plans (development and implementation of travel plans) **DATA COLLECTION:** The primary outcome measures were assessed by a survey administered to the parents of all children in years 2 and 5 in all schools 2 months after the intervention was complete. The survey was offered in English, Bengali, Somali, Greek, Turkish, Chinese, and Albanian. It was completed in 20 of the 21 participating schools. On completion of the study, head teachers were interviewed. Copies of written travel plans were obtained and examined for the relevant areas covered and the specific components included. The number and quality of actions taken by the local authority were also recorded. **LIMITATIONS:** Random error might have obscured a modest but real intervention effect; study size and duration were constrained by resources	3-10 year olds **ELIGIBILITY:** Not reported **EXPOSURE/ PARTICIPATION:** 1. Of the 11 intervention schools originally randomized, 2 schools opted out of the project. 2. 1629 pupils were exposed in the 20 surveyed schools	**LEAD AGENCY:** The research team was from the London school of Hygiene and Tropical Medicine and the University of Colorodo **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ADAPTATION:** Not reported **ADOPTION:** The government funded school travel coordinators to provide expert, site specific advice on development and implementation of effective travel plans at schools. **IMPLEMENTATION:** Intervention schools were offered 16 hours of expert assistance over one school year from one of two part-time school travel coordinators, who had formal teaching qualifications and road safety experience. Travel plans were drafted and the coordinator encouraged implementation of the plans by liaison with relevant parties within the local and health authorities. Control schools received 150 pounds (£) in compensation for their time. All participating schools were offered an individual report on their school travel pattern on study completion. **FORMATIVE EVALUATION:** Prior to randomization, information was collected on whether the school was local authority, whether road safety improvements were planned during the follow up period, whether the school was already participating in "safe routes to school" or other safety related programs, and whether the school already had a travel plan. **PROCESS EVALUATION:** Head teachers were interviewed to determine whether their schools had developed a school travel plan and if any "safe routes" activities had been undertaken.	**RESOURCES:** 1. £150 compensation (control schools) 2. Travel coordinators 3. Parent and school personnel involvement 4. Individual report on child travel patterns to school **FUNDING:** The study was funded by the Camden and Islington Health Action Zone. The Camden and Islington Health Authority funded the researchers. The London Boroughs of Camden and Islington funded incentives for children to return the survey. **STRATEGIES:** Not reported	**PHYSICAL ACTIVITY:** 1. For the journey to school, the adjusted odds of walking, cycling, or using public transport in intervention schools were almost identical to that in control schools (OR=0.98; 95% CI: 0.61-1.59). Results for travel from school to home in the afternoon were similar (data not shown). **OTHER:** 2. Two of the 11 intervention schools and 1 of 10 control schools reported having travel plans prior to the study. One year later, 9 of 11 intervention schools and none of the 10 control schools had a written travel plan. 3. None of the 11 intervention schools took action in all four recommended areas in government "Best Practice" guidelines for school travel plans. 4. Of the 9 intervention schools developing their travel plan within the project time frame, all implemented some form of Safe Routes activities, compared to 4 of the 10 control schools.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Ziviani, Scott (2004) Australia	Active commuting to school and amenities necessary to provide safe routes to school after the implementation of a walking program. **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Neighborhood concerns about traffic safety 2. Distance to school *Complex:* 1. Companionship on walk to school 2. Parental attitudes toward physical activity	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 164 students from a primary school in Brisbane, Australia **PRIMARY OUTCOME:** Walking to and from school **MEASURES:** 1. Survey (factors facilitating and/or hindering child walking [heavy traffic, lack of adult presence at cross-walks], demographic data, psychosocial data [safety, extra-mural events, availability of a walking companion, attitudes toward physical activity], environmental data [school bag weight, access to shelter, footpath, pollution], physical activity) **DATA COLLECTION:** The school data was collected from, had recently been promoting a walk-to-school program, which had the support of the local council. Surveys were distributed to the parents of all children. Survey information was collected using categories defined by the National Center for Chronic Disease Prevention and Health Promotion (2002) and Young Transnet (2002); validity was provided from these two studies. The survey required either a multiple-choice response or a judgment using a rating scale. Psychosocial and environmental items were rated on a 4 point scale, with 1 indicating great concern and 4 no concern. Physical activity items used a 5 point scale with 1 being very high and 5 very low. Test-retest reliability was conducted on a small sample (n=10) of parents on two occasions, one week apart (ICC=0.89-0.99). **LIMITATIONS:** Data from the survey was self-reported; causal inferences cannot be made using cross-sectional study design; this study did not control for parents selection of school and parents opting out of the survey because of a child's physical condition	5-13 year olds: 9.1 ± 2.02 years of age (mean age of sample): Students grades 1-7: 46% Female This sample was situated in a middle to upper middle class residential area. Apart from a major road on one boundary the remainder of street access routes were quiet and residential. **ELIGIBILITY:** Not reported **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from the University of Queensland. **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not reported **IMPLEMENTATION:** Not reported **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Not reported **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Parental concern about traffic (χ^2 = 14.6, df = 3, p = 0.002) and the distance a child lived from school (χ^2 = 45.5, df = 10, p <0.001) were both statistically significant factors for choice to walk to school. 2. Parental concern about 'other factors' not listed in the survey had a statistically significant impact on the number of days children walked to or from school (χ^2 = 16.4, df = 1, p <0.001). 3. Using the backward elimination procedure to determine the relative impact of these environmental factors, distance was found to have a substantial impact on walking to school (OR = 0.54, 95% CI = 0.35 - 0.74, p = 0.001). 4. 'Other factors' also influenced walking to school [OR = 0.32, 95% CI = 0.13 - 0.8, p =0.01).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Salmon, Salmon (2007) Australia	Active commuting to and from school **OTHER INTERVENTION COMPONENTS:** *Multi-component* 1. Distance to school from residence 2. Neighborhood concerns about traffic safety 3. Access to direct routes to school *Complex* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 720 parents of primary school children from all 8 capital cities in Australia **PRIMARY OUTCOME:** Walking and cycling to school behavior **MEASURES:** 1. Survey (sociodemographic data, usual mode to school, frequency of walking/ cycling to school, commute time from home to school, preferences and perceptions for travel to school, barriers [traffic]) 2. Children's Leisure Activities Study Survey (CLASS) items (frequency and mode choice to school) **DATA COLLECTION:** Computer assisted telephone interview (CATI) recruited individuals in April 2004. The survey was completed in conjunction with the National Walk Safely to School Day. Child age was collapsed into two categories (4-9 years and 10-13 years) for the purposes of analysis. CLASS items have been previously validated and are a reliable measure. The time needed to walk to school was collapsed into two categories: (1) < or equal to 15 minutes or (2) >15 minutes. Parents reported level of agreement with a series of statements about child's travel, taken from the CLASS questionnaire. **LIMITATIONS:** Causal inferences cannot be assessed using a cross-sectional study design; telephone interviews may elicit socially desirable responses	4-13 year olds **ELIGIBILITY:** Eligible parents had a telephone and a child between the ages of 4 and 13 years living in the home and attending primary school. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from Deakin University. **THEORY/ FRAMEWORK:** Social Ecological model **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** The Pedestrian Council of Australia's National Walk Safely to School Day and its evaluation were funded by the Commonwealth Department of Health and Ageing, Australia. **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Using a multiple logistic regression model, two environmental barriers were significantly inversely associated with active commuting; the school is too far for the child to walk to (OR=0.1, 95% CI=0.0-0.1, p<0.01) and there is no direct route to school (OR=0.4, 95% CI= 0.2-0.7, p<0.01). *Subset of children living within a 15-minute walk to school (n=366)* 2. Using a multiple logistic regression two environmental barriers were significantly inversely associated with active commuting; having no direct route to school (OR=0.3, 95% CI=0.2-0.7, p<0.01) and school too far for child to walk to (OR=0.3, 95% CI=0.1-0.7, p<0.01). 3. Using a multiple logistic regression model, one environmental barrier, having concern that their child might be injured in a road accident walking to school, was identified as positively associated with active commuting (OR=1.9, 95% CI=1.10-3.18, p<0.05). **SOCIAL BARRIERS:** 4. Using a multiple logistic regression model, two individual factors were identified as significantly inversely associated with active commuting; preference (the child prefers to be driven; OR=0.4, 95% CI=0.3-0.6, p<0.01) and time (the child does not have enough time in the morning; OR=0.2, 95% CI=0.3-0.8, p<0.01). 5. Using a multiple logistic regression model, three social factors were identified as significantly inversely associated with active commuting; lack of a child companion to walk with (OR=0.7, 95% CI=0.4-1.0, p<0.05), lack of adult to walk with (OR=0.6, 95% CI=0.4-0.9, p<0.05) and risk taking (parents were worried about child taking risks; OR=0.6, 95% CI=0.3-0.9, p<0.05). *Subset of children living within a 15-minute walk to school (n=366)* 6. Using a multiple logistic regression two social barriers were significantly inversely associated with active commuting; lack of child companion to walk with (OR=0.6, 95% CI=0.3-0.98, p<0.05) and lack of adult companion to walk with (OR=0.5, 95% CI=0.3-0.9, p<0.05).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Timperio, Ball (2006) Australia	Active commuting to school **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Access to lights and cross walks and the presence of busy-road barriers 2. Distance to school from residence *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 235 five to six year olds and 677 ten to twelve year olds from 19 elementary schools (10 high and 9 low SES) **PRIMARY OUTCOME:** Active commuting to school **MEASURES:** 1. Height and weight (calculated body mass index -BMI) 2. 2004 Geographic Information Systems (GIS) (potential route to school, types of roads and intersections, connectivity, surface analysis or level of incline) 3. Child questionnaire (local neighborhood (area level socioeconomic status, usual school mode choice, frequency of usual travel behavior, child energy levels and enjoyment of physical activity) 4. Parent questionnaire (neighborhood perception) 5. Australian Bureau of Statistics' Index of Relative Socio-Economic Advantage/Disadvantage (area-based score for each participant using residential postcode) 6. State of Victoria data (cadastral data, address points, road and road attribute information, and a digital elevation model) **DATA COLLECTION:** Data for this study was taken from a subset of participants. Questionnaires were completed between July and December 2001(range ICC=0.70-0.89). Two week test-retest reliability measures were performed on each age group (n=58 five to six year olds and n=11 ten to twelve year olds) and in parents (n=97). Frequency of behavior was collapsed into three categories: never; occasional (1-4 times/week); frequent (5+ times/week) (73.0% agreement reliability). Socioeconomic status index score was collapsed into tertiles with higher scores representative of greater advantage. The pedestrian route directness (PRD) en route to school was calculated by dividing road network distance by "straight line" distance. Potential route to school was defined as <800 meters and ≥ 800 meters. **LIMITATIONS:** GIS data may have led to assumptions; causal inferences cannot be made using a cross-sectional design; only a limited range of personal and family factors were included in this study; study had a modest response rate	5-6 year olds and 10-12 year olds (intervention population) The subsample contained a higher proportion of English speaking children, with married parents, and a lower proportion of employed mothers. **ELIGIBILITY:** Family consent was attained. All children in the 19 schools within the preparatory grade and grades 5 and 6 were eligible. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers from Deakin University, the University of Western Australia, and the University of Sydney **THEORY/ FRAMEWORK:** Social Ecological Theory **ADOPTION:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** The Financial Markets Foundation for Children **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Children in both age groups were less likely to actively commute to school if their parents reported that there were no lights or crossings (OR= 0.4, 95% CI: 0.1-0.9 for 5-6 years and OR= 0.6, 95% CI: 0.3-0.9 for 10-12 years) for their child to use ($p<0.05$). 2. In both age groups, children whose route to school was <800 m were more likely to actively commute (OR =5.2, 95% CI: 2.2-12.3 for 5-6years; and OR=10.2, 95% CI: 5.9-17.6 for 10-12 years), and those with a busy-road barrier (OR= 0.1, 95%CI: 0.0-0.5 for 5-6 years old; and OR= 0.3, 95% CI: 0.1-0.9 for 10-12 years) en route to school were less likely ($p<0.001$). 3. Younger children with a steep incline en route to school (OR= 0.3, 95% CI: 0.1-0.8), and older children with a direct route (OR= 0.7; 95% CI: 0.5-0.98), were less likely to walk or cycle to school compared with other children ($p<0.05$). **SOCIAL COHESION:** 4. Children in both age groups were less likely to actively commute to school if their parents reported that there were few other children in the neighborhood for their child to play with (OR= 0.3, 95%CI: 0.1-0.8 for 5-6 years; and OR= 0.6, 95% CI: 0.4-0.99 for 10-12 years).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Larsen, Gilliland (2009) Ontario	Active commuting to school **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Distance to school from residence, land-use mix, residential density, and neighborhood design 2. Presence or absence of street trees along route to school *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 614 students from grades 7 and 8 at a heterogeneous sample of 21 elementary schools varying by income and built environment throughout the city of London, Ontario. Eleven schools were from the London District Catholic School Board and 10 were from the Thames Valley District School Board. **PRIMARY OUTCOME:** Active commuting to school **MEASURES:** 1. Student survey (mode of travel both to and from school, neighborhood characteristics, behavioral and environmental questions) 2. Geographic Information System -GIS (home and school neighborhood including sidewalks, road networks, street trees, pathways, land use type and distance from home to school in the shortest path) 3. Parental questionnaire (household income, education, and single-parent families) response rates on these questions were deemed too low (about 60%) to incorporate into the analysis **DATA COLLECTION:** The survey was conducted from October-December in 2006 and April-May in 2007. A parental questionnaire was distributed to obtain the demographic characteristics of individual households at the same time as forms requesting permission for children's participation. A "circulation system" was created by combining the City of London digital map files for road network, trail network, and pathways network to look at possible walking routes. Neighborhood data was obtained from the City of London Planning Department and validated by researchers through field surveys and inspection of aerial photographs. **LIMITATIONS:** The authors did not identify the actual route of child takes to school; the process of using home postal codes may have reduced the variability in the data, or altered distance estimates; parental responses rates on certain social variables such as income and educational attainment were too low for this study, so neighborhood-level census data were employed for social variables; the questionnaire was completed by 49% of eligible students, and it may be that the other 51% were less or more "active" than the study participants	11-13 year olds Urban Suburban **ELIGIBILITY:** Permission from parents and children must live within 1 mile of school **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** The research team **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ADAPTATION:** Not applicable **ADOPTION:** Not reported **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Canadian Institutes of Health Research and the Social Science and Humanities Research Council of Canada **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. The likelihood of active travel to school rose with both increased land use mix (OR=2.891; 95% CI: 1.634, 5.117; $p<0.001$) and greater number of street trees (OR= 1.300; 95% CI: 1.034, 1.635; $p=0.025$). 2. With the journey home from school, the presence of street trees is no longer important whereas active travel decreased with both higher residential density (OR=0.259; 95% CI: 0.123, 0.547; $p<0.001$) and greater median household income (OR= 0.952 95% CI: 0.930, 0.973; $p<0.001$). 3. Fewer students walked or biked to school in high-income, suburban neighborhoods ($p=0.023$).

REFERENCES

Babey, S.H., Hastert, T. A., Huang, W., & Brown, E. R. (2009). Sociodemographic, Family, and Environmental Factors Associated with Active Commuting to School among US Adolescents. *Journal of Public Health Policy*. 30:S203-S220.

Boarnet, M.G., Anderson, C.L., Day, K., McMillan, T., and Alfonzo, M. (2005). Evaluation of the California Safe Routes to School legislation: Urban form changes and children's active transportation to school. *American Journal of Preventive Medicine*. 28(2 Suppl 2): 134-140.

Boarnet, M.G., Day, K., Anderson, C.L., McMillan, T., and Alfonzo, M. (2005). California's Safe Routes to School Program: Impacts on walking, bicycling, and pedestrian safety. *Journal of the American Planning Association*. 71(3): 301-317.

Larsen, K., Gilliland, J., Hess, P., Tucker, P., Irwin, J., He, M. (2009). The influence of the physical environment and sociodemographic characteristics on children's mode of travel to and from school. *American Journal of Public Health*. 99(3):520-6.

McMillan, T.E. (2007). The relative influence of urban form on a child's travel mode to school. *Transportation Research Part A*. 41:69-79.

Mendoza, J.A., Levinger, D.D., and Johnston, B.D. (2009). Pilot evaluation of a walking school bus program in a low-income, urban community. *BMC Public Health*. 9(1): 122.

Rowland, D., DiGuiseppi, C., Gross, M., Afolabi, E., and Roberts, I. (2003). Randomized controlled trial of site specific advice on school travel patterns. *Archives of Disease in Childhood*. 88(1): 8-11.

Salmon, J., Salmon, L., Crawford, D.A., Hume, C., Timperio, A. (2007). Associations among individual, social, and environmental barriers and children's walking or cycling to school. *American Journal of Health Promotion*. 22(2):107-13.

Schlossberg, M., Greene, J., Phillips, P.P., Johnson, B., Parker, B. (2006). School Trips: Effects of Urban Form and Distance on Travel Mode. *Journal of the American Planning Association*. 72(3):337-346.

Staunton, C.E., Hubsmith, D., and Kallins, W. (2003). Promoting safe walking and biking to school: The Marin County success story. *American Journal of Public Health.* 93(9): 1431-1434.

Timperio, A., Ball, K., Salmon, J., Roberts, R., Giles-Corti, B., Simmons, D., et al. (2006). Personal, family, social, and environmental correlates of active commuting to school. *American Journal of Preventive Medicine*. 30(1):45-51.

Zhu, X., Arch, B., and Lee, C. (2008). Personal, social, and environmental correlates of walking to school behaviors: Case study in Austin, Texas. *Scientific World Journal.* 8: 859-872.

Ziviani, J., Scott, J., Wadley, D. (2004). Walking to school: incidental physical activity in the daily occupations of Australian children. *Occupational Therapy International.* 11(1):1-11.