Safe Routes to School Local School Project

A health evaluation at 10 low-income schools

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Jill F. Cooper, UC Berkeley Safe Transportation Research and Education Center
Tracy E. McMillan, PhD, MPH, PPH Partners - February 2010

FOREWORD

The Safe Routes to School National Partnership (Partnership) is proud to present the report, "Safe Routes to School - Local School Project Health Evaluation." The Local School Project (Project) began in April 2008 at ten schools around the country and concluded in December 2009, after one full academic year of program activities.

The Project and the resulting evaluation is one of the first multi-school, Safe Routes to School (SRTS) programs and evaluations conducted in the United States. The Project was funded by the Centers for Disease Control and Prevention, Kaiser Permanente and the Robert Wood Johnson Foundation. This report presents the formal evaluation of the Project and provides insights as to what is needed to launch a successful SRTS program in communities where resources are limited, to evaluate program effectiveness and to identify complex barriers that can be difficult to address.

The Project funded technical support to part-time paid coordinators working an average of ten hours per week at four sites in California, Georgia, Virginia, and Washington D.C., and provided remote technical advice to volunteer leaders at another six sites in Illinois, Kentucky, Louisiana, Oklahoma, New York, and Texas. All ten schools were chosen based upon a number of factors, including that at least 50% of students receive free or reduced-price lunch, a common indicator of the prevalence of low-income families at schools, and that at least 50% of the students live within two miles of the school.

Data was collected and analyzed in order to understand the effect of the 20-month program in improving health in these communities, and to develop lessons learned to help other communities and schools with implementing SRTS programs. This report presents results, lessons learned, and recommendations, plus provides a link to an SRTS Evaluation Handbook that will help local SRTS programs effectively evaluate their programs.

An innovative contribution of this Project was its sole focus on low-income schools. These communities are typically underserved, and safe options for children and youth are often limited with regard to physical activity. In fact, barriers such as poor street and sidewalk conditions, high crime rates, abandoned houses, few financial resources, language and cultural diversity, low school test scores, and low parental and community involvement often make it difficult for SRTS programs to get started and to be sustained in these communities.

It was within this framework that our health evaluation was conducted. The health evaluation included data on transportation modes, safety and air quality around schools. Over the 20 months of the Project, sites recorded qualitative and quantitative data, while acknowledging that it would take longer than the Project time-period for each school to record significant quantitative results. The accomplishments observed would be notable in any community, but were especially noteworthy given the challenges of working in communities that face substantial economic, educational and social struggles.

Among the lessons learned during the Project was that recruiting volunteers in a low-income school environment takes concerted effort. Program leaders need to be very creative in finding volunteers, sometimes recruiting friends, neighbors, coworkers, university and high school students, and using social gatherings, local events and special occasions to talk to potential volunteers. This process requires personal confidence, excellent public relations skills, and the willingness to work evenings, weekends and early mornings to get the job done.

The difference between SRTS programs that are led by paid coordinators and those led by volunteers is also notable. Paid coordinators have the benefit of dedicated time which makes it easier to effectively organize SRTS school teams, apply for federal funding, develop program approaches, get access to resources, and develop relations with government staff and community leaders who can contribute additional technical assistance and resources to the effort.

Working with low-income communities can be very rewarding and successful, despite the challenges. Communities with the greatest need are often the most appreciative of assistance, especially when

there is dedicated staffing, the introduction of expertise and resources, and sensitivity to local concerns. Partnerships are key in any SRTS effort, especially with organizations and leaders that represent the target populations. SRTS program leaders must be sensitive to busy school staff schedules and pay attention to language and cultural diversity in order to generate confidence and support for program activities.

The Partnership is continuing the Local School Project through the 2010 and 2011 calendar years at five sites, including the California, Georgia, Virginia and Washington D.C. schools, plus a new school site in Maryland, thanks to continued and expanded Kaiser Permanente funding. And during 2010 the Partnership will be developing additional resources to assist communities in leading successful SRTS programs in diverse communities throughout the United States.

The Local School Project is one step forward in the beginning of a movement throughout the United States to work with and understand the challenges faced by residents, schools and advocates in diverse, low-income communities in becoming more physically active through the trip to school. We hope that the Project is also just the beginning of a focused emphasis on funding the evaluation of SRTS programs. SRTS programs need to become increasingly accountable for limited funds, and evaluation can help to justify the dollars spent on these critical health programs.

We hope this report becomes an effective and useful tool for local and state programs to show how Safe Routes to School programs can actually change the habits of an entire generation.

Sincerely,

Robert Ping
State Network Director
Safe Routes to School National Partnership

February 2010

ACKNOWLEDGEMENTS

We sincerely thank the many people who made significant contributions to this evaluation research.

Funding and research for this report were provided by the Safe Routes to School National Partnership through the Bikes Belong Foundation, and from Kaiser Permanente and the Centers for Disease Control and Prevention. The Robert Wood Johnson Foundation also provided funding for some of the programmatic and policy work in the ten local communities. We want to thank Deb Hubsmith and Robert Ping for their leadership, support and vision of the role of evaluation in health promotion. Margo Pedroso and Brooke Driesse also provided valuable input to this project.

The Local School Project staff and volunteers at the ten school sites were invaluable to us in conducting the data collection and in their ongoing efforts to execute programs that create policy and environmental changes that change behaviors.

The team working on this evaluation was integral to its success. Lindsay Allen of PPH Partners, and David Ragland, Tom Rice, Swati Pande, and Monica Altmaier of UC Berkeley, Safe Transportation Research and Education Center (SafeTREC), all contributed substantively to this project. Finally, we are grateful to Grace Felschündneff for her knowledgeable editing of this report.

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EXECUTIVE SUMMARY

Overview and Background

The Safe Routes to School National Partnership (Partnership) founded the Local School Project (Project) in 2008 to assist ten schools in low-income communities to: 1) develop and evaluate a school-based SRTS program, 2) build local capacity to apply for state or federal SRTS funding, and 3) increase safe walking and bicycling to and from the school and in the community. The Centers for Disease Control and Prevention, Kaiser Permanente, and the Robert Wood Johnson Foundation provided funding for the Project.

This report presents the results, lessons learned and recommendations identified during the Project's 20-month period. The Project involved a review of the relevant literature, development of a logic model, design and implementation of data collection tools, analysis of findings, and establishment of conclusions and recommendations.

Between 1969 and 2001, the number of children in the United States who walked or bicycled to school dropped from 42 percent to 13 percent (FHWA 2004). High traffic volume and speed, lack of sidewalks, economic issues (such as the need for parents to work more than one job), the situating of schools on the outskirts of towns, and fears of stranger danger and crime are among parent-identified barriers associated with this decline. In addition, there have been increases in child overweight and obesity, traffic hazards and poor air quality in and around schools, particularly in lower income and minority children. SRTS programs have arisen to create encouragement, engineering, education and enforcement efforts to help reverse the large decrease in child physical activity and health.

While recruiting community, parental and school resources and support may be difficult in any school, it may be particularly challenging in low-income schools. The lack of parental and school staff "extra" time, perceived and actual danger of children's exposure to the streets (due to traffic and crime), and the pressures of schools to improve academic achievement all detract from "extracurricular" efforts; e.g., safe routes to school.

Methodology

The Partnership contracted with UC Berkeley Safe Transportation Research and Education Center (SafeTREC) and PPH Partners to develop an evaluation plan, handbook and appropriate data collection tools for use in the field by the ten local school sites. Baseline data (from parent surveys and student travel tallies) was collected in spring or fall 2008 and follow-up data in spring 2009. In addition, four sites conducted intersection observations and vehicle counts in fall 2008 and spring 2009, in addition to caregiver focus groups in fall 2008.

Results

Overall, the results indicate there was good progress toward achieving many of the desired outcomes for the Project as a whole. While the results also reveal challenges in promoting SRTS in communities and schools with economic and social challenges, almost all of the school sites reported some amount of policy and environmental change occurring across the academic year in support of walking and bicycling. Additionally, nine out of ten schools had successful walk/bicycle educational and encouragement activities that will continue into future years.

Major Findings

- The Project was successful in increasing the positive perception and awareness of walking and bicycling among the parent population at many of the sites.
- While traffic safety data was limited to two sites, the findings indicate that safe crossing and crossing behavior increased over time.
- Based on changes in vehicle counts and self-reported travel distances over the academic year, the calculated carbon dioxide levels (as a measure of vehicle emissions) near the schools decreased.
- All of the sites, regardless of local challenges, were able to initiate a few SRTS program activities and/or environmental/policy changes, and most received additional funds for SRTS efforts in the future.
- Beyond the policy and environmental changes that were implemented at or near the majority of the schools over this short time period, most interviewees reported

that the Project was successful in creating momentum for policy and environmental change, as well as changes to the walking and bicycling culture and norms in the broader community.

Lessons Learned:

Schools with paid coordinators were able to generate program activities more frequently than schools relying on volunteers; parents and schools need to be better educated about the importance of surveys in developing strong programs; and members of these low-income communities often did not see active transportation as a priority compared with other concerns, such as high crime, violence, drugs, and unemployment. More children walked in the afternoon than in the morning, informing encouragement activities.

Recommendations

Recommendations for future SRTS programs include providing funding for on-site, paid staff dedicated to SRTS, planning for a multi-year SRTS program, and acknowledging the role of non-traditional SRTS activities in building school and community support (e.g., tree planting, and graffiti removal). Further, building a volunteer base takes time, and future evaluation efforts include the need to fund and promote both community-based and large-scale, scientific evaluation.

Conclusion

This innovative project focused on low-income communities. Overall, the sum of the parts indicates that the Project was a success and shows great promise for generating a continuing positive impact on health in the future. SRTS programs are not meant to be short-term. They must be ongoing and require continued investment. Long-term, continuing support through policy and programming has been shown to help promote physical activity among children.

Our nation faces many health problems associated with sedentary lifestyles. Children in low-income communities face additional barriers to active transport to school. Walking and bicycling to school offer opportunities for active living; promoting routes to school that are fun, safe and enjoyable are key. That the SRTS Local School Project was able to succeed at all attests to the value of the program and the ability of the community of staff, parents and volunteers to provide opportunities to improve child health.

OVERVIEW

The Local School Project (Project) is an innovative community-based Safe Routes to School (SRTS) program targeting ten low-income schools in communities across the United States. The project, created by the SRTS National Partnership (Partnership), was designed to address the disproportionate risk children in low-income communities face regarding traffic injury, air quality, and a lack of physical activity. The Project targets low-income schools specifically in order to provide enhanced support to build capacity, identify and recruit school and community stakeholders, implement safe routes programs, and address environmental and policy change to affect interim and long-term health outcomes in these communities. The Project also examines the value of hiring paid local SRTS coordinators compared with relying on volunteer coordinators for the success of local program activities and sustainability. This report focuses on the results, lessons learned and recommendations identified during the Project's 20-month period.

In 1969, 42 percent of children in the United States aged five to eighteen walked or bicycled to school. By 2001, 85 percent of children were driven to school by car or bus, and only 13 percent walked and 2 percent bicycled.

Background on Safe Routes to School

In 1969, 42 percent of children in the United States aged five to eighteen walked or bicycled to school. By 2001, 85 percent of children were driven to school by car or bus, and only 13 percent walked and 2 percent bicycled (FHWA 2004). High traffic volume and speed, lack of sidewalks, and long distances between home and school are among the parent-identified barriers associated with this decline. Parallel to the decline in non-motorized travel to school, there were increases in child overweight and obesity, traffic hazards and poor air quality in and around schools, particularly in lower income and minority children (Centers for Disease

Control and Prevention, 2009a; Ogden et al., 2002; Hedley et al., 2004; Ogden et al., 2008).

These negative trends in physically active travel and child health have spurred efforts in the United States to encourage children to walk and bicycle to school by enhancing the appeal, feasibility and safety of these modes of transportation. Denmark is credited with piloting the first such program in the 1970s. It was instituted after studies revealed that Denmark had the highest child pedestrian collision rate in Europe. The program began in the city of Odense and created a series of engineering improvements to reduce safety hazards. Ten years after implementation, child pedestrian casualties decreased by more than 80 percent (Appleyard 2003).

The first local SRTS program in the U.S. was initiated in 1997 in the Bronx, New York. In 1999, California became the first state to pass legislation for a state level program, which allocated federal transportation funds for the construction of bicycle and pedestrian safety and traffic calming projects near schools. The California legislature has re-authorized the program three times over the past decade.

Modeled after and inspired in part by the California program, the 2005 federal transportation bill (SAFETEA-LU: Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users), introduced the first national level SRTS program for all 50 states and the District of Columbia. The bill established multiple goals related to transportation and health:

1. To enable and encourage children, including those with disabilities, to walk and bicycle to school.
2. To make walking and bicycling to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age.
3. To facilitate the planning, development and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption and air pollution in the vicinity (approximately two miles) of primary and middle schools (Grades K-8).

Through the Federal Highway Administration, state Departments of Transportation received $612 million over a five-year period (2005-2009) to allocate to local agencies via a grants process (GAO Report 2008). This national SRTS program requires states to provide funds for both infrastructure and non-infrastructure projects (i.e., engineering, education, encouragement and enforcement). In addition, in 2006 the national SRTS program created a clearinghouse (now known as the National Center for SRTS) to assist with program resources, training and evaluation. On the education and advocacy side, the non-profit Safe Routes to School National Partnership began in 2005. Its mission is to serve a diverse community of organizations and to advocate for and promote the practice of safe walking and bicycling to and from schools throughout the United States. The Partnership includes more than 425 affiliate organizations and focuses on policy change, state and local implementation and advocacy to secure additional funding and improvements through federal and state sources.

The Local School Project

The Partnership began the Project in 2008 in an effort to address health equity issues in low-income communities and to increase knowledge of the challenges and opportunities unique to these communities. The Project was implemented at ten schools in low-income communities throughout the United States to: 1) develop and evaluate a school-based SRTS program, 2) build local capacity to apply for state or federal SRTS funding, and 3) increase safe walking and bicycling to and from the school and in the community. (See Table 1 on page 6.)

The Centers for Disease Control and Prevention (CDC), Kaiser Permanente, and the Robert Wood Johnson Foundation (RWJ) funded the Project. Kaiser Permanente provided funds for paid coordinators to assist elementary schools in four communities where Kaiser Permanente had an established community partnership: Kawana, DC Prep - Edgewood, Knollwood and Mount Vernon (shown in bold in Table 1). Paid coordinators received $1,000 per month for 10 hours per week for 20 months to initiate SRTS programs, support policy changes, and conduct health evaluation activities. These sites also received direct technical

assistance from Partnership staff. Alternatively, the six other elementary schools (King, Lebanon, Drew, Hamlin, Highland Park and Johnson) received remote technical assistance from the Partnership, up to 2 hours per week, but no funding for paid staff at the site. Community or school volunteer coordinators led four of the sites' programs (Drew, Hamlin Park, Highland Park and Johnson), while city or school district staff led programs at the two other sites (King and Lebanon). Only one of those six program leaders (at King) had technical expertise or previous experience with SRTS.

Schools were chosen based on school readiness and principal support, the percentage of students receiving free or reduced price lunch (as a measure of low income), available community partners, availability of data on traffic safety, the built environment around the school, and volunteer and staff capacity. Each school site identified a volunteer coordinator or hired a paid coordinator who worked as an SRTS technical advisor and program leader prior to and during the 2008-2009 academic year to organize a school team, promote SRTS and manage project activities, which may include engineering, enforcement, encouragement, and/or education. The program leaders were also responsible for evaluation. They collected baseline data in spring or fall 2008 and follow-up data in spring 2009 from parent surveys and student travel tallies (using standardized forms from the National Center for SRTS), intersection observations and vehicle counts. In addition, the four paid coordinators held focus groups in fall 2008 (Kawana, DC Prep - Edgewood, Knollwood and Mount Vernon).

The Partnership contracted with UC Berkeley Safe Transportation Research and Education Center (SafeTREC) and PPH Partners to oversee the health evaluation of the Project, including program planning and technical support on data collection for the ten local sites. Included in the evaluation was development of a project logic model, a user-friendly quantitative and qualitative evaluation handbook, training on data collection tools, and an evaluation plan to be implemented by each local site. The evaluation team was also responsible for data analysis and report preparation, focusing primarily on the Project's impact on mobility, traffic safety and program sustainability.

Table 1. Local School Project Sites

LOCATION	SCHOOL*	NEIGHBOR-HOOD	TYPE OF SCHOOL	# OF STUDENTS	RACIAL/ ETHNIC DEMOGRAPHICS		ELIGIBLE FOR FREE/ REDUCED LUNCH PROGRAM
Santa Rosa, California	**Kawana Elementary**	**Urban/City 157,985**	**Public**	**616**	**Hispanic White Black Asian Other**	**74% 15% 4% 2% 5%**	**93%**
District of Columbia Edgewood St., NE	**DC Prep -Edgewood Elementary**	**Urban/Inner City 588,292**	**Charter**	**197**	**Black Hispanic**	**98% 2%**	**50%**
Georgia Belvedere/ Atlanta	**Knollwood Elementary**	**Suburban/ County 18,945**	**Public**	**397**	**Black Hispanic Other**	**97% 2% 1%**	**96%**
Champaign/ Urbana, Illinois	King Elementary	Suburban/ City 234,000	Public	297	Black Asian White Other Hispanic	58% 23% 13% 4% 2%	86%
Lebanon, Kentucky	Lebanon Elementary	Rural/Small Town 5,718	Public	333	White Black Hispanic	77% 18% 5%	77%
New Orleans, Louisiana	Drew Elementary	Urban/Inner City 273,000	Public	603**	Black** Other	99%* 1%	96%**
Buffalo, New York	Hamlin Park Elementary	Urban/Inner City 292,648	Public	345	Black Hispanic White	96% 2% 2%	77%
Oklahoma City, Oklahoma	Highland Park Elementary	Urban/Inner City 537,734	Charter	406	Black Other	85% 15%	72%
Bryan, Texas	Johnson Elementary	Suburban/ Town 65,660	Public	391	White Hispanic Black Asian Other	53% 38% 6% 2% 1%	41%
Northern Alexandria, Virginia	**Mount Vernon Elementary**	**Suburban/ City 128,283**	**Public**	**558**	**Hispanic Black Asian White Other**	**57% 32% 6% 3% 2%**	**76%**

*Schools at which Kaiser Permanente had an established community partnership and provided funding for paid coordinators are shown in bold

** Pre-Katrina statistics (post Katrina not available)

THE PROJECT SCHOOLS: BACKGROUND AND PROGRAM PLANNING ACTIVITIES

Kawana Elementary, Santa Rosa, California (Kaiser Permanente site):

The Kawana local school team was led by the Sonoma County Bicycle Coalition and the Sonoma County Department of Public Health. Over 90 percent of students live within a two-mile radius of school, with 50 percent of these within one half mile. The Kawana team participated in International Walk to School Day, implemented a Walking Wednesday and walking school bus program; provided bicycle helmet education and low-cost helmets for sale; collaborated with local law enforcement to identify areas suitable for traffic enforcement; and successfully applied for federal SRTS funding for both engineering and enforcement/encouragement/education at Kawana Elementary and other Santa Rosa schools.

SRTS state grant funds applied for and received: $1,111,700.

DC Preparatory Academy, District of Columbia (Kaiser Permanente site):

While DC Preparatory Academy is a public charter school, 62 percent of students live within two miles of the school. To combat traffic congestion, the local school team initiated efforts to reduce traffic flow and speed, build a pedestrian bridge and improve the streets near the school. The school's team participated in International Walk to School Day, distributed information packets to parents and taught students about pedestrian and bicycle safety. Additionally, the Metropolitan Police Department increased their patrol in strategic areas around the school.

Grant funds applied for and received: $345,000 (includes in-kind services).

Knollwood Elementary, DeKalb County, Georgia (Kaiser Permanente site):

The entire student body of Knollwood lives within two miles of the school, but the roads surrounding the school are busy, with traffic traveling at high speeds and limited pedestrian access. Knollwood received money for infrastructure improvements through a local school team partner, a nearby bicycle shop and Georgia Kaiser Permanente. A community walking and bicycling audit addressed problem areas, resulting in the installation of bicycle parking on campus, the repair of neighborhood streetlights, and acknowledgement of the need for traffic speed reduction. Knollwood participated in International Walk to School Day, sponsored an ongoing walking school bus program, educated students in bicycle safety and provided competitions and incentives for walking and bicycling to school.

SRTS local grant funds applied for and received: $8,150 (state funds to be applied for in 2010).

King Elementary, Urbana, Illinois:

King's efforts were led by a local team including the school principal, a police officer and the statewide Active Transportation Alliance. Engineering efforts at King included the installation of bicycle racks on campus, replacement of neighborhood school zone signs, repainting of crosswalks, and the improvement of school parking lot traffic. King participated in International Walk to School Day, gave away refurbished bicycles (in conjunction with an accompanying traffic safety clinic) and initiated walking school buses and bike trains. Additionally, members of the city police department attended school meetings and increased law enforcement around the school.

SRTS state and local grant funds applied for and received: $171,500.

Lebanon Elementary, Lebanon, Kentucky:

Lebanon's local school team members include the school principal, a physical education teacher, the school's family resource center director, city officials and the county school transportation coordinator. Over half of Lebanon's students live within two miles of the school; however, the school is located on a busy highway without shoulders. Engineering efforts included the creation of safe street crossings as well as sidewalk renovation, neighborhood traffic signs and bicycle rack installation on campus. These renovated routes are being used for three walking school bus routes for the 2009-2010 school year.

SRTS state grant funds applied for and received: $163,235.

Drew Elementary, New Orleans, Louisiana:

The local school team at Drew initially made great strides towards raising funds for improving infrastructure, and SRTS activities. However, a new principal was appointed in 2008 and was unwilling to continue the program during the 2008-2009 school year. The local team hopes efforts will resume. Despite setbacks, the team was able to work with the New Orleans Regional Planning Commission and DODT to find funding and install bicycle lanes and crosswalks near the school. In the spring of 2009 a bicycle lane was completed in front of the school, representing the first-ever bicycle lane striped in the city of New Orleans.

SRTS state and local grant funds applied for and received: $412,530.

Hamlin Park Elementary, Buffalo, New York:

This school presents a particular challenge as a citywide policy allows parents to choose their child's school. Consequently, only 20 percent of Hamlin Park's students live within a half-mile. Hamlin Park's local school team is led by Be Active New York State and the Hamlin Park Neighborhood Association. Funding is going towards the reconstruction of three main intersections along school routes, which includes new curb features, crosswalk marking, lighting and signage. The local school team has a plan for the upcoming school year including a walking school bus, bicycle train, Recycle-A-Bicycle program, school travel maps, the promotion of Walk to School Day events, and safety classes. Additionally, in the upcoming school year school officers will monitor traffic safety.

Local funds for neighborhood renewal and SRTS state grant funds for intersection improvements applied for and received: $1,550,000.

Highland Park Elementary, Stillwater, Oklahoma:

Approximately 75 percent of students live within two miles of Highland Park with access to sidewalks, although many are in need of repair. The principal is currently devising methods to reduce traffic congestion on school grounds to improve the safety of children walking and bicycling. Regular Walking Wednesdays were implemented at Highland Park after success with International Walk to School Day and the school is planning additional walking programs for the coming year. A cycling clinic was provided at Highland Park to train adults to teach students about bicycle safety.

SRTS state grant funds applied for and received: $20,000, plus $200,000 pending.

Johnson Elementary, Bryan, Texas:

Local school team members at Johnson include the school principal and physical education teacher, who among others, assessed the pedestrian and bicycle environment surrounding the school. The majority of Johnson's student body lives in neighborhoods surrounding the school, but there is a need for new sidewalks, safer traffic crossings and traffic calming efforts. The school has participated in the past two International Walk to School Days and is currently developing additional encouragement activities. The community police officer conducted a bicycle skills clinic for students.

State and local funds will be applied for in 2009-2010.

Mount Vernon Elementary, Alexandria, Virginia (Kaiser Permanente site):

The entire student body of Mount Vernon lives within two miles of the school and 47 percent of its students live less than a half-mile from the school. In June 2009 Mount Vernon received a SRTS mini grant to provide a bicycle skills clinic, offer giveaways, generate walking maps and participate in Walk and Bike to School Day, which has spurred a Walking Wednesdays program. Mount Vernon has recently improved infrastructure around the school with bicycle lanes, crossing signals, a street median and bicycle racks. Education efforts have included a bicycle skills clinic and a Healthy Fun Day.

SRTS state grant funds applied for and received: $5,000; the school neighborhood also received a portion of $2 million in citywide traffic safety improvements.

SCHOOLS, ACTIVE TRANSPORTATION AND HEALTH: SELECTED LITERATURE

Safe Routes to School and the Local School Project focus on a setting that is synonymous with children: school. Most U.S. children spend the greater part of each weekday at school and begin and end each of those days traveling to and from school. It is their "work trip," and one that was overlooked by transportation professionals for decades. However, due to the concurrent travel and health trends outlined in the overview, much has changed over the past five or ten years. SRTS programs initiated by the federal transportation bill now exist in every state of the union. What have we learned so far about the relationships between active travel, traffic safety, physical activity and other health outcomes, particularly for low-income populations?

Most U.S. children spend the greater part of each weekday at school and begin and end each of those days traveling to and from school.

Schools as Important Locations for Child Health

Bicycle and pedestrian curricula in physical education classes and promotion of bicycling and walking to and from school are two ways to increase physical activity in children and to positively affect academic performance. In addition, schools are effective settings for public health initiatives because they bring in a large population of children from different ethnic and socioeconomic backgrounds (Naylor and McKay, 2009). Many schools have reduced or eliminated physical education time at school to accommodate additional instructional time for standardized test preparation. A recent review of the literature by Trost (2009) indicates that allowing time for physical activity during the school day does not adversely affect academic performance. Several of the studies actually showed improved academic performance in students who were more physically active at school. Studies also show that children who are more active and physically fit outside of school perform better academically (Trost, 2009). Additionally, Trost reports on a recent study by the Cooper Institute examining fitness levels of 2.4 million Texas students in grades 3-12 which found associations between higher levels physical fitness and lower rates of absence and disciplinary incidents (drugs, alcohol, truancy and violence). School-level correlations were also seen between physical fitness achievement and better performance on state standardized tests. Investigators controlled for socioeconomic status, minority status and school size, among other variables (Trost, 2009). In concluding this important report, Trost notes that more research is needed on physical activity and academic performance, particularly in those child populations at disproportionate risk for childhood obesity: black, Latino, American Indian and Alaska Native, Asian-American, Pacific Islander, and those in lower-income communities.

A key factor in increasing physical activity among children is to involve their parents. However, engaging parents is challenging at any school and more so at low-income schools. A study on parental participation in childhood education at schools found that 50.6 percent of low-income parents agreed that their jobs prevented them from involvement in school activities. In contrast, only 26.2 percent of middle-income parents and 11.9 percent of high-income parents agreed. Being sensitive to parents' skill levels and work schedule flexibility, as well as clearly identifying opportunities for involvement, may strengthen parental support in low-income neighborhoods (Chavkin and Williams 1989).

Impact on Physical Activity

A recent review of active transportation to school literature by McMillan (2009) found youth who walk to and from school are more physically active than those who travel to school by automobile. The intensity of physical activity measured in youth who walk to and from school is also higher, with walking students engaging in greater levels of overall physical activity at the moderate-to-vigorous level than students who walk infrequently or travel to school by motor vehicle.

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One particular study of 219 fifth-graders from eight randomly chosen elementary schools in South Carolina revealed a statistically significant difference between the activity levels of those who walked or bicycled to school and those who did not. On average, the active commuters (walk/bicycle) spent 24 more minutes in moderate to vigorous physical activity than did the irregular or non-active commuters. Those who actively commuted were also more active throughout the day (Sirard et al., 2005).

When examining physical activity in neighborhood settings, Romero (2004) found that limited accessibility to, and quality of recreational facilities, in addition to safety concerns inhibit physical activity for children in low-income neighborhoods. Other studies found that low-income neighborhoods offered fewer recreational facilities such as parks, sports fields, trails and fitness clubs, and fewer that offered free access, as opposed to pay-for-use facilities (Sallis and Glanz, 2006). In focus groups in East Los Angeles (a primarily Latino and lower socio-economic area), residents emphasized the lack of safe places for children to play. Thus, the streets become play spaces, putting children in danger from moving vehicles (Cooper et al., 2005). Household factors may also create barriers to engaging in physical activity. As mentioned above, lower income residents may not be able to participate in after school programs because of cost, location convenience, or limited time, and because low-income youth may be more likely to have jobs or household responsibilities (Romero 2004).

Body Mass Index

The rapid growth of obesity-related chronic diseases has gained wide currency over the years (CDC 2008). Although active commuting in adults is linked to improvement of health status and weight loss, the same benefits have not yet been documented in children. While studies have found a connection between active commuting to and from school and total physical activity among children, the data is inconclusive on the impact of active commuting on body mass index (BMI). In a review of twelve studies that explored the relationship between active commuting and BMI, only one found an association between active commuting and lower BMI. In two studies, a positive relationship was found between active commuting and higher BMI, while the nine other studies found no association or mixed results (Lee et al., 2008).

The dearth of existing studies will be alleviated by a new CDC initiative called Common Community Measures to Prevent Obesity (COCOMO). The "goal of the Measures Project was to identify and recommend a set of obesity prevention strategies and corresponding suggested measurements that local governments and communities can use to plan, implement, and monitor initiatives to prevent obesity" (Centers for Disease Control and Prevention 2009b).

Air Quality

Emissions from vehicles used in the school commute (e.g., school buses, city buses and private cars and trucks) may affect air quality outdoors near schools, on school grounds and in school buildings. Motorized routes to school contribute substantially to poor air quality for all children, since 59 percent of children ride to and from school in private vehicles and 27 percent ride in buses (Lee et al., 2008). Children walking or bicycling may face exposure to vehicle emissions; however, SRTS can help children pick routes offering lower levels of vehicular congestion. Additionally, a study published in 2001 found that a child riding in a school bus may be exposed to up to four times the level of toxic diesel exhaust as a child outside the bus (Solomon et al., 2001), an important finding as districts and municipalities plan new school locations and the subsequent travel distances for the student populations.

Injury and Pedestrian/Bicyclist Safety

As the percentage of children walking to school has decreased, the number of child pedestrian fatalities has also decreased. However, when rates of exposure are considered, safety concerns about walking and cycling emerge. Pedestrian crash deaths constituted 11 percent of total crash fatalities in 2006 (NHTSA, 2008a). Approximately 900 pedestrians 19 years of age or younger die each year and an additional 51,000 pedestrians are injured (Agran and Weiss 2009). In 2007, 20 percent of all children aged five to nine who were killed in

traffic crashes were pedestrians (NHTSA, 2008b). Overall, children are involved in about one-third of all pedestrian-vehicle crashes (Clifton and Kreamer-Fults, 2007).

Children aged 5-15 bicycle more than any other age group. In 2007, children under the age of 16 comprised 28 percent of those injured and 15 percent of those killed in a bicycle crash. Injury and fatality rates for bicyclists in this age group are higher than for all other ages (NHTSA, 2008c). As with pedestrian data, while these percentages are lower than those found in 1997 data, the numbers do not take into account exposure rates. Are there fewer crashes or are there fewer children bicycling and walking, and therefore lower odds of crashing?

A 2008 report from the CDC investigating why more children do not walk to school found traffic safety to be the second most common barrier, while distance children live from school was first.

A 2008 report from the CDC investigating why more children do not walk to school found traffic safety to be the second most common barrier, while distance children live from school was first (Beck and Greenspan, 2008). This is consistent with a 1999 poll conducted by the CDC, which found that 40 percent of parents identified traffic danger as a major barrier to permitting children to walk to school. Similarly, the National Highway Traffic Safety Administration found that traffic safety concerns were among the top reasons parents gave for not allowing their children to walk or bicycle to school (NHTSA 2004). Other studies have shown that parents perceive the streets closest to school to be some of the most dangerous locations for child pedestrians because of other parents transporting children to and from school in motor vehicles (Anderson et al., 2002; Bradshaw 2001).

In a statewide evaluation of the safety and mobility effects of the California SRTS program, UC Berkeley SafeTREC researchers (Orenstein, et al., 2007) found an overall decline in the number of child pedestrian/bicyclist injuries in the Safe Routes project areas, the study control areas, and in California as a whole, consistent with national data. When compared with the control areas, though, the Safe Routes project areas did not show a greater decline in the number of injuries. However, once increases in walking rates were taken into account in the project areas, the California program did suggest a decreased rate of injury and a net benefit in terms of safety for affected students.

Other safety benefits of the California program are important to note. These include reductions in near misses, increased perceptions of safety, less vehicle traffic, and improved driver and pedestrian behavior. These factors were examined through a qualitative evaluation of safety as reported by agencies receiving funding through the California program. In general, the agencies felt strongly that the program had succeeded in improving safety for the children and other neighborhood residents (Orenstein et al., 2007).

Factors Influencing Active Transport to School

Studies consistently show that distance from home to school is the primary factor influencing whether children walk or bicycle to school. Walking and bicycling rates decrease as distance between home and school increases (Cohen et al., 2006; DiGuiseppi et al., 1998; Martin and Carlson, 2005; McDonald, 2007; McDonald, 2008; McMillan et al., 2006; McMillan, 2007; Schlossberg et al., 2006; Timperio et al., 2006; Yeung et al., 2008; Ziviani et al., 2004; Martin et al., 2007). Nationally, 1969 data shows that 85.9 percent of students in the U.S. who lived less than one mile from school walked or bicycled, but by 2001 only 49.9 percent walked or bicycled that same distance (McDonald, 2007). A study of sixteen elementary schools found that children who lived within one mile of school were three times more likely to walk than to travel by private vehicle. This finding also relates to the concept of neighborhood schools. A study that compared the busing, driving, walking and bicycling rates of children who attend neighborhood schools with those who attend citywide schools found that students who attended schools in their own neighborhoods had walking and bicycling rates of about 33 percent, while the rates for students who traveled to citywide schools were only 6 percent (Wilson et al., 2007). Finally, as mentioned above, short distances do not guarantee that children will walk or bicycle to school. In a study of twelve elementary schools, 68.5 percent of

children living within one-quarter to one-half mile of school arrived by private vehicle while only 28.5 percent walked (McMillan, 2003).

Other influences on travel mode choice to school include transportation engineering-related factors such as sidewalk presence, traffic volumes and speeds, lights, and crosswalks. In a study of nineteen elementary schools in Australia, children were less likely to walk or bicycle to school if they had to travel along a roadway with busy traffic and no lights or crossing points (Timperio, et al., 2006). At three elementary schools in California, parents reported a 38 percent increase in how often children walked to school after a SRTS sidewalk improvement was completed (Boarnet et al., 2005). Neighborhood design aspects including mixed land uses, physical activity, community resources, windows facing the street, trails and general walkability also influence children's walking and bicycling rates to and from school (Evenson, et al., 2006; Kerr, et al., 2006; Martin and Carlson, 2005; McMillan, 2007; Timperio, et al., 2006).

Parental perception is a sometimes overlooked but extremely influential factor that must be addressed in SRTS programming. McDonald (2008) found that time constraints among parents, especially working mothers, are associated with less walking and bicycling to school for children aged 5-14. A Seattle study found that children are five times more likely to use active travel to school when traffic danger and neighborhood safety are not concerns of their parents (Kerr et al., 2006). The children of parents who perceive physical activity as important for their own and their child's health and who walk regularly are more likely to walk or bicycle to school (McMillan, 2006; McMillan, 2007; Ziviani et al., 2004). Finally, another common barrier is parental perception of safety relating to crime surrounding schools. Several studies show, however, that neighborhood safety is not strongly associated with active travel patterns for youth and that actual crime related fears are more likely to be perceived than based on accurate crime statistics (Zhu and Lee, 2009; Babey, et al., 2009).

Results from studies that focused specifically on associations between socioeconomic status and active transportation to school are mixed. A national study on adolescent health found no variations in transportation mode by household income or education levels in those under the age of 18. This study also found that active transportation in particular was more likely in full-time students of higher income and education (Gordon-Larsen et al., 2005). However, after analyzing a different national dataset (2001 National Household Travel Survey), McDonald (2008) found that students from families earning less than $30,000 annually walked over twice as much as students from household earning more than $60,000. However, when distance was taken into account, this study found that the likelihood of walking increased across all groups, regardless of income and ethnicity.

Other studies indicate that low-income populations may be less sensitive to the walkability of a neighborhood when making their active transportation decisions. A study of school travel in Seattle households that included children aged 4-18 found that youth in high-income neighborhoods with greater walkability actively commuted to school more than youth in high-income/low-walkability neighborhoods. However, there was no difference in active commuting between low-income/high-walkability and low-income/low-walkability neighborhoods (Kerr et al., 2006). A study of attendance areas surrounding 73 elementary schools in Austin, Texas found that schools with higher Hispanic student populations and poverty rates included greater numbers of students living close to school, more complete sidewalk networks, greater land-use mix and residential densities, yet the infrastructure in these neighborhoods was poorly maintained and included areas of higher traffic and crime rates (Zhu and Lee, 2008). While both of these studies focused primarily on urban and suburban neighborhoods, they indicate that the SRTS needs of low-income communities are nuanced. A focus

The Federal Highway Administration suggests the "SRTS program can serve as a mechanism to address equity and environmental justice issues in diverse neighborhoods."

on crime prevention through environmental design and infrastructure maintenance may be more relevant for these areas than for those in higher-income neighborhoods. The Federal Highway Administration suggests the "SRTS program can serve as a mechanism to address equity and environmental justice issues in diverse neighborhoods" (Martin, Moeti, and Pullen-Seufert, 2009).

LOGIC MODEL

The Project logic model (see Figure 1) was developed by the evaluation team to visually display how program planning and implementation of SRTS activities would inform the various outcomes outlined for this project.

The logic model was intended to show the ***breadth of possibility*** in the Local School Project rather than ***specificity*** as is often shown in other logic models. The logic model has three standard sections: resources/inputs, program activities and outcomes. Because of the variability that exists in the implementation of this project (e.g., each local site determined the program planning and SRTS activities that best fit its needs) no direct lines were drawn between the various sub-sections of the three standard sections. Any and all of the resources/inputs outlined could (and possibly should) inform the various activities encompassed under the "5 E's" of SRTS (education, engineering, enforcement, encouragement and evaluation). Likewise, there are many SRTS activities captured under the "5 E's" that can be implemented to work toward achieving the eight primary outcomes and the numerous interim outcomes anticipated in this project.

As an example, combining educational activities with engineering resources is meant to create both physical and socio-cultural conditions that will make it more likely for students to walk and bicycle to school. Those improvements also increase air quality and perceptions of safety, which in turn lead to an increase in walking and bicycling as families feel safer and healthier as they participate in SRTS activities. Finally, it is important to note that the logic model is not necessarily a linear path; feedback systems exist between many program activities, interim outcomes, and final outcomes.

The logic model also shows that while the project has eight broad long-term outcomes, there are several interim outcomes that can be achieved over the course of the project and measured using the data collection tools designed for use in this project. These interim outcomes are important in identifying and measuring Project results, as achievement of the broader outcomes will likely occur over a longer time frame than the one-year length of this project evaluation. It is hoped that the interim outcomes will show progress toward these broader goals.

FIGURE 1 ***(next page)***

*Logic model does not follow a linear path; feedback systems exist between many program activities, interim outcomes, and final outcomes.

**Specific program activities to be determined by each local site.

Outcome Measurements

Potential knowledge, awareness and perceptions measurement methods:

[1]Parent survey and/or focus groups

[2]Youth survey (currently not planned but could be conducted with extra funding support)

[3]Interviews with program coordinators, school officials, program committee members, local law enforcement, local government staff/officials, review of school transportation and health policies, teaching curriculum and extra-curricular activities

[4]Near-misses, helmet use & yielding behavior measurement methods: observations during school arrival/departure

[5]Walk/bicycle rates: student travel tallies, parent survey

[6]Vehicle count measurement method: observations during school arrival/departure

[7]Vehicular speed measurement method: Portable speed detection device, radar checks, data from police department (logs, etc.), observations during school arrival/departure

[8]Local and state crash reports, injury data, GIS mapping

[9]Increase level of enforcement of speed, pedestrian right-of-way, etc.

[10]Installation of new sidewalks or repair of existing sidewalks, countdown signals, bicycle lanes, etc.

Figure 1. Logic Model

RESOURCES/ INPUTS	PROGRAM ACTIVITIES**	OUTCOMES
School support	**Education** *(e.g., walking/bicycling safety, health benefits, community benefits)*	***Increase walk/bicycle to school*** [1, 2, 4, 5, 6] Interim Outcomes: Increase positive perception of walk/bicycle [1, 2, 3, 5] Increase awareness of walk/bicycle as travel mode [1, 2, 3] Increase knowledge & awareness of health benefits of walk/bicycle [1, 2, 3]
Local champion(s)	**Engineering** *(e.g., changes to the pedestrian and bicyclist environment, driving experience)*	***Increase physical activity*** [1, 2, 4, 5, 6] Interim Outcomes: Increase positive perception of walking/bicycling [1, 2, 3, 5] Increase awareness of walking/bicycling as travel mode [1, 2, 3] Increase knowledge & awareness of health benefits of walking/bicycling [1, 2, 3]
Program committee	**Enforcement** *(e.g., speed checks, yielding sting operations, increased police in school zone, volunteer patrols)*	***Decrease pedestrian/ bicyclist injuries and fatalities on trip to and from school*** [4, 5, 6, 7, 8] Interim Outcomes: Increase knowledge of pedestrian/bicyclist safety [1, 2, 3, 5] Increase yielding rate [4] Decrease vehicle speeds [7] Increase helmet use [4]
Financial resources (monetary or in-kind)	**Encouragement** *(e.g., WTSD/BTSD programs, caregiver role models, teacher role models)*	***Improve air quality around schools*** [5, 6] Interim Outcomes: Increase positive perception of walking/bicycling [1, 2, 3, 5] Increase awareness of walking/bicycling as travel mode [1, 2, 3] Increase knowledge & awareness of health benefits of walking/bicycling [1, 2, 3] Reduce vehicle volume at school [6]
Community support (public, law enforcement, local government)	**Evaluation** *(e.g., feedback on program activities)*	***Decrease self- and school-reported incidents of asthma*** [5, 6] Interim Outcomes: Increase positive perception of walking/bicycling [1, 2, 3, 5] Increase awareness of walking/bicycling as travel mode [1, 2, 3] Increase knowledge & awareness of health benefits of walking/bicycling [1, 2, 3]
Community readiness to change (e.g., walk/ bicycle social norms)		***Increase program sustainability of SRTS*** [1, 2, 3] Interim Outcomes: Increase participation in SRTS planning and implementation activities by key community stakeholders [1, 2, 3] Increase funding [1, 2, 3] Observe evidence of programming/policy changes at the school or in the community related to SRTS [1, 2, 3]
Students' desire to walk/bicycle		***Reduce carbon emissions*** [6] Interim Outcomes: Increase positive perception of walking/bicycling [1, 2, 3, 5] Increase awareness of walk/bike as travel mode [1, 2, 3] Increase knowledge & awareness of health benefits of walking/bicycling [1, 2, 3] Reduce vehicle volume at school [6]
Baseline data & background information		***Improve the built environment for multi-modal transportation*** [7, 8, 9] Interim Outcomes: Increase vehicular safety (decrease near misses, speed, collisions) [6, 7, 8, 9] Increase number of designed and deployed engineering improvements [10]
Best practices & research		
Local school program plans		

METHODOLOGY

As diagrammed in the logic model, the desired outcomes from the SRTS programs include: increased walking and bicycling to school, increased physical activity, decreased injuries and fatalities, improved air quality around schools, decreased reports of asthma, increased sustainability of SRTS programs, reduced carbon emissions around school areas, and land use supporting multi-modal transportation. Each data collection tool was selected to inform these long-term outcomes through direct measurement of many of the interim outcomes outlined in the logic model (see logic model for details on links between measurement and outcome).

The Partnership hired the evaluation team to develop an evaluation plan and the appropriate data collection tools for use, as needed, in the field at the local school sites. The evaluation team's tasks were to educate the local sites on the use of the data collection tools and enter and analyze the data; the local sites were responsible for actual data collection. Therefore, an effort was made to design the protocols and data collection tools to be as volunteer-friendly as possible.

Prior to the fall 2008 baseline data collection, the evaluation team compiled an evaluation handbook for the local sites explaining the purpose and importance of evaluation both for program planning and evaluating program effectiveness. The handbook contained timelines for data collection (including coordinating volunteers and acquiring school permission), protocols for each of the data collection methods as well as copies of each data collection instrument. A copy of the handbook can be found at the following link: http://www.saferoutespartnership.org/media/file/SRTS.Eval.Handbook-Final_9_08.pdf

All local sites were required to collect baseline data before program activities began at the school (typically prior to International Walk to School Day in the fall of 2008) and again in the spring of 2009, after an academic year of program activities had been implemented. Sites also collected data again in the fall of 2009; however, those data are not included in this report.

Each site was required to collect parent survey and student tally data at each data collection time point. The four Kaiser Permanente supported school sites had additional data collection requirements due to the established community partnership of paid coordinators, including caregiver focus groups in the fall of 2008 and safety observations and vehicle counts at baseline and in the spring of 2009. The four paid coordinators received training from the evaluation team via telephone in administering the evaluation tools. The evaluation team and Partnership staff worked with the four sites using Google Earth to identify the best intersection locations near the schools at which to conduct traffic observations. All of the sites were also required to participate in an exit phone interview with the evaluation team in June of 2009. Partnership staff also participated in an exit phone interview in the fall of 2009. The data collection instruments are described in Table 2 below.

Table 2. Data Collection Instruments

INSTRUMENT	DATA COLLECTION PERIODS
National Center for SRTS Parent Surveys	Spring, Fall 2008 & Spring 2009
National Center for SRTS Student Tallies	Spring, Fall 2008 & Spring 2009
Caregiver Focus Groups	Fall 2008 (Kaiser Permanente-funded sites)
Traffic Safety Observations	Fall 2008 & Spring 2009 (Kaiser Permanente-funded sites)
Vehicle Counts	Fall 2008 & Spring 2009 (Kaiser Permanente-funded sites)
Exit Interviews	Spring 2009 & Fall 2009

DATA COLLECTION INSTRUMENTS

Parent Survey

The short two-page survey developed by the National Center for Safe Routes to School, and used as a standard national data collection tool, asks respondents for information about travel mode to school, what factors affect whether parents allow their children to walk or bicycle to school, the presence of key safety-related conditions along routes to school, and related background information.[1] It is available in both English and Spanish and takes approximately 10-15 minutes to complete.

Sites were encouraged to attain a 50 percent response rate for the parent surveys, with a minimum 20 percent response rate. Sending the surveys home in a designated parent information folder (backpack mail) was the typical method for distribution. Other options included distribution at parent-teacher conferences, Parent-Teacher Association/Organization (PTA/PTO) meetings or at large school social events. At most sites backpack mail was found to be most effective, particularly when combined with an incentive for return (for either the student, parent and/or teacher/classroom) and a short timeline for return (e.g., one to two days was better than one week). The survey is used in many SRTS programs across the United States, and can be found in both English and Spanish at the following links:
http://www.saferoutesinfo.org/resources/collateral/Parent_Survey_English_Scan2009.pdf
http://www.saferoutesinfo.org/resources/collateral/Parent_Survey_Spanish_Scan2009.pdf

[1] To analyze the travel mode data from the parent survey, the proportion of respondents who reported that their child walked to school was estimated and compared using unconditional maximum likelihood Poisson regression models. Two models were developed, one using ***walked to school*** as the outcome and the other using ***walked home from school*** as the outcome. In each case, an initial model with binary terms for ***Kaiser support*** and ***post period*** was fitted. A product term was entered into the model to assess heterogeneity of the risk ratios for each variable across levels of the other. Results were confirmed using Mantel-Haenzsel stratified methods. All Mantel-Haenzsel point and interval estimates were nearly identical to those obtained from the regression models. Data from two schools without post-period information were excluded from the analysis.

Student Tally

The tally form developed by the National Center for Safe Routes to School was used to collect information from children about how they traveled to and from school. The tally sheet identifies six different travel modes: walking, bicycling, bus, private vehicle, carpool, or other modes. This standardized tally form is used in many SRTS programs across the United States.

Schools were instructed to have teachers or SRTS program volunteers conduct the tallies among a large sample of classrooms on Tuesday, Wednesday and/or Thursday of a normal week of school (i.e., no special events, vacation/early release days or intense weather; and not the first or last week of school or a major academic testing week due to travel anomalies that occur at these times) for a total of two days at a minimum. In-classroom tallies were encouraged but larger group gatherings were an alternative if classroom tallies were not possible. As an example, one site conducted tallies during lunchtime by going from table to table. While this was effective in obtaining a complete sample of the school, information such as grade distribution of travel mode was not recorded (but could be with slight modifications to the method). More consistent results were obtained when volunteers or paid coordinators conducted tallies because this was a low-priority task for many teachers due to other academic pressures. The student tally form can be found at the following link:
http://www.saferoutesinfo.org/resources/collateral/SRTS_Two_Day_Tally_Scan2009.pdf

Caregiver Focus Group

The focus groups provided a social setting in which paid coordinators at the Kaiser Permanente supported sites could explore topics and issues related to safe walking and bicycling to school with caregivers at their schools in the fall of 2008 before program activities were planned and implemented. The evaluation team and the Partnership developed the protocol and questions (in English and Spanish) with the following objectives in mind:

1) To explore children's patterns of getting to school at each particular school site, including current practices and barriers to walking/bicycling.

2) To identify barriers and opportunities for walking/bicycling inherent to each school site.

3) To explore and solicit feedback about the types of improvements that would help children to walk or bicycle safely to school.

4) To explore and solicit feedback about the types of SRTS activities that could increase walking/bicycling and safety, and gain further understanding of ways to encourage parents to participate in SRTS activities.

For a copy of the focus group questions, see page 14 of the Evaluation Handbook at the following link: http://www.saferoutespartnership.org/media/file/SRTS.Eval.Handbook-Final_9_08.pdf.

Traffic Safety Observation

The safety observation form and protocol developed by UC Berkeley SafeTREC was used to examine crossing behavior of pedestrians and cyclists and driver behavior near schools. This tool focused on characteristics of intersections and events that affect safety including presence of crossing guards, presence of crosswalks and traffic lights and whether they were used by pedestrians/cyclists, driver yielding behavior, and conflicts between vehicles and pedestrians/cyclists.

The evaluation team assisted the four Kaiser Permanente sites in identifying one or two intersections at or near the main pedestrian point(s) of entry to the school grounds. The paid coordinators were instructed to conduct safety observations on two days during both the arrival and dismissal times. The days of the week selected in the fall of 2008 were to be mirrored in the spring of 2009 (i.e., if data was collected on Tuesday and Wednesday in the fall at a particular site, then spring data collection occurred on those same days). Similar to the student tallies, sites were advised to avoid days with higher probability of irregular travel patterns (e.g., Mondays, Fridays and early dismissal days). For a copy of the safety observation protocol and form, see page 13 of the Evaluation Handbook at the following link: http://www.saferoutespartnership.org/media/file/SRTS.Eval.Handbook-Final_9_08.pdf)

Vehicle Count

The vehicle count form and protocol developed by UC Berkeley SafeTREC was used to record the number of and general types of vehicles (e.g., small vehicles, medium vehicles, mini-vans, small SUVs, large SUVs, pick-up trucks) observed at the main drop-off/pick-up area(s) at the school. The information collected was used to determine the change in the number of children arriving by vehicle at the beginning of the school year versus the end of the year and to provide a general measure of how vehicle emissions around the schools may have improved over the year.

The form included general definitions and examples of each vehicle type. The paid coordinators were encouraged to conduct the vehicle counts on the same day as the safety observations, and to conduct counts in both the morning and the afternoon. As with the safety observations, data was to be collected on the same weekdays in the fall and spring for consistency.

In order to obtain an understanding of any change in air quality around schools, CO_2 emissions from transportation activity were estimated by entering parent survey data and vehicle count data into a carbon calculator developed by the Nature Conservancy (http://www.nature.org/initiatives/climatechange/calculator/). The calculator uses two variables: vehicle type (small, midsize or large) and estimated miles driven per day to derive number of tons of CO2 emitted per year. The vehicle count data provides information on vehicle type, while the self-reported distance from home to school is used to estimate the miles driven per day.

The first step in determining these variables was to combine the six vehicles categories from the vehicle observations (small vehicles, medium, mini-vans, small SUV, large SUV, and truck) into three categories, as the online carbon calculator only provided options for small, medium, and large vehicles. Smaller vehicles were entered into the "small" vehicle category, medium-sized vehicles, mini-vans, and small SUVs were grouped together for the "midsize" category, and large SUVs and trucks were combined for the "large" category. Percentages of each of the three types of vehicles were determined for each of the schools that

conducted both parent surveys and vehicle counts. These values were then multiplied by the number of students who were reported to live within each of the five distance categories listed on the parent surveys (less than one-quarter mile, one-quarter to one-half mile, one-half to one mile, one to two miles, and more than two miles from school).

The carbon calculator was utilized and respective variables were entered for each of the three vehicle types for each of the five distance categories. The output from these two variables was the measurement in tons of CO2 emitted per year. This was repeated 15 times at each school to determine all the different CO2 emissions from the three car types at the five different distances

A limitation of this data is that it linked self-reports of distance from school to actual counts of vehicles in front of schools—two different samples. It is impossible to determine from this data how far each of the vehicles counted actually traveled to and from school. For a copy of the vehicle observation protocol and form, see page 13 of the Evaluation Handbook at the following link: http://www.saferoutespartnership.org/media/file/SRTS.Eval.Handbook-Final_9_08.pdf.

Telephone Exit Interviews

The evaluation team and the Partnership conducted hour-long telephone exit interviews in the spring of 2009 with each site's main coordinator (paid or volunteer) to ascertain more about the processes of program planning, data collection and implementation for SRTS activities at each school site, in addition to coordinators' impressions about the sustainability of SRTS programming at each location. The coordinators were also asked about the helpfulness of resources such as Partnership and evaluation team technical assistance in program planning and evaluation.

The evaluation team also interviewed the Project's overall project manager at the Partnership about project challenges and successes from the manager's vantage point of overseeing and interacting with all ten sites and to discuss issues relevant to SRTS program development at low-income schools, including ideas for surmounting challenges. For a copy of the coordinator exit interview questionnaire, see the Appendix.

RESULTS

This report identifies the results from the first year of SRTS implementation at ten low-income schools. This project's evaluation was used to provide feedback for program planning, as well as to report on progress toward short- and long-term outcomes.

Evaluation as a tool for program planning is an often-overlooked element of SRTS.

Using Evaluation for Program Planning

Evaluation as a tool for program planning is an often-overlooked element of SRTS. Focus groups were conducted as an evaluative program-planning tool for the four Kaiser Permanente sites. The sites were encouraged to use the information collected from the focus groups, in addition to the baseline parent surveys to guide their selection of SRTS program activities throughout the year. For example, if gang activity was identified as a more pressing issue than vehicle speeds, time and resources might be better spent increasing community law enforcement activities (e.g., school or community resource officers) and implementing neighborhood watch programs than on speed enforcement.

In response to questions about barriers to walking or bicycling, caregivers at these four locations were mostly concerned about personal safety and traffic danger. Caregivers at Knollwood Elementary (a suburban school) and Kawana Elementary (an urban school) described the social environment surrounding the school as being unsuitable for child pedestrians due to obstacles including frequent presence of stray dogs, crime (people loitering in the neighborhood and selling drugs), sexual predators and unsafe traffic. At the most urban of the four schools, DC Preparatory Academy, caregivers voiced concerns about children walking near traffic, even with an adult leading a group of children (as with a walking school bus). Focus group participants voiced their concerns about the difficulty of one adult in supervising a group of children who tend to lag behind and are easily distracted. Traffic was also an issue at Mount Vernon Elementary. However, at this school, scheduling issues were the greatest obstacles to caregivers walking their children to school or meeting other caregivers to walk their children to school. Caregivers whose children

received free breakfasts and needed to be at school by 7:30 a.m. found it difficult to get their children to school on time by walking. Other caregivers stated that it was difficult to walk their children to school and then get themselves to work on time.

Caregivers expressed somewhat mixed opinions about walking school buses. While caregivers suggested that larger groups of adults and children walking together could help improve safety and decrease crime, some indicated that there would be too many children for parent volunteers to watch safely. They believed that the walking school bus would work well for those living closer rather than farther from school (a distance of one half mile or within five blocks of the school, or a walking route comprised of streets with no major intersection). However, caregivers at Mount Vernon Elementary mentioned that the walking school bus would reduce auto congestion in front of the main entrance of the school.

Caregivers were fairly consistent in their support of encouragement activities, and mentioned Walk to School Days as attractive, as well as one-day walking/bicycling fairs held a few times a year that included incentives such as contests and prizes that might make the transition from driving to walking more enticing. Caregivers at Kawana Elementary were concerned about the sedentary lifestyles that might arise if their children were simply driven to school, and cited the lack of physical education classes at the school as a contributor to sedentary behavior.

Using Evaluation to Measure Outcomes

Progress toward achieving the outcomes outlined in the logic model was assessed using the parent survey, student tally, safety observation, vehicle count and exit interview data. Overall, the results indicate there was good progress toward achieving many of these desired outcomes for the Project as a whole and in particular for the four Kaiser Permanente sites.

Given the task of reversing a 30-year decline in walking and bicycling to school, as well as the challenges inherent in working with low-income schools and communities, this project recorded solid successes. Almost all of the school sites reported some amount of policy and environmental change occurring across the academic year in support of walking and bicycling. Additionally, nine out of ten schools implemented successful walk/bicycle educational and encouragement activities that paid and volunteer coordinators expect will continue into future years.

Parent surveys were submitted from the sites during the two data collection time periods. Baseline data collection yielded 846 surveys from ten schools, whereas parents only returned 470 surveys in spring 2009 and only from eight schools (two schools could not schedule spring data collection due to political or school staffing barriers), totaling 1,136 across the project period. Response rates varied from 43 percent to 5 percent of total school populations in the baseline surveys and from 35 to 4 percent in the spring 2009 data collection. Response rates were generally comparable across all sites at baseline, but in the spring of 2009 those sites with paid coordinators experienced higher response rates than the sites with volunteer coordinators. In addition, the number of returns across all sites with paid coordinators was almost identical between baseline and spring 2009 follow-up (321 versus 307). However, the number of responses fell dramatically at sites with volunteer coordinators (from 508 at baseline to 162 in spring 2009).

Eight sites returned student tallies from an average of fourteen classrooms during the two data collection time periods. The number of classrooms included in the tallies each time was generally comparable across the sites; however, one school increased the number of classrooms tallied from five to fifteen. An average of 214 students across all schools participated in the tallies in the fall and 250 students participated in the spring. The average student population at the eight schools during the 2008-2009 academic year was 441. As was the case with the parent surveys, two schools did not collect student tallies in the spring of 2009.

Safety observation and vehicle count data were examined for two Kaiser Permanente sites: Kawana Elementary and DC Preparatory Academy. Safety observations were conducted at two different sites at both schools in fall 2008 and repeated at these

locations in spring 2009. Unfortunately, due to fall 2008 and spring 2009 data collection occurring on different days of the week, comparative analysis of safety observation data from the other two Kaiser Permanente sites (Knollwood and Mount Vernon) was not possible.

Exit interviews were conducted with the paid coordinators at the Kaiser Permanente sites and the volunteer coordinators at four of the non-Kaiser Permanente sites. Interviews with the remaining two sites (Johnson Elementary and Drew Elementary) could not be scheduled due to volunteer coordinator changes in the spring of 2009.

Increase in Walking/Bicycling to School and Increase in Physical Activity

An increase in walking and bicycling to school is one of the long-term outcomes of the Project. It was anticipated that given the short time period of this project, initial increases in these active transport modes would be modest. Interim measures, though, can show progress toward long-term achievement, as shown in the logic model, and three questions on the parent survey offered insight into interim outcomes for walking/bicycling increases. The questions focused on how much parents think the school encourages walking and bicycling, how much fun it is to walk and bicycle, and how healthy it is to walk and bicycle. Responses to these questions were examined in terms of how children traveled to school and/or whether parents/guardians reported that children asked for permission to walk or bicycle to school in the previous year.

At sites with paid coordinators, 71 percent of parents who reported that their school "strongly encouraged" active commuting, stated that their children asked for permission to walk or bicycle to school. In contrast, at sites with volunteer coordinators, 53 percent of parents who reported that their school "strongly encouraged" walking and bicycling stated that their children asked to walk or bicycle to school.

Largely consistent with the literature on parental support of active travel, the parent surveys indicate that a greater percentage of parents whose children walk consider walking and bicycling to be fun compared with those who travel to school in the family vehicle (76 percent versus 63 percent respectively for paid coordinators sites; 75 percent versus 61 percent for volunteer coordinator sites). The same holds true in terms of parents' ratings of the healthiness of walking/bicycling: 95 percent versus 87 percent respectively for paid coordinator sites and 88 percent versus 80 percent for volunteer coordinator sites.

Finally, part of increasing the awareness of walking and bicycling as travel modes is to make sure these modes are feasible for students. As discussed in the literature review, distance from home to school is one of the most frequently cited barriers to walking and bicycling to school. Parent survey data aggregated across all schools from both data collection periods indicated that, of the children who walk, 60 percent live within a quarter mile of school, 18 percent live one quarter to one half mile from school, 11 percent live one half to one mile from school, 4 percent live one to two miles from school, 2 percent live more than two miles from school, and 4 percent indicated that they did not know the distance form home to school (Table 3).

Table 3. Distances Traveled by the Walking Population at School Sites

DISTANCE FROM HOME TO SCHOOL	PERCENTAGE OF WALKERS LIVING THIS DISTANCE FROM SCHOOL
Less than one quarter mile	60
One quarter to one half mile	18
One half to one mile	11
One to two miles	4
More than two miles	2
Don't know distance	4

Not surprisingly, with more children walking in the afternoon, a greater percentage of afternoon walkers indicated that they lived farther than a quarter mile from school than reported in the morning numbers. Also worth noting is that the population of potential walkers is large—38 percent of those living within a quarter mile of school travel by family vehicle.

Initial analysis of the parent survey data indicated that a modest increase in walking occurred between the baseline and follow-up surveys. The proportion of respondents who reported that their child walked to school was 29 percent higher in the spring (95 percent CI 1.00-1.65) across all school sites included in the survey analysis. Similar increases for the proportion of students who walked home from school were estimated (26 percent). The changes in walking rates were nearly identical at sites with paid coordinators and those with volunteer coordinators for both morning and afternoon travel (walk to school: RR 1.49 and RR 1.53, respectively; likelihood ratio p 0.93; walk home from school: RR 1.30 and 1.27, p 0.93) (See Table 4).

Overall, and independent of the data collection time period, school sites with paid coordinators reported over 50 percent more children walking to school than those sites with volunteer coordinators (RR 1.51, 95 percent CI 1.15-1.97). The same held true in the afternoon, with 45 percent more students walking at sites with paid coordinators.

Analysis of the student tally data by school indicates that even at the sites with paid coordinators, the change in walking rates varied (Figure 2). One paid coordinator site (Knollwood Elementary) showed a 5 percent increase, two other sites (Mount Vernon and Kawana elementary schools) experienced minimal change, with a 1 percent difference between baseline and follow-up. The final site showed a 5 percent decrease in walking rates. Only one site with a volunteer coordinator showed clear increases in walking between baseline and follow-up (Johnson Elementary), from 7 to 14 percent of those tallied who reporting walking.

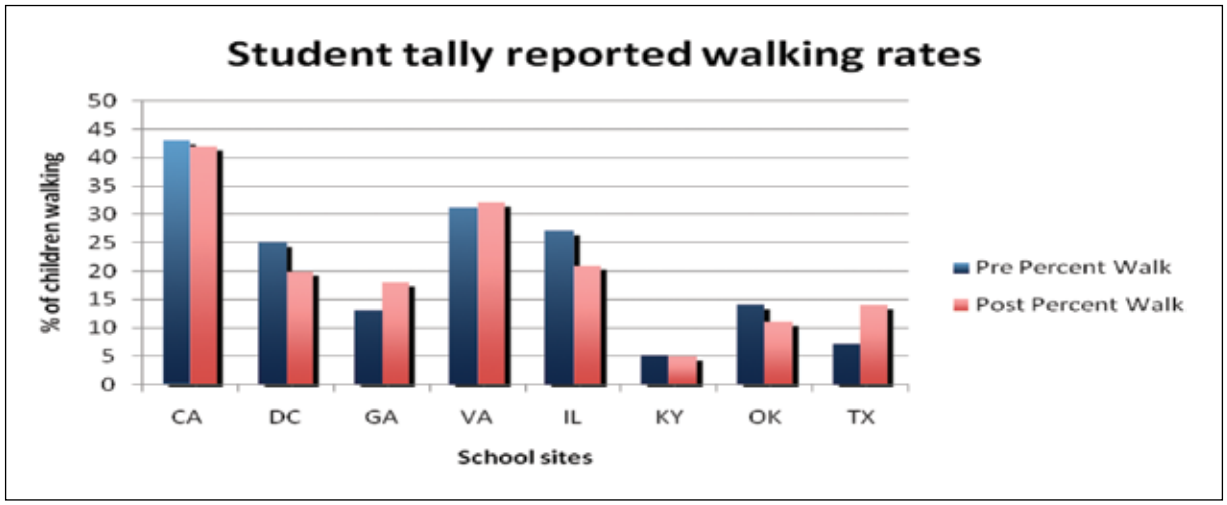
Both the parent surveys and the student tallies indicate that walking was more prevalent in the

Table 4. Risk Ratios* for Walking to School by Pre-Post Status and Kaiser Permanente Support Status

OUTCOME	VARIABLE	RR	(95% CI)	P-VALUE
Walked to School	Time period			
	Baseline	1	-	-
	Follow-up	1.29	(1.00-1.65)	0.047
	Kaiser Permanente support			
	No	1	-	-
	Yes	1.51	(1.15-1.97)	0.003
Walked Home from School	Time period			
	Baseline	-	-	-
	Follow-up	1.26	(0.98-1.61)	0.071
	Kaiser Permanente support			
	No	-	-	-
	Yes	1.45	(1.12-1.88)	0.005

* Ratio of proportion reporting walking to or from school

Figure 2. Student Tally Reported Walking Rates



afternoon than in the morning, while travel in the family car generally decreased in the afternoon. However, the family vehicle is still the predominant travel mode at all sites. Bicycling remained an infrequent travel mode at all schools. Barriers to, and solutions for increasing bicycling, particularly at low-income schools, should continue to be explored.

Decrease in Pedestrian/Bicycle Injuries and Fatalities on Trip To and From School

Changes in pedestrian/bicycle injuries and fatalities are among the most difficult characteristics to assess over a short timeframe due to the small number of incidents at each school. However, the precursors to incidents—potential conflict points, crossing and yielding violations and near misses—are generally more prevalent and are important interim measures as they can identify current and/or future problem spots around the school site.

At Kawana Elementary, very few near misses or yielding problems were recorded, most likely due to low rates of vehicular traffic. There was a 63 percent increase in child pedestrians crossing in, rather than outside of, striped crosswalks. The percentage of children crossing with a crossing guard increased 17 percent between the baseline and follow-up observations.

DC Preparatory Academy also recorded few near misses or yielding problems at their two observation locations. Due to the installation of crosswalks at these intersections, in the spring of 2009, all children who were observed crossing the street did so in a marked crosswalk. Overall pedestrian traffic increased at one observation location and decreased at another. Almost all of the children crossing at the two observation locations crossed with a crossing guard.

Improve Air Quality Around Schools, Decrease Self- and School-Reported Incidents of Asthma and Reduce Vehicle Emissions

The modest increases in walking and decreases in family vehicle and school bus traffic determined from the parent survey data can contribute to the reduction of vehicle emissions around schools. This, in turn, can improve air quality and decrease self- and school-reported incidents of asthma. While asthma rates and vehicle emissions were not directly measured in this project, carbon dioxide emission changes were estimated using vehicle volumes and travel distances as a proxy for overall vehicle emission reductions.

In the fall of 2008, a total of 301 vehicles were counted at Kawana Elementary (30 small, 165 medium and 106 large). Among those who responded to the parent survey, 21 lived less than one quarter mile from the school, 11 lived one quarter to one half mile away, 9 lived one half to one mile away, and 15 lived over one mile away

from school. Using The Nature Conservancy carbon calculator (http://www.nature.org/initiatives/climatechange/calculator/), and entering estimates on carbon dioxide emissions for the three car sizes, fall 2008 vehicle counts and the self-reported distance from home to school from the parent survey, it was calculated that Kawana families contributed approximately 19.04 tons of carbon dioxide per year due to their school commute driving patterns. Comparatively, in the spring 2009, only 288 vehicles were counted. If it can be assumed that parents continued driving the same model vehicles and did not move into a different mileage category specified in the parent surveys, then the spring 2009 carbon dioxide contribution was down to 17.7 tons per year. If this drop in vehicles counted was due to a shift from family car to walking, then the potential carbon dioxide reduction due to walking is 1.34 tons of carbon dioxide emissions over the course of the academic year.

DC Preparatory Academy volunteers counted a total of 171 vehicles in the fall of 2008 (40 small, 99 medium and 32 large vehicles). According to the parent survey, 7 families reported living one quarter mile from school, 8 lived one quarter to one half mile from school, 1 lived one half to one mile from school, 6 lived one to two miles from school, and 16 lived over two miles away from school. Using The Nature Conservancy carbon calculator and the same factors as were calculated for Kawana Elementary, it was determined that DC Prep families contributed approximately 18 tons of carbon dioxide annually due to their school commute driving patterns. In the spring of 2009, 78 vehicles were counted (7 small, 64 medium and 7 large). Additionally, parent surveys from the spring indicated that 2 respondents lived less than one quarter mile from school, 2 lived one quarter to one half mile away from school, 1 lived one half to one mile away from school, 6 lived one to two miles away from school, and 9 lived over two miles away from school. Based on these numbers, the spring 2009 carbon dioxide contribution was reduced to 11 tons per year. If this drop in vehicles counted was due to a shift from family car to walking, then the potential carbon dioxide reduction due to walking is seven tons of carbon dioxide emissions over the course of the academic year.

Increase Program Sustainability of SRTS

The exit interviews with both the paid and volunteer coordinators and the Project Manager, provided rich data not only related to program sustainability but also regarding the other seven long-term outcomes listed in the logic model through information on the key players, barriers, lessons learned and the successes and strengths of the programs.

Overall, coordinators expressed positive attitudes about the Project. Sixty-two percent rated the project's overall success as very high or high, while 38 percent rated it as neutral. The local program coordinator (whether paid or volunteer) and school team were rated as critical in initiating SRTS planning at the school and achieving success. Other key players include local government staff, school administrators and volunteers. Parent support was critical to achieving school administration approval. The Project Manager reported that particularly in low-income communities, churches could play an important role in SRTS due to the organizing power and status they hold in the community. Project partners were found in unlikely places, such as community revitalization groups. All of the paid coordinators indicated that the technical support from the SRTS National Partnership was invaluable. Paid coordinators generally reported success with Walk and Bike to School Days, as well as with implementation of permanent bicycling/walking policies and projects. Nine out of ten schools implemented successful walk/bicycle educational and encouragement activities that will continue into future years. These activities helped to attract attention and support at the schools and energize school communities. Participation was enthusiastic at several sites, even those that held their events in the rain. Furthermore, early successes helped build momentum for increased school and parental involvement and were essential in communicating the program's potential to benefit the school community.

"It takes time to let people get familiar with the program and build relationships..."

Additionally, it was shown that momentum increases over time. As one participant stated,

"In the fall, we had to fight with the school to have Walk and Bike to School Day. In the spring, the school was more than happy to sponsor the event."

Respondents mentioned improved networking as a benefit to the Project, regardless of whether the site had a paid coordinator or a volunteer coordinator. At King Elementary (a site with a volunteer coordinator), a state SRTS conference was instrumental in promoting and expanding knowledge of SRTS. Through this avenue, the local school team was able to emphasize the need for a major intersection investment near the school, as well as to make connections with the University of Illinois' Department of Kinesiology to acquire support for programs and evaluation.

Both paid and volunteer program coordinators consistently referred to the challenges of recruiting parents/caregivers in low-income areas. Consistent with the literature, the pool of parent volunteers tends to be small, parents working multiple jobs and therefore having limited time and/or inconsistent schedules were common issues. At one site, even caregivers who wanted to volunteer were not able to do so because they could not pass the background checks required for school volunteers. Parents, however, were cited as influential to obtaining school administration support of SRTS activities for their children.

Six site respondents reported that school staff were the key players most often missing from the project. Interviewees reported that while school administrators were engaged and helpful to a certain extent, they also acted as gatekeepers to the school and teachers. Teachers' ability to participate in programming or data collection was hampered because of a lack of time due to the required focus on academic testing, curricular requirements, as well as unclear communication from the school administration regarding the importance of these activities. The Project Manager also noted that turnover of school staff, principals and even student/parent populations is greater in low-income schools, which makes identifying program champions/volunteers and maintaining momentum for activities challenging. Other groups missing from the process at some sites included neighborhood organizations and parents. For these groups, SRTS was perceived as a low priority compared with issues such as neighborhood crime and the reality of limited time outside of work for parents. As an example, only 37 percent of respondents rated the Project's ability to bring together key partners in an effective and sustainable committee as very high or high while 62 percent gave neutral responses. In this regard, few differences were observed between the sites with paid coordinators and those with volunteer coordinators.

Despite the recruiting challenges, creative solutions were found. Project coordinators who were able to support other community-based programs (e.g., tree planting), were able to build trust within the community and garner support for SRTS. At one site, the paid coordinator, in collaboration with a parent champion, organized a "cupcakes and conversation" event on a street corner along the route to school. This event gathered together neighbors—both parents and non-parents—and provided education about travel to and from school. Participants were also able to discuss neighborhood issues that were most relevant to them. It was a great opportunity to expose them to SRTS and to allow neighbors who might not know one another to meet and discuss problems and possible solutions.

Project successes came in various forms, from sustained educational and encouragement activities to policy and environmental changes along the routes to school. Several of the examples listed below represent low-cost, high-visibility successes, which helped to increase community awareness of SRTS:

- The formation of broad-based school/community task forces that target not only SRTS but also larger neighborhood issues that affect the walk to and from school, such as street safety (both personal and traffic-related).
- Tree planting around the school.
- New crosswalks, curb ramps, signage and bicycle facilities (bicycle racks at safe locations on the school grounds).
- Implementation of no-idling policies for vehicles.
- A street closure in front of a school.

- Implementation of walking and bicycling curricula in physical education classes.
- Bicycle, helmet and small incentive giveaways.
- Subcommittee of the Parent-Teacher Organization dedicated to SRTS and child health.
- Walk to School Days including local officials and media coverage.
- Removal of the "no bicycling to school" policy previously in place.

Local businesses also supported SRTS programs via sponsorships or donations to SRTS programs, including local stores offering healthy snacks and prizes for Walk to School Day event participants. Project incentives were essential to achieving parent, student and volunteer participation in SRTS programs.

Another measure of program success and sustainability is funding. Many sites submitted and received grants (SRTS and non-SRTS) for programs that represented a range of activities based on the "5 E's" (education, engagement, enforcement, engineering and evaluation). In total, eight sites received $2,237,115 in funds for SRTS activities. Another two sites also received a portion of general citywide engineering and planning funding totaling $3,550,000 for infrastructural improvements benefiting safe routes to school for children.

Both paid and volunteer coordinators rated as valuable the technical assistance provided by staff from the SRTS National Partnership regarding implementing best practices, conducting problem solving when barriers or challenges arose and providing a forum for discussion and networking with their peers at other schools.

When asked directly about program sustainability, 63 percent stated that their school's SRTS program was very likely/likely to continue in some capacity with no additional funding after the program ended, largely due to momentum from the previous year's activities. Overall, interviewees at the sites with paid coordinators reported less optimism that their programs would continue at the same level without support, perhaps because they knew how much effort they had personally contributed to the project. Paid coordinators repeatedly mentioned the importance of delegating and "not doing everything yourself." In some cases, this was difficult, especially at the beginning of the program, at schools where there was limited support from key parties. Generally, the strength and depth of the SRTS school team, including local government staff and school staff (principals, assistants, teachers) affected the extent and effectiveness of the SRTS programs.

Improve the Built Environment for Multi-Modal Transportation

Interviewees from seven of the eight sites reported a policy or environmental change that occurred over the academic year as a result of the Project. As a result, 87 percent of those interviewed rated the Project's success in creating momentum towards policy change and/or changes in the built environment in the broader community as very high or high. Additionally, 75 percent rated the Project's success in generating momentum towards changes in the walking/bicycling culture and/or social norms in the broader community as high. As mentioned earlier, examples of policy and environmental changes include a new crosswalk and bicycle parking, the permanent change to a physical education curriculum to include walking and bicycling, removal of a "no-bicycling to school" policy, a policy to discourage motor vehicle idling and successful grant submission for SRTS and non-SRTS funds to support walking and bicycling in local communities. *(See sidebar about Project schools on page 8-9)*

DATA LIMITATIONS

Limitations in the datasets are important to note. First, while some schools were successful at obtaining good response rates at both data collection time points, the response rates for the majority of schools at both baseline and in spring 2009 were low. The very low return rates at the sites with volunteer coordinators in the spring limited comparative analyses and eliminated the ability to analyze changes at any one school between baseline and spring 2009 follow-up with any certainty.

Secondly, while the evaluation team outlined protocols for data collection and discussed the importance of using the same methods for the two data collection time periods, at several

sites the protocols were not followed. This made comparative analysis both across the two time periods and across schools difficult, if not impossible. Volunteers were also constrained by the limited access at some schools to both teachers and students for data collection.

Finally, this project attempted to measure changes in walking and bicycling patterns through the use of the parent surveys and student tallies. However, measures of traffic injury risk, chronic disease and air quality and greenhouse gases are central goals of SRTS and are also critical to measure. Evaluating the impact of SRTS on these elements, however, requires time, expertise and resources (financial and personnel).

Potential solutions to these obstacles are discussed further in the next section.

THE SUM OF THE PARTS: MAJOR FINDINGS, LESSONS LEARNED AND RECOMMENDATIONS

Major Findings

Implementing community-based programs is never easy, particularly with the limited time, funding and staff and volunteer resources often found in low-income communities. Evaluating these programs presents challenges as well, especially when the project period is short. However, this innovative project successfully overcame these challenges and established a solid foundation for future increases in walking and bicycling rates, safety, air quality and program sustainability, in addition to conducting SRTS programming in low-income communities, and several points of its success should be noted.

However, this innovative project successfully overcame these challenges and established a solid foundation for future increases in walking and bicycling rates, safety, air quality and program sustainability, in addition to conducting SRTS programming in low-income communities...

Increase Walking and Bicycling to School and Increase Physical Activity: The Project was successful at increasing the positive perception and awareness of walking and bicycling in the parent population at many of the sites. The Project also identified that, as shown in the literature, distance is a factor in travel mode choice. However, the focus groups indicated that issues such as perceived crime and traffic safety also have an impact. Overall, however, modest increases in walking occurred between baseline data collection and spring follow-up, and walking rates at the schools that received support from Kaiser Permanente were typically higher. Generally, rates of walking were higher in the afternoon than in the morning. While physical activity was not directly measured, the trends in the data and the findings from the literature suggest that physical activity is likely to increase along with walking and bicycling rates.

Decrease in Pedestrian/Bicycle Injuries and Fatalities on Trips to and From School: While traffic safety data was limited to two sites with Kaiser Permanente support, the findings indicate that safe crossing behavior increased over time.

Improve Air Quality Around Schools, Decrease Self- and School-Reported Incidents of Asthma and Reduce Vehicle Emissions: This data was also limited to two sites with Kaiser Permanente support. However, based on changes in vehicle counts and self-reported travel distances over the academic year, the calculated carbon dioxide levels (as a measure of vehicle emissions) near the schools decreased. As mentioned above, increases in the positive perception and awareness of walking and bicycling and their health benefits, along with the modest increases in walking observed at some sites indicate that SRTS programming can have a positive impact on air quality and reports of asthma.

Increase Program Sustainability of SRTS: All of the sites, regardless of local challenges, were able to initiate some SRTS program activities and/or environmental/policy change, and most received additional funds for SRTS education, encouragement, enforcement, evaluation and/or engineering in the future. While the sites were successful at drawing in key players from many different constituencies, further work remains to identify ways to reduce barriers to participation for low-income caregivers (e.g., limited free time due to working multiple jobs). Teachers and school administrators also need to be more involved

overall, or alternatively SRTS programs need to find ways to work with schools without overburdening the staff. Successful program activities in the fall built momentum for the spring. In the end, coordinators at most sites reported positive attitudes about the program and stated that program sustainability was likely, particularly if additional funding was available for staff and/or activities.

Improve the Built Environment for Multi-Modal Transportation: Beyond the policy and environmental changes that were implemented at or near the majority of the schools over this short time period, most program coordinators reported that the Project was successful in creating momentum for policy and environmental change, as well as changes to the walking/bicycling culture and norms in the broader community.

With any project come lessons learned, even in successful projects. Several themes that emerged from the evaluation are discussed below.

Lessons Learned

The Importance of Paid SRTS Staff: Schools with paid coordinators were able to generate high-quality program activities more frequently than schools relying on volunteers. Through the exit interviews, we learned that the paid coordinators were able to secure more outside resources (such as volunteers, grants and incentives) and were more aware of the major community leaders and stakeholders.

Paid coordinators also helped to "fill in" when volunteers were unavailable to assist with program planning and implementation. They were able to conduct outreach to parents, organize educational and encouragement activities, and advocate for policy and infrastructure changes. Schools with paid coordinators were also more likely to experience policy changes at or around the school. One paid coordinator worked with a school to create a new physical education curriculum that included walking/bicycling, a school health policy, and a "no vehicle idling" policy. Generally, the paid coordinators were able to convey to the school administration that they operated independently and therefore did not require a lot of school staff time, which reduced an important barrier to access at schools.

Two non-Kaiser Permanente-funded schools were able to procure staff support from outside sources and funding to assist their volunteer coordinators. In these cases, staff from public agencies and nonprofit organizations were motivated and supportive of the local SRTS project and were able to help generate momentum toward policy and built environment change and public awareness.

The one downside reported by paid coordinators is the tendency to not delegate enough to SRTS program committee members. In a new program, the scarcity of volunteers can make this difficult. However, once volunteers are on board, or in order to encourage them to get on board, changing the time of committee meetings might be helpful in gaining their support and involvement. One Kaiser Permanente-funded site coordinator found that while caregivers couldn't attend evening meetings, they were able to attend meetings immediately following the morning student drop off at school. Daytime meetings also tended to be more convenient for city officials, and law enforcement and public health department staff, which strengthened the external support of the program and helped grow the committee.

Evaluation: In its 2008 report on SRTS, the Government Accountability Office declared the importance of using evaluation results to understand the impact of the program on children's physical activity and safety. An evidence-based understanding of the effectiveness of SRTS and the components necessary for successful implementation are critical to the continued federal reauthorization of the SRTS funding. There is an important role for both rigorous professional evaluation and local, community-based evaluation.

In this evaluation, it was anticipated that sites with paid coordinators would have greater capacity to conduct more extensive evaluations; however, this still posed a challenge since the paid coordinators relied on volunteers to conduct observations, on parents to participate in the surveys, and on teachers to collect student tallies, as did the volunteer coordinators. While an evaluation handbook on data collection and training via telephone were provided to all sites, and technical assistance on evaluation was continually available, there were inconsistencies in data collection

between baseline and spring 2009 follow-up periods at almost all of the sites. Findings from the exit interviews indicate that this was due to: 1) paid staff carrying the weight of the project early on and perhaps not delegating enough, and 2) an inadequate time period—one academic year—necessary to build momentum, not only in program activities but in volunteer recruitment and commitment.

Another issue that arose regarding evaluation was communicating the importance of the data to parents in order to get adequate response rates. All sites faced challenges in parent survey completion rates in spring 2009. Several coordinators reported that parents who submitted a fall 2009 survey either did not think they needed to submit the follow-up survey in spring 2009, or did not want to repeat the process. The paid coordinators generally got the highest return rates from parents. To maximize returns, paid coordinators provided incentives to children, parents and teachers for completed forms. However, even at these locations response rates were lower than hoped.

Evaluation, even conducted "on a shoestring," is important not only for monitoring progress, but for obtaining input about programs.

Evaluation, even conducted "on a shoestring," is important not only for monitoring progress, but for obtaining input about programs. While the evaluation team discussed the importance of data collection in the evaluation handbook and during monthly conference calls with coordinators, it wasn't clear whether the value and impact of the data was fully grasped. Evaluation was often perceived as an extra burden, even at those sites with paid coordinators. Conveying the idea that an investment in good data collection (i.e., time and money) was an investment in the sustainability of the local SRTS program was difficult, and perhaps understandably so since evaluation is poorly funded as a whole for SRTS programs across the country.

Working with Low-Income Communities:

In the exit interviews, both paid and volunteer coordinators reported that federal and state policies that require substantial attention to academic achievement and testing have resulted in teachers who have little time to focus on "ancillary activities," particularly at schools where the perception exists that such programs detract from academic priorities. One coordinator reported that not only had her school eliminated physical education, but it had also eliminated recess. Wealthier communities can often establish foundations to augment government funding for extracurricular activities, while low-income communities usually do not have this option. In these communities, opportunities to walk and bicycle safely to and from school take on additional importance.

In the exit interviews, both paid and volunteer coordinators reported that federal and state policies that require substantial attention to academic achievement and testing have resulted in teachers who have little time to focus on "ancillary activities," particularly at schools where the perception exists that such programs detract from academic priorities.

Bicycling remained a low mode choice among all sites, although none worked specifically to increase bicycling during the program year. The affordability of bicycles and helmets, in addition to safe storage were key barriers. Programming in future years should address these issues.

Members of the low-income communities in this evaluation referred to the need to "triage" limited volunteer energy and money. Community members did not see active transportation as a priority compared with other concerns such as high crime, violence, drugs, and unemployment.

Coordinators were successful when searching outside the school community for stakeholders and volunteers, including at churches and among nearby apartment complex staff (whose residents were often the caregivers of children attending the school). Project coordinators also found that working with local law enforcement and residents to address community crime prevention issues could support SRTS activities in the future.

Recommendations

The following recommendations were developed as a result of the Local School Project, but can generally apply to any school.

Programmatic:

- Provide funding for on-site, paid staff dedicated to SRTS. Funding can help especially in schools where teacher and volunteer support may be limited.
- Implement low-cost but high-visibility policy and environmental changes, and encouragement activities, like Walk and Bike to School Days that can quickly increase community awareness of SRTS.
- Acknowledge that, for many families, it may be more likely for children to walk in the afternoon than in the morning. Highlight the afternoon commute in encouragement activities.
- Conduct multi-year safe routes to school programs in low-income communities, not just one-year programs, because of the delays that come from limited resources, low rates of volunteer and school staff participation, and barriers such as crime.
- Acknowledge the role of non-traditional SRTS activities in building school and community support (e.g., tree planting, collaborating with neighborhood revitalization, neighborhood watch, sports, recreation, art, reclaiming abandoned houses, removing stray dogs, connecting parents through social gatherings, snow removal and graffiti removal, air quality and other health and livability programs), especially in low-income areas where parent and community volunteers and resources may be particularly limited. Non-traditional activities can show a commitment to school and community, attract volunteers, increase resources through collaboration, and encourage physical activity among children.

Recruitment of Stakeholders and Volunteers:

- Expect that a volunteer base will take time to build.
- SRTS staff should delegate and share responsibilities to build ownership among stakeholders as program capacity grows.
- Identify and recruit key stakeholders not only from among parents, community groups and governmental agencies, universities and businesses but also from other neighborhood sources including churches (e.g., in the case of one of the Project sites, staff from a nearby apartment complex where some of the children lived were recruited). External support can help build school administration buy-in.
- Form or join a community-wide SRTS task force with stakeholders and decision-makers to leverage resources.
- Provide a project-based avenue for involvement for schools and parents, particularly those in low-income communities, while being sensitive to the myriad of demands on their time.

Evaluation:

- Fund and promote both community-based and large-scale, scientific evaluation that allows for large samples sizes, rigorous measurement of interventions and analysis of data.
- Collect data on the multiple measures of SRTS success, in addition to mode shift.
    - To understand the impact of SRTS on safety, the dearth of pedestrian volume data severely limits analyzing the traffic risk that pedestrians and bicyclists face. Measuring pedestrian volumes and aspects of driver behavior can lead to information on traffic safety and injury risk, and can be used to quantify program needs on local, state and national levels. Additionally, since crash rates and vehicle miles traveled are generally used in formulas to determine funding for infrastructure improvements, understanding pedestrian exposure is key to leveraging needed funding for non-motorized travel. Methods for determining pedestrian counts are being developed. (Schneider, et al., 2009).
    - To understand the effect of walking and bicycling to school on chronic disease and overweight, obtaining direct

measurements of physical activity via accelerometers is ideal. In the absence of funding and capacity to conduct studies with accelerometers, however, specific questions for students about all types of physical activity, including walking and bicycling to school, should be included in surveys. Exploring methods of determining measures of air quality at schools should be a priority, as well.

- Local SRTS staff and volunteer coordinators should be educated about the importance and use of evaluation for program planning and increased funding.
- Train local SRTS staff and volunteers about evaluation for data consistency (especially student tallies, vehicle counts and safety observations). Participants should be educated about the importance of the evaluation work and be willing to commit, to the extent possible, to participating in both fall and spring activities.
- Identify volunteers to help with evaluation through departments of public health, universities, local service clubs, churches and senior centers.
- Conduct parent surveys only once per year (in the fall), using the survey as the baseline and planning tool for that project year. This will keep the survey "fresh" for parents and help maximize response rates.
- Conduct student tallies at the beginning of the project (usually in the fall along with parent surveys, before any program activities have started), and then at least every spring to measure changes in travel behavior, near or after the end of spring program activities.

CONCLUSION

The innovative Local School Project focused on low-income communities with modest resources and a short timeline. Overall, the sum of the parts indicates that the Project was a success and shows great promise for generating a continuing positive impact on health in the future. SRTS programs are not meant to be short-term. They must be ongoing and require continued investment. Long-term, continuing support through policy and programming has been shown to help promote physical activity among children.

Our nation faces many health problems associated with sedentary lifestyles. Children in low-income communities face additional barriers for active transport to school. Walking and bicycling to school offer opportunities for active living. However, given the elevated injury risk that child pedestrians and bicyclists face from motor vehicles, promoting routes to school that are fun, safe and enjoyable are essential. SRTS offers expertise and planning for engineering, encouragement, enforcement, education and evaluation to help children to be fit, mobile and healthy.

The Partnership is working to expand recommendations for research and evaluation in the upcoming federal transportation reauthorization. In addition to evaluation that shows the impact of SRTS on physical activity, safety, air quality and overall personal and community health, measuring institutional change is crucial. Evaluations of programs such as the California Healthy Cities and Communities Program indicate that community capacity is strengthened by factors such as coalition participation (Kegler, et. al., 2008). It would be useful to measure how STRS programming affects—and is affected by—institutional change efforts.

The schools in the Local School Project face enormous challenges. By design, they are all low-income schools in low-income neighborhoods. The Project was specifically designed to support these schools and parents in promoting child health, given how financial, academic, community and personal issues compound each other in economically disadvantaged communities. Providing support to help mitigate their impact on children is critical. That SRTS was able to succeed at all at these sites attests to the value of the program, and the ability of the community of staff, parents and volunteers to provide opportunities to improve child health.

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APPENDIX

Exit Interview Questions

Name: _____

State: _____

LSP School Name: _____

PROJECT SUPPORT

1. What type of support did you feel was most needed ***to initiate*** SRTS planning at this school? Please rank the choices below, with 1 being the highest ranking.

_____Your efforts/leadership
_____School Team members
(school staff and/or parents)
_____SRTSNP staff technical assistance
_____Support from your state network organizer
(if you are not that person)
_____Support from the School District Administration
_____Support from the City/County
_____Support form Kaiser Permanente
(for 4 KP sites)
_____Support from other groups/organizations (please specify:_____)
_____Peer support from the other sites involved in the SRTSNP LSP
_____Other: _____

2. Overall, who do you credit with the project's success? Please rank the choices below, with 1 being the group or individual most credited.

_____Your own efforts
_____School Team members (school staff and/or parents)
_____SRTSNP staff technical assistance
_____State network organizer (if you are not that person)
_____School District Administration
_____The City/County
_____Kaiser Permanente (for 4 KP sites)
_____Other groups/organizations (please specify:_____)
_____Peer support from the other sites involved in the SRTSNP LSP
_____Other: _____

3. Who do you consider to be the key players (individuals and/or organizations/agencies) that …
a) were helpful with the project?
b) were missing or underrepresented in the project activities?
c) If you can, please suggest what may have prevented key players from participating (staffing, perceptions, timing of meetings…).

4. How would you rate your local school project's:

	Very HIGH				Very LOW
… overall success?	1	2	3	4	5
… ability to bring together key partners in an effective and sustainable committee?	1	2	3	4	5
… ability to initiate SRTS program activities?	1	2	3	4	5
… ability to complete SRTS program activities	1	2	3	4	5
… ability to get the selected school and its leaders to see the value of this project?	1	2	3	4	5
… success in increasing walking activity to/from school	1	2	3	4	5
…success in increasing bicycling activity to/from school	1	2	3	4	5
…success in planning safer routes to school?	1	2	3	4	5
…success in decreasing traffic congestion around the school	1	2	3	4	5
…success in creating momentum towards policy changes and/or changes to the built environment in the broader community	1	2	3	4	5
…success in creating momentum toward changes in the walk/bike culture and/or social norms in the broader community	1	2	3	4	5

(Note to interviewers: if they rate something low [3 or lower], why?)

5. How would you rate the value of:

	Very HIGH				Very LOW
…peer support from other LSP sites?	1	2	3	4	5
…technical assistance from evaluators (conference calls, evaluation handbook, email support)?	1	2	3	4	5
…technical assistance (conference calls, trainings, resources, etc.) from SRTSNP staff?	1	2	3	4	5

(Note to interviewers: if they rate something low [3 or lower], why?)

6. Describe anything that has happened at the school and/or within the surrounding community that would not have occurred if the LSP project was not going on (e.g., links/contacts made for future efforts, visible program activities, improvements to the built environment for walking and bicycling).

7. Describe any unanticipated outcomes that occurred ***due to*** this project (positive or negative).

8. What barriers did you experience in ***planning program activities*** (e.g., timing, people, schools, politics, resources) and what strategies did you use to work through these barriers?

9. What barriers did you experience in ***implementing program activities*** and what strategies did you use to work through these barriers??

10. What barriers did you experience ***during the data collection process*** and what strategies did you use to work through these barriers?

11. Share your favorite "tale of success" and "lesson learned." (one for each) (e.g., things you might do differently next time around.)

12. On a scale of 1-5, please rate how helpful it was for your local SRTS project to be part of a larger ten-state SRTS project that provided resources such as technical support, peer support, and guidance on evaluation?

Very HELPFUL				Not Very HELPFUL
1	2	3	4	5

13. On a scale of 1-5, how likely is it that this Safe Routes to School program will continue at this school if there is no additional funding or technical support coming from the SRTSNP after December 2009?

Very LIKELY				Very UNLIKELY
1	2	3	4	5

14. Additional Comments (e.g., describe any other activities or issues that you want to bring to our attention)?

Jill F. Cooper, Safe Transportation Research and Education Center. UC Berkeley

Tracy E. McMillan, PhD, MPH, PPH Partners

Editing by Deb Hubsmith (Director) and Robert Ping (State Network Director), Safe Routes to School National Partnership

Design by Melanie Scheuermann, www.melcreative.com.

www.saferoutespartnership.org