



Safe Routes to School: Helping Communities Save Lives and Dollars

2011 Policy Report



Changing the Habits of
an Entire Generation

September 2011

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The Safe Routes to School National Partnership (National Partnership) is a fast-growing network of more than 500 organizations and professional groups working to set goals, share best practices, leverage infrastructure and program funding, and advance policy change to help agencies that implement Safe Routes to School programs across the nation. The National Partnership's mission is to advocate for safe walking and bicycling to and

from schools, and in daily life, to improve the health and well-being of America's children and to foster the creation of livable, sustainable communities. The National Partnership is hosted by Bikes Belong Foundation, a 501(c)(3) non-profit which is a sister organization to Bikes Belong Coalition.

For more information visit www.saferoutespartnership.org.

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The Safe Routes to School Program: From Creation to Integration

Today, just 13 percent of children ages 5 to 14 walk and bicycle to and from school—a dramatic drop from 1969, when nearly 50 percent of children walked to school. Nearly 85 percent of children are either bused or driven by their parents, costing school districts and families billions in gasoline each year.¹ In addition, the sheer volume of vehicles crowded onto the streets around schools creates traffic congestion, air pollution and wear and tear on roads.

In this challenging economy, school systems are struggling to balance their budgets and are increasingly cutting school busing. Many parents cannot afford to drive their children when they lose access to the school bus. As a result, children are left to walk and bicycle to and from school—often in unsafe circumstances. In many communities, traffic volume and speed combined with a lack of sidewalks and crosswalks create real dangers for child pedestrians and bicyclists. State and local governments are seeing their funding squeezed and lack the resources to install the infrastructure

necessary to make it safer for these kids. This is particularly true in lower-income communities, which have higher rates of obesity, and in smaller towns and rural communities.²

In addition, childhood obesity has increased among children ages 6 to 11 from 4 percent in 1969 to 19.6 percent in 2007.³ Nearly one in three young people in the United States—more than 23 million children and adolescents—are overweight or obese.⁴ Approximately 70 percent of obese youth ages 10 to 17 will grow up to be obese adults.⁵ And the total cost of treating obesity is estimated at \$168 billion per year, more than 16 percent of national medical care spending.⁶

Congress Prioritizes Children's Safety

Fortunately, local school systems and governments can turn to the federal Safe Routes to School program for help in addressing these pressing safety and congestion issues. Created in 2005 as part of the

federal SAFETEA-LU transportation law, the Safe Routes to School program makes it safer for children to walk and bicycle to and from school. Approximately \$950 million has been allocated to state departments of transportation from fiscal years 2005 to 2011, with current funding at \$183 million per year following extensions of SAFETEA-LU.

State departments of transportation award these federal funds, which do not require a match, to local governments and school systems for comprehensive efforts to improve safety and get more children walking and bicycling to school. The bulk of funding (70% to 90%) is spent on infrastructure improvements within a two-mile radius of schools. Examples of critical infrastructure include sidewalks, bike paths, crosswalks, school zone signage and traffic calming. The remaining 10 percent to 30 percent is allocated for programs that complement the infrastructure—such as teaching children traffic safety skills, ensuring that motorists are driving safely around schools and running programs that encourage more children to walk and bicycle. Safe Routes to School infrastructure projects and programs benefit children, families and adults on more than just the trip to school. Because this infrastructure is located in the neighborhoods around schools, it also provides safe ways for families to walk and bicycle to parks, stores and other destinations—providing community-wide benefits.

A Program with Broad Reach and in Great Demand

All 50 states and the District of Columbia are actively implementing the Safe Routes to School program, providing guidance and funding to local communities and schools. As of March 2011, 71 percent of available funds have been awarded. Thus far, state departments of transportation have given out more than 4,300 awards, at an average of \$141,000 per award. Because many awards include multiple schools, an estimated 11,100 schools and 4.8 million children are benefiting from these funds.⁷

While these are impressive statistics, infrastructure improvements are costly—meaning that the average award is only enough to improve safety in one or two

priority areas around schools. And just 10 percent of schools in the nation have benefitted from the federal Safe Routes to School funds thus far. Thousands more schools have applied for Safe Routes to School funding, but were not selected due to funding limitations. For example, in Washington state's 2011 Safe Routes to School competition, 124 applicants requested \$43 million—yet only 29 applicants will be funded and receive approximately \$11.4 million total. To date, Wisconsin has only been able to fund one-third of applicants for approximately one-quarter of funding requested. Nebraska has been able to fulfill just 21 percent of applications, leaving approximately \$22 million in unmet requests. Arkansas has only been able to provide 28 percent of requested funds, with \$14.2 million in unmet needs.

The availability of Safe Routes to School funding has helped galvanize a new focus on prioritizing safety improvements around schools. Local planners and engineers are developing thousands of school travel plans to document necessary infrastructure upgrades, which can be made through future Safe Routes to School awards and through policy initiatives.

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For example, policies such as Complete Streets help ensure that any road projects also address the needs of all transportation users. In addition, schools and local governments are working hand-in-hand to find ways to reduce the number of parents that choose to drive their children to school, mitigating traffic congestion, reducing gasoline costs and getting children to be

more physically active. Many states have also put into place special approaches to ensure that lower-income communities receive needed planning assistance so they can compete for and access federal Safe Routes to School funding.

Maturation of the Movement

In creating the program, Congress identified the key purposes of the federal Safe Routes to School program as: increasing walking and bicycling to school; improving safety; encouraging more physical activity;



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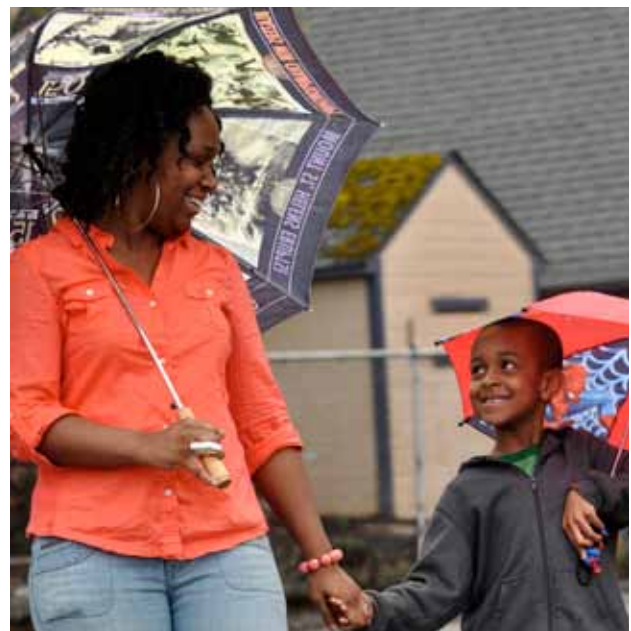


and reducing traffic, fuel consumption and air pollution around schools. While the federal Safe Routes to School program clearly tackles core transportation issues of safety and congestion, it has become apparent over the past several years that its broader goals are directly connected to health, education and social justice issues. As a result, it has been necessary to go beyond traditional transportation partners to engage a range of organizations and agencies.

Health agencies and organizations have become advocates for Safe Routes to School initiatives as a means for increasing physical activity, improving safety and making progress on reducing childhood obesity. School siting also has become a prominent issue within the Safe Routes to School movement, as the location of a school in relation to students' homes determines whether distances are reasonable for walking and bicycling. This has required outreach to local school boards and state and local departments of education. Because many communities struggle with crime and

violence issues that can endanger children on the trip to school, law enforcement has become a critical partner, and community policing has helped to bring neighborhoods closer together.

To provide a more holistic approach to implementing Safe Routes to School programs, most state departments of transportation maintain advisory committees with representation from other key state agencies, such as departments of health, law enforcement and education, as well as advocacy and parent groups that promote and run local programs. These advisory committees have helped facilitate collaboration across state agencies. For example, the Mississippi Department of Health trained staff in each of the nine districts across the state in implementation of Safe Routes to School programs and in bicycle safety, ensuring that local communities had a health expert they could contact for assistance when applying for and carrying out Safe Routes to School initiatives. These partnerships are being mirrored at the local level, with police departments, health departments, public works staff and school officials participating in Safe Routes to School planning and implementation teams, breaking down silos, increasing coordination and helping put children's safety at the forefront of government business.





Making the Case for Safe Routes to School

The economic recession and slow recovery has had a dramatic impact on the budgets of families, governments and school districts. Millions of Americans have lost their jobs, affecting the ability of families to make ends meet. Rising gasoline prices are exacerbating financial pressures across the board as well.

High unemployment rates have reduced federal, state and local revenues from income taxes and sales taxes. The federal government and nearly all states have responded by making major cuts in services and programs. In fiscal years 2009 and 2010, states reduced funding for services and programs by 11.1 percent—approximately \$74 billion. As federal Recovery Act dollars come to an end, states are expected to face continued budget challenges into 2012 and beyond.⁸

School systems have not been exempted from these cutbacks, and in some cases have been hit even harder. At least 34 states and the District of Columbia have implemented cuts to K-12 education. Colorado reduced public school spending in fiscal year 2011 by 5 percent, equivalent to approximately \$400 per student. Missouri chopped its K-12 transportation reimbursement for local

school systems by 46 percent. Georgia cut its K-12 education funding by 5.5 percent, resulting in school districts laying off staff and requesting exemptions from class size requirements.⁹

In this economic climate, every dollar that school systems and governments spend must be scrutinized to ensure it is essential and effective. The federal Safe Routes to School program meets this criteria—it is one initiative that has multiple benefits and it can reduce costs in several policy areas.

The research and stories of local impact in the following sections demonstrate the potential for Safe Routes to School initiatives to ameliorate local challenges and costs. By improving safety for children who are walking and bicycling, Safe Routes to School projects can reduce traffic deaths and injuries, which cost hundreds of millions of dollars annually. These safety improvements can also enable school districts to decrease school busing in formerly hazardous areas, directing more precious education dollars to the classroom, or to focus safety improvements on areas where school busing has already been cut. By getting more children walking and bicycling, Safe Routes to

School initiatives can reduce traffic congestion around schools and increase children's physical activity levels, which is critical for reducing the health care costs associated with obesity. Given these multiple benefits, it would be shortsighted for Congress to eliminate the Safe Routes to School program, particularly when families, local governments and school systems are already struggling financially.

Improving Safety and Preventing Tragedy

The federal Safe Routes to School program is the only federal transportation program aimed at improving safety for child pedestrians and bicyclists. When most people think about improving traffic safety for children, they think about auto-related measures such as car seats, air bags and seat belts. While such measures are undoubtedly important, none of these initiatives help protect children who are walking and bicycling.

The infrastructure improvements being made through Safe Routes to School initiatives are proven to reduce pedestrian and bicycle deaths and injuries. Pedestrians are more than twice as likely to be struck by a car when walking in a location without sidewalks as they are when walking in an area with sidewalks.¹⁰ Adding speed humps decreases the risk that a pedestrian will be struck by 53 percent.¹¹ Installing refuge islands in crosswalks, which are protected medians that allow pedestrians to safely wait in the middle of the street for a break in traffic before continuing to cross, can reduce the likelihood

of pedestrian-vehicle crashes by 66 percent.¹² Simply increasing street lighting to improve visibility can reduce pedestrian-vehicle crashes by 59 percent.¹³

Unfortunately, because so many roads are built to move as many cars as quickly as possible and do not include essential pedestrian and bicycle infrastructure, there are significant numbers of deaths and injuries that occur each year. In 2009, more than 250 children between the ages of 5 and 15 were killed by cars when they were struck while walking or bicycling.¹⁴ This represents nearly one-quarter of all children's traffic fatalities for 2009. In the same year, approximately 23,000 children between the ages of 5 and 15 were injured by cars while walking or bicycling—15 percent of all children's traffic injuries.¹⁵ Looking across multiple years, 30 percent of children's traffic deaths from the years 2000 to 2006 occurred when children were struck by a car while walking or bicycling.¹⁶

In addition to the significant emotional toll and trauma these traffic accidents have on individuals, the economic costs are staggering. An analysis of 2005 data reveals that the medical costs of hospitalization, emergency room visits and treatment for children's bicycle and pedestrian fatalities and injuries totaled \$839 million for the year. This is more than 4.5 times what the federal government currently spends each year on the Safe Routes to School program. The costs of injuries—which can result in lifelong disabilities—and fatalities are also measured in their impact on a person's ability to earn

Robertsville Middle School Oak Ridge, Tennessee

While Oak Ridge, Tenn., is a mid-sized community of less than 30,000 residents, it has the traffic volumes of a much larger city due to the presence of several U.S. Department of Energy facilities with employees that commute from Knoxville. As a result, two arterial streets around Robertsville Middle School handle 30,000 to 40,000 cars per day.

In November 2007, a 12-year-old girl was killed while riding her bicycle home from school when she was involved in a collision with a school bus. In addition, within the past five years, there have been two other incidents where children walking or bicycling were struck by cars and injured within a two-mile radius of Robertsville Middle School. In the wake of the girl's tragic death, the Oak Ridge City Council committed to making bicycle and pedestrian improvements.

In March 2008, the city applied for and ultimately received \$238,000 in federal Safe Routes to School funding to add or repair sidewalks, curb cuts and crosswalks within a half-mile radius of Robertsville Middle School. Also included in the award was funding to improve school zone signage by adding beacons so they are more visible to drivers. The school has also implemented bicycle safety education for students. Using some of the \$393,000 in local revenue from red light cameras, the city has approved additional bicycle and pedestrian safety improvements at multiple locations throughout the city. These two projects have jumpstarted Oak Ridge's efforts to make walking and bicycling safer for kids.

wages and perform productive work.¹⁷ Looking at the lifetime costs for lost wages that result from children's bicycle and pedestrian injuries and fatalities that took place in 2005 adds another \$2.2 billion. This figure, the result of just one year's child pedestrian and bicycle

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injuries and fatalities, is more than twice what the federal government has invested *to date* for the Safe Routes to School program. Preventing just one death of a child while walking and bicycling is estimated to save approximately \$1.1 million in lifetime medical and work-loss costs.¹⁸

Parents are rightfully concerned about their children's safety given the statistics as well as the volume and speed of traffic around schools combined with

inadequate or missing sidewalks and crosswalks.¹⁹ The key to making safety improvements through the Safe Routes to School program is the comprehensive planning approach—cities, schools and parents working together to identify major hazards and prioritizing infrastructure improvements to alleviate those hazards. Given the limited dollars available to address traffic safety, it makes sense to concentrate resources around schools, where children spend a majority of their time.

While infrastructure improvements are critical, they are not the only tactics to improve safety. Teaching children bicycle and pedestrian safety can improve their knowledge of safety when walking and crossing roads.²⁰ Enforcing speed limits in school zones can reduce the risk of death significantly: a pedestrian hit by a vehicle traveling 20 miles per hour (mph) has a 95 percent chance of surviving; at 30 mph the chance of survival is 55 percent; and at 40 mph the chance of survival plummets to only 15 percent.²¹

Simply put, the Safe Routes to School program provides local communities with the incentive to prioritize children's safety and the funding to construct much-needed safety infrastructure improvements. It is an important tool to help communities protect children and prevent tragedies.

Sheffield Middle School Sheffield Village and Sheffield Lake, Ohio

The school district covers two small towns, Sheffield Village and Sheffield Lake. Students attending Sheffield Middle School have to travel along Harris Road, which is a narrow, two-lane road with no sidewalks. Because busing is limited due to budget constraints, most children are either dropped off at school by their parents, creating significant traffic congestion, or walk or bicycle on the edge of the same high-traffic road. Cars must veer around the children on the very narrow road, which has no shoulder. As a result of this dangerous situation, in October 2009, a student riding his bicycle home from school was injured when he was struck by a car on Harris Road. School and local government officials agreed that improving safety along Harris Road was a top priority, but did not have the financial resources to make the improvements using local funds.

In 2010, Sheffield received a \$475,000 federal Safe Routes to School award to construct a sidewalk along Harris Road from the middle school to the major population center in Sheffield Lake. The school administrator estimates that approximately 150 children at the middle school who are not currently bused will benefit from the significant safety improvements and congestion reduction resulting from the creation of a safe and separate place for children to walk and bicycle. The project also will benefit the nearby high school, as the district has had to eliminate busing for high school students due to financial pressures.

The Impact of the Trip to School on Traffic Congestion

Traffic congestion is choking communities throughout the United States. In 2010, Americans drove an estimated 3 billion miles and their trips took an average 9.7 percent longer than they would have without congestion.^{22,23} Delays for drivers impact productivity, usage of gasoline and economic competitiveness. High levels of congestion reduce growth in employment, while reducing congestion can increase job growth.²⁴ When congestion is reduced and traffic flow improves, worker and employer productivity and efficiency benefit greatly—leading to direct economic benefits such as additional tax revenues and higher property values.²⁵ While congestion and vehicle miles driven have declined since their peak in 2007 due to fuel prices and the economic downturn, they are rising again. It is estimated that once the job market makes a full recovery, our roads will need to accommodate an additional 9 million commuting trips per day, furthering congestion challenges.²⁶

Many people think that building more roads and highways is the only way to relieve traffic congestion, but there is another, more cost-effective way—leaving the car at home for short trips, which reduces the number of vehicle miles driven. Relatively small reductions in miles driven have significant impacts on congestion. From 2007 to 2008, vehicle miles driven nationwide dropped

During the morning commute in the United States, driving to school represents an average of 5 percent to 7 percent of miles traveled and 10 percent to 14 percent of traffic on the road. Assuming an average gasoline price around \$4 per gallon, parents are collectively incurring an estimated \$5 billion in fuel prices annually to drive their children to school.

Roosevelt Middle School Eugene, Oregon

Roosevelt Middle School in southern Eugene sits at a busy intersection with high traffic volumes and a small drop-off zone, producing congestion and safety issues on the street. The school campus lacked adequate bicycle parking facilities, and did not sufficiently separate children walking and bicycling from traffic, which was hazardous. Several parents asked the school district safety manager and city staff for help in applying for federal Safe Routes to School funds. Having successfully secured a \$500,000 award in 2010, the city of Eugene is in the midst of making infrastructure improvements at Roosevelt Middle School and five other schools, including installing a walking path, upgrading several crosswalks with pedestrian refuges and better markings, and adding improved school zone signage.

Once the infrastructure is in place, students at Roosevelt Middle School will be able to benefit from many other Safe Routes to School initiatives being implemented across Eugene schools. A total of \$100,000 in two other federal Safe Routes to School

awards allocated in 2007 and 2009 has allowed the school district to hire a Safe Routes to School coordinator who spearheads a wide range of non-infrastructure activities. These programmatic elements include regular walk and bicycle to school events, presentations about Safe Routes to School for parents, bicycling classes and continued encouragement to reduce parent drop-offs at school.

This comprehensive approach to implementing a Safe Routes to School program has created a noticeable difference at Roosevelt Middle School. Comparing 2007 with 2010, the percentage of children walking or bicycling has increased from 27 percent to 42 percent. There are 53 fewer parent cars at the school picking up children each day, which represents a 24 percent reduction. Parents and community members have remarked that the decline in traffic makes them feel safer when walking and bicycling. The reduction in cars has also eased congestion on the streets around the school.

2 percent primarily because of the recession and rising gasoline prices. At the same time, travel delays due to congestion decreased by 30 percent. Alternatively, from 2009 to 2010, vehicle miles driven increased just 0.7 percent and congestion delays increased 11 percent.²⁷

This is where the trip to school becomes an important component of managing traffic congestion. In 2009, American families drove 30 billion miles and made 6.5 billion vehicle trips to take their children to and from schools. Approximately 40 percent of those trips were taken just to deliver the child to school—meaning that the parent drove from home to school and then returned home, doubling the impact of the journey on traffic levels. During the morning commute in the United States, driving to school represents an average of 5 percent to 7 percent of miles traveled and 10 percent to 14 percent of traffic on the road.²⁸ Assuming an average gasoline price around \$4 per gallon, parents are collectively incurring an estimated \$5 billion in fuel prices annually to drive their children to school.



Among children who live less than a mile from school, 43 percent are driven to school.²⁹ These short trips could be shifted to walking and bicycling with the help of Safe Routes to School initiatives, easing the morning commute. Improving the infrastructure around schools and increasing the safe and available options parents have for getting their children to school has the potential to reduce traffic congestion around schools, while also reducing wear and tear on the roads and improving the morning commute for other drivers.

Red Pine Elementary School Eagan, Minnesota

Red Pine Elementary School serves 950 children from Eagan, a suburb of Minneapolis-Saint Paul, and from several surrounding towns and farming communities. Eagan is blessed with good infrastructure for bicycling and walking, with a network of sidewalks and crosswalks in neighborhoods around the school. Nevertheless, many parents were in the habit of driving children to school—resulting in more than 100 cars arriving at school all around the same time each morning. Traffic backed up significantly around the school, resulting in slowed and stopped traffic backing up onto the highway a quarter-mile away from the school.

Principal Gary Anger realized that implementing a Safe Routes to School initiative was the answer to changing the culture and encouraging more parents to allow their children to walk and bicycle. The school implemented major changes by making good use of a \$10,000 non-infrastructure award from the federal Safe Routes to School program. The school produced a Safe Routes to School map that identified sidewalks, crosswalks and school patrols, and recommended safe walking routes to alleviate safety concerns from parents. Walking school buses, in which a parent

chaperone escorts a group of children on the walk to school, were launched. Drop-off zones for parents who live further away were added to allow students to join walking school buses and get physical activity while reducing traffic. The school has instituted a culture of healthy and safe habits, including recess walking and running incentives, donating bicycles to any students who can't afford them and offering fitness fairs on the weekends open to all residents.

The school's efforts to encourage more physical activity and walking or bicycling to school have paid off. Before implementing a Safe Routes to School program, approximately 75 children walked or bicycled to school; today there are 200 children regularly walking and bicycling throughout the year. The reduction in traffic congestion around the school has been dramatic. Before the Safe Routes to School program, approximately 100 cars were arriving every day at school. Now, just 40 to 45 vehicles drop off children each day. This success has continued even as the school has reduced school busing due to tight budgets, which could have easily resulted in more parents driving children to school.

Helping School Systems Manage Busing Costs

Transportation is a major cost for school systems across the country, and with fluctuating and rising gasoline prices, it is an expense that is challenging to accommodate in budgets. For the 2007–2008 school year, approximately 55 percent of students in public schools were transported by school bus at a cost of \$21.5 billion, an increase of 7.5 percent from the prior year. When adjusting expenditures to reflect constant 2008–2009 dollars, the average cost per student transported has increased approximately 20 percent from the 2000–2001 school year to the 2007–2008 school year.³⁰ Those figures, which are the most recent available, predate the major gasoline price hikes in the fall of 2008 and again in the spring of 2011.

While many children are bused over longer, non-walkable distances, many school districts bus children who live close to school because street conditions are too dangerous for walking or bicycling. These “hazard busing” costs are not collected nationally and are thus difficult to measure, but some state-level data is instructive. In Illinois, approximately 15 percent of students who ride a bus are doing so as part of hazard busing. Between 2000 and 2006, the number of students transported through hazard busing in Illinois has increased by 53 percent to approximately 157,000 students and costs have increased 67 percent to approximately \$70 million.³¹ In Maryland, an estimated 75 percent of school districts provide hazard busing.³²

Exacerbating the significant costs of busing children to school, including those who live within walking distance but lack infrastructure to make the trip safely, are the high price of fuel and state education budget cuts.

In some cases, school systems eliminate or consolidate bus routes to balance budgets. Many start by eliminating busing for children who live within a certain radius of school (such as one mile or 1.5 miles), even if no safe routes exist for children to walk or bicycle to school. This story is being repeated in jurisdictions across the country.

Nationwide, approximately 22 percent of school districts made busing reductions during the 2010–2011 school year due to fuel price increases, continuing the trend of busing cutbacks when fuel prices spike.^{33,34} In North Carolina, state transportation reimbursements for schools dropped 6.3 percent over the last two years. For the Rowan-Salisbury School System in Salisbury, N.C., that meant a loss of \$262,000 in state assistance at a time when gasoline prices rose 25 percent in three months.³⁵ In Alabama, state contributions to school districts have dropped 20 percent since 2008, while the cost of diesel fuel rose 60 cents a gallon from January to April of 2011. The Jefferson County, Alabama school system’s weekly cost of gasoline for its school buses has risen from \$35,000 per week to \$50,000 or more per week.³⁶

Safe Routes to School programs are a critical tool for school districts struggling with transportation costs. Particularly when school bus routes are cut, Safe Routes to School funding can help make infrastructure improvements to increase safety for children. School districts also can plan ahead by prioritizing Safe Routes to School improvements in areas where children are currently being bused due to hazardous conditions, or when they know that bus routes are slated to be cut in the near future. Once the infrastructure is constructed, the hazard bus route can be eliminated, saving money over the long-term.

Melrose Elementary School Wooster, Ohio

Just 8 percent of children at Melrose Elementary School walk to school regularly, while 25 percent are dropped off in cars. Parents cite safety concerns as their primary reason for driving their children. This is understandable given that the primary access to the school is along Portage Road, a three-lane road with a speed limit of 35 miles per hour, significant commercial truck traffic and no sidewalks. The school also buses approximately 62 percent of children, including many who live less than one mile from school along hazard bus routes.

Fortunately, the city of Wooster secured a \$464,000 federal Safe Routes to School award in 2011 that will enable them to make a number of sidewalk and crosswalk improvements around several schools in the district. Improvements at Melrose Elementary will account for \$130,000 of the total award. Along Portage Road, sidewalks and school zone signage will be installed, along with high-visibility crosswalks and pedestrian signals to improve safety when crossing the street. Once the project is complete, the school district will be able to eliminate one full bus route due to the new safe route for walking and bicycling to school—saving \$49,000 each year.



Coronado K-8 School Tucson, Arizona

Located on the outskirts of the city of Tucson, Coronado K-8 School serves nearly 1,200 students. One of the primary routes from neighborhood homes to Coronado K-8 School is a very busy and narrow road. The only place to walk along the road is on the shoulder, without any curb or barrier to separate children from the high-speed traffic. Consequently, Pima County provides hazard busing for children who live within the usual one-mile walk radius. It costs approximately \$30,000 each year to operate the school bus needed for these children.

Thanks to a \$400,000 federal Safe Routes to School award, Pima County will be able to construct a walking and bicycling path along the narrow, busy Wilds Road. An engineer whose three children attend the school volunteered to write the funding application, because he had first-hand experience with dangers along the roadway. Once the path is complete, the school district will eliminate the hazard bus route, saving at least the \$30,000 annual operations costs, while increasing safety and providing a means for healthy physical activity each day.

Frost Elementary School Mount Prospect, Illinois

Mount Prospect is a suburb of Chicago with a population of approximately 56,000. For 30 years, Frost Elementary School had been busing children who live in a large apartment complex just one-third of a mile from the school. Because the main street connecting the apartment complex to the school had high traffic volumes, limited sidewalks, few stop signs and no safe crossing locations, the school never encouraged students to walk to school due to safety concerns. Several years ago, the village was able to construct a segment of sidewalk thanks to some financial assistance from a church and the park district that benefited from the sidewalk. Yet they did not have the financial resources to complete the sidewalk network all the way to school.

In 2007, the village of Mount Prospect received a \$76,000 federal Safe Routes to School award that allowed them to construct the remaining one-quarter mile of sidewalk. In addition, with their own funds, the village added school crossing signs, stop signs and crosswalks. Once the project was completed, the traffic engineer met with the school district and officials agreed that the route to school no longer required hazard busing. This one small project allowed the school system to eliminate a bus route in the morning, mid-day and afternoon—for a total annual cost savings of \$66,657. Because the school actively encouraged parents from the apartment complex to walk with their children, parents saw that the walk to school was indeed safe. As a result, approximately 50 more children are walking to school every day, twice the number prior to the project's completion. Plus, the school system has been able to save considerable money in a difficult economic climate.

Directing Funds Where They Are Most Needed

Small rural towns and lower-income communities often need Safe Routes to School improvements the most due to the lack of safe infrastructure, high-volume roads and residents who may be less likely to afford a car. Students from homes without vehicles are twice as likely to walk to school, making sidewalks and safe infrastructure even more important. Children of color and children living in lower-income households are at a greater risk of obesity.^{37,38} Yet these communities often lack the tax base and financial resources to invest in the sidewalks and crosswalks that make it safer for residents to get physical activity through walking and bicycling.

In rural areas, the primary street through a small town is often a highway or a county road that has high-speed limits outside of town with reduced speeds in the center of town. However, drivers often do not slow down adequately when passing through towns, creating hazardous conditions for pedestrians and bicyclists.³⁹ Small towns often lack sidewalks, lighting and crosswalks even though 1.6 million rural households do not have access to cars, and the poorest 20 percent of households spend more than 40 percent of their

income on transportation.⁴⁰ In small towns in rural New Hampshire and Vermont, for example, researchers found that half of students who lived within three miles of school walked or bicycled to or from school at least one day a week.⁴¹

Lower-income communities, particularly in urban areas, often have the benefit of greater density which means shorter distances between homes and schools.

Rural small towns and lower-income communities are in great need of more Safe Routes to School funding and infrastructure improvements. Safe Routes to School awards are particularly beneficial to underserved communities because they do not require a match.

Mills-Parole Elementary School Annapolis, Maryland

At the Mills-Parole Elementary School in urban Annapolis, 40 percent of students are Hispanic and 60 percent are African-American. Nearly all students are from lower-income families. With the growing Hispanic population, the city has noticed a significant increase in families with small children walking to school in unsafe circumstances. Sidewalks are few and generally in a state of disrepair. During heavy rain, many of the paths along the roads fill up with mud and puddles, forcing children to walk in the street. In 2008, in exactly this circumstance, a child walking to school was struck and injured by a car.

After that injury, community members asked the city to improve pedestrian safety along the road. The city traffic engineer and the school worked together to survey the infrastructure around the school and to interview parents. As a result, the city applied for and received a federal Safe Routes to School award of \$121,000, \$90,000 of which will be used around Mills-Parole Elementary

School. New sidewalks will be installed, existing sidewalks will be repaired, crosswalks will be painted and school zone signs with flashing lights and reduced speeds will be added. The new signage means that the police can issue tickets with doubled fines, a measure which deters drivers from speeding in school zones.

Within one block of the school, there is a community health center, a walk-in medical clinic and an after-school center—all of which will benefit from the safety improvements. In addition to the infrastructure improvements, the process of applying for Safe Routes to School funding has created a meaningful way for the city and the school system to work together. The city added an inventory of needed school infrastructure improvements to their capital improvement plans and prioritized making school zones safer, which will have long-term benefits for Mills-Parole Elementary and other schools throughout Annapolis.

But these same communities generally have fewer sidewalks, and if they do exist, they are often poorly maintained. These communities also frequently have fewer crosswalks and more high-speed traffic—all of which create dangers for children walking to school.⁴² As a result, children from lower-income families have a higher risk of being injured or killed by cars when they are walking.⁴³ Children in lower-income communities also may face higher rates of neighborhood crime and violence. Safe Routes to School initiatives can help increase personal safety for children through community policing and increasing “eyes on the street” with walking school buses and adult safety patrols.

Rural small towns and lower-income communities are in great need of more Safe Routes to School funding and infrastructure improvements. Safe Routes to School awards are particularly beneficial to underserved communities because they do not require a match. The smaller size of the awards also makes them more feasible for small or underserved communities to manage. Because of these factors, and because many state departments of transportation have prioritized outreach to lower-income communities, the federal Safe Routes to School program has been effective in reaching communities with the greatest need for assistance. Nationally, 21 percent of schools serve a student population where at least three-quarters of students come from lower-income families. Thus far, these schools have received 22 percent of Safe Routes to School funding.⁴⁴ Many states are seeking to increase the percentage of awards that are directed to lower-income schools by implementing planning grants, providing extra points on applications and tracking the income level of recipients. These small awards can make a big difference for these communities as they struggle to meet the needs of their residents.

Riverdale Elementary School Saint Joe, Indiana

Saint Joe is a small rural town of just 500 people, but Riverdale Elementary School serves 300 students from the town and the surrounding county. With their small tax base barely covering basic services, the few sidewalks in town are cracked, uneven and overgrown—resulting in children walking in the street to reach their school or the bus stop. The town is not included on any master or comprehensive plan for the county, so many of their transportation needs are overlooked. The town wanted to prioritize installation of sidewalks, but only had enough funding locally to build one block of sidewalk each year.

Safe Routes to School funding was a great fit for Saint Joe because it does not require a match. With a \$250,000 federal Safe Routes to School award in 2006, Saint Joe was able to put in 1.5 miles of sidewalk—which would have taken 15 years without Safe Routes to School funding. Because they had developed a Safe Routes to School plan, Saint Joe also received federal stimulus funds to build another 1.5 miles of sidewalk. Today, children and families use the sidewalks to get to school safely and to be active. The city council views their new sidewalks as a critical asset to help revitalize the town’s image to attract new businesses and residents and increase property values. So while the focus is on children, the benefits to small towns, in particular, are much broader.

Shelby Elementary School Shelby, Montana

Located 45 miles south of the Canadian border, Shelby is a rural community in north central Montana with approximately 3,300 residents. Even though approximately 120 of the 285 students at Shelby Elementary School live within one mile of school, the Burlington Northern Santa Fe Railway rail line cuts through town and many roads lack sidewalks. As an agricultural community, Shelby has a small tax base and has been unable to afford construction of sidewalks. What limited dollars are available have to be used for water and sewer infrastructure or street paving.

With several federal Safe Routes to School awards totaling \$200,000 awarded between 2007 and 2010, Shelby constructed missing sidewalks with ramps and curbs and paved the connections between sidewalks and gravel alleys. They have prioritized sidewalks along the busiest routes within Shelby. Before the Safe Routes to School projects were constructed, there were a number of sidewalk gaps in Shelby. Students would be forced to move from the end of a sidewalk to the street, which increased dangers as drivers were not sure when children would suddenly be in the road. Today, approximately 60 percent of children living within one mile of school are walking there at least once a week and in much safer circumstances. The sidewalk also connects to a trail route that loops around the outskirts of town, which has provided more opportunities for families to exercise together.

Increasing Physical Activity through Changes in the Built Environment

The childhood obesity rate in America has quadrupled over the past forty years.⁴⁵ Today, approximately one-quarter of health care costs in the United States are attributable to obesity, and some studies suggest that the direct costs for childhood obesity alone are as high as \$14 billion annually.^{46,47} In addition to medical costs, obese adults earn lower wages, have higher rates of absenteeism and lower productivity at work—all of which results in costs to the employer.^{48,49,50} In the cities with the highest rates of obesity, direct medical costs are estimated at \$50 million annually per 100,000 residents.⁵¹ These direct medical costs and hidden costs are a drag on job and economic growth.

Obesity and physical activity levels also have a more immediate impact on a child's academic performance. Children who are more physically active perform better academically, regardless of their socioeconomic status.⁵² Similarly, overweight and obese children, on average, have lower grade point averages, more school absences and more disciplinary referrals.⁵³

Children gain weight when they take in more calories than they expend. The “energy gap” is narrow enough in most children that simply making consistent behavioral changes—either eating less or smarter, or getting more physical activity—averaging 110 to 165 calories per day may be sufficient to avoid weight gain.⁵⁴

To reduce obesity, it is critical to create more opportunities for children to be physically active. The built environment has a direct impact on obesity and physical activity: communities that are more walkable and bikeable and that have pedestrian-accessible destinations increase physical activity levels.⁵⁵ Children in neighborhoods with sidewalks and safe places to cross the street are also more likely to be physically active than children living in neighborhoods without those safe infrastructure elements.⁵⁶ The design of streets and volume of cars have an impact too: children living in areas with high traffic volumes have higher body mass indexes.⁵⁷ Because the bulk of their funding is dedicated to infrastructure improvements like sidewalks, crosswalks, bike paths and traffic calming, Safe Routes to School programs are an important component of efforts to reduce childhood obesity.

Studies clearly show that children who walk and bicycle to school are more physically active, have lower body mass index scores, lower obesity levels and are more likely to meet physical activity guidelines than students who are bused or driven to school.^{58,59,60,61} An evaluation of the America on the Move initiative found that two small lifestyle changes—specifically eliminating 100 calories per day and walking an additional 2,000 steps per day (roughly one mile)—can help address childhood obesity by preventing excess weight gain.⁶²

Central School Des Plaines, Illinois

The city of Des Plaines, which is a suburb of Chicago, chose Central School as their pilot Safe Routes to School location. Although nearly 90 percent of students live within one mile of school, the walking rate was low because parents were concerned about their children's safety due to the amount of traffic around the school.

To kick off the Safe Routes to School initiative, city staff created a school walking route map to guide children to the safest routes for pedestrians. The city also added two crossing guards to ensure students had help crossing the streets and installed stop signs, pedestrian walk signals and crosswalks. Federal Safe Routes to School funding totaling \$304,000 is going towards the construction of new sidewalks, curb extensions, raised crosswalks and striping

improvements. Central School also has encouraged parents to walk to school with their children regularly and has hosted a number of special walk to school events.

Even though the primary infrastructure projects are not yet completed, rates of walking and bicycling have already more than doubled—from 19 percent of students in 2007 to 40 percent of students in May 2010—and traffic congestion around the school has declined. This means that 50 children who were not previously walking or bicycling to school are now getting this regular physical activity. The city and school expect rates of walking and bicycling to continue to increase once the infrastructure improvements are completed.

Alpine Elementary School Alpine, Utah

Located in the small city of Alpine, population 7,000, Alpine Elementary School is located in a compact area without much room for parking and drop-off areas. Nearly three-quarters of children live close enough to walk to school, but traffic congestion around the school has discouraged many from doing so. The congestion contributed to two children being struck by cars while walking to school. While the children only suffered minor injuries, it prompted the community to work together to embark on a Safe Routes to School initiative. Before applying for funding, parents, school officials and the city engineer mapped the routes to school. The city made some initial low-cost improvements, such as repainting crosswalks and adding school zone signs.

With two federal Safe Routes to School awards totaling \$71,500, Alpine Elementary was able to make some additional infrastructure improvements, including creating a safe walking path to a rear entrance of the school and installing speed monitoring signs. Most importantly for Alpine Elementary, however, was the funding to support education and encouragement activities. They have placed a strong emphasis on teaching children to safely walk and bicycle

to school. In partnership with parents, Alpine Elementary holds regular walk-to-school events, walking school buses and special events to ensure the streets and sidewalks around the school are safe.

The biggest key to motivating students to walk and bicycle more has been Alpine Elementary's partnership with a "sister school" in Kenya. For the past three years, as students walk and bicycle, they earn money to help support their sister school's feeding program. In three years' time, students have raised enough funding to support three months of lunches for the African school, plus enough donations for the school to purchase a cow, goats, chickens and fruit. All told, the number of students who regularly walk and bicycle to school has increased from 32 percent in 2008 to 50 percent today. With more students walking and bicycling to school, there is less traffic congestion around the school with 60 fewer cars commuting to the school campus each day. In a little over half of a year (September 2010 to March 2011), students have walked a total of 28,000 miles and experienced more than 500,000 minutes of physical activity.

Bonneville School District Idaho Falls, Idaho

Idaho Falls is one of the largest cities in Idaho with a population of approximately 56,000. Four years ago, parents at Falls Valley Elementary School asked the Bonneville School District for help in ensuring that its students were safe walking to school. Bonneville School District launched a walking school bus program and safe house program. The walking school bus program involves parents and other adult volunteers, who wear yellow jackets to identify them as members of the parent patrols. Volunteers either walk with children or come outside in mornings and afternoons to watch over children as they walk or bicycle to school. The safe house program identifies homes along the route to school where children can stop and request help if they ever feel unsafe.

The initiative at Falls Valley Elementary School led to the creation of Bonneville School District's Safe Routes to School program. With \$45,000 in federal Safe Routes to School funding over three years, Bonneville's program has spread to five of the district's elementary schools. Students who walk to school can enter monthly raffles for small incentives like t-shirts, and once a year, a bicycle. The initiative has grown rapidly. At this point, there are approximately 200 parent volunteers across the five elementary schools and approximately 800 to 1,000 children walking or bicycling regularly,

which is 60 percent to 70 percent of the children within the walking radius of the schools. It is not unusual to have 100 bicycles filling up the racks at school. The Safe Routes to School program has had a noticeable impact on traffic congestion as well. For example, because there are more children walking and bicycling to school, there are approximately 60 fewer cars creating congestion around school during pick-up and drop-off times.

Bonneville School District also has started integrating walking and bicycling into their academic programs. Fifth-grade students are taught a bicycling and walking curriculum in their physical education class. The culmination of the class is a 14-mile round-trip bicycle ride from school to a local park where students have a cookout. Other schools in and around the Bonneville School District are interested in Safe Routes to School funding and developed safe routes maps to jumpstart the process. It looks promising that the healthy habits will spread to students at these other schools as Safe Routes to School programs continue to expand in Idaho Falls. Plus, with so many parent chaperones and eyes on the street, parents feel better about their children's safety as they walk or bicycle to school.



Conclusion: Tallying the Financial Benefits of Safe Routes to School

The federal Safe Routes to School program makes it safer for more children to walk and bicycle to and from school. Other program benefits include mitigating the financial, safety and health challenges facing communities throughout the nation. The sidewalks, crosswalks and bike paths constructed with federal Safe Routes to School funding also can provide opportunities for other residents to walk and bicycle safely to other

Conservatively assuming that 5 percent of today's school busing costs are for hazard busing, making it safe for those children to walk or bicycle instead could save approximately \$1 billion per year in busing costs.

destinations, such as libraries, parks and grocery stores. Installing pedestrian and bicycle infrastructure, and increasing rates of walking and bicycling to school helps improve safety, reduces traffic congestion and school busing costs and helps increase physical activity levels.

These benefits impact the budgets of schools and governments across the country. For example, reducing the miles parents drive to take their children to and from school by just 1 percent would reduce 300 million miles of vehicle travel and save an estimated \$50 million in fuel costs each year.⁶³ This change would also help reduce traffic congestion, while simultaneously helping local governments increase productivity, safety and economic growth. Conservatively assuming that 5 percent of today's school busing costs are for hazard busing, making it safe for those children to walk or bicycle instead could save approximately \$1 billion per year in busing costs.⁶⁴ And given the up to \$14 billion in annual

direct medical costs to treat childhood obesity, creating more opportunities for children to be physically active can reduce the burden on our public health system.⁶⁵

These figures do not even take into account the fact that building pedestrian and bicycle infrastructure projects are beneficial to the economy. Many Safe Routes to School projects require the assistance of engineering, planning and construction firms, which creates jobs and private sector benefits. Bicycle and pedestrian infrastructure projects require fewer materials and are more labor-intensive, meaning they create more jobs per million dollars spent than road repair and construction projects.⁶⁶

Adding sidewalks, trees and other bicycle and pedestrian infrastructure also can help attract new residents and businesses, which can mean higher property tax revenues for local governments.^{67,68} In a recent survey of mayors in 176 cities, 60 percent said that the lack of additional funding for bicycle and pedestrian infrastructure was hindering their efforts to reduce congestion, improve livability and increase economic competitiveness. In the same survey, 75 percent said they would support an increase in the federal gasoline tax if a greater share of the funding was invested in bicycling and walking infrastructure.⁶⁹

Examining the many benefits and cost-savings Safe Routes to School programs offer, alongside the stimulating effects that bicycling and walking infrastructure can have on local economies, provides a more complete picture of the program's transformative impact on local governments, school systems, families and children. Federal Safe Routes to School funds are critical to building stronger, healthier and safer communities all throughout the United States. The infrastructure improvements create lasting benefits, which improve the routes to school, increase safety and add opportunities for physical activity for everyone. In short, particularly in these challenging economic times, we cannot afford not to invest in Safe Routes to School programs.

Endnotes

- ¹ McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedrosa. "U.S. School Travel 2009: An Assessment of Trends." *American Journal of Preventive Medicine* 41 (August 2011): 2, 146-151.
- ² Black, Jennifer and James Macinko. "Neighborhoods and obesity." *Nutrition Reviews* 66 (2008): 1, 2–20, doi:10.1111/j.1753-4887.2007.00001.x.
- ³ Ogden, Cynthia and Margaret Carroll. "Prevalence of Obesity among Children and Adolescents: United States, Trends 1963-1965 through 2007-2008." Atlanta: Centers for Disease Control and Prevention. National Center for Health Statistics, June 2010.
- ⁴ Ogden, Cynthia, M Carroll, LR Curtin, MA McDowell, CJ Tabak, and KM Flegal. "Prevalence of Overweight and Obesity in the United States, 1999-2004." *Journal of the American Medical Association* 295 (2006): 1549-55.
- ⁵ Whitaker, Robert, Jeffrey Right, Margaret Pepe, Kristy Seidel, and William Dietz. "Predicting Obesity in Young Adulthood from Childhood and Parental Obesity." *The New England Journal of Medicine* 337 (September 25, 1997).
- ⁶ Cawley, John and Chad Meyerhoefer. "The Medical Care Costs of Obesity: An Instrumental Variables Approach." NBER Working Papers 16467. Cambridge: National Board of Economic Review, October 2010.
- ⁷ National Center for Safe Routes to School. "Spring 2011 SRTS Program Tracking Brief." Accessed June 2, 2011, www.saferoutesinfo.org/sites/default/files/1st_qrt_2011SRTSProgramTrackingBrief.pdf.
- ⁸ National Association of Governors and National Association of State Budget Officers. "The Fiscal Survey of States, Fall 2010." Accessed June 2, 2011, www.nasbo.org/LinkClick.aspx?fileticket=C6q1M3kxkEY%3D&tabid=65.
- ⁹ Johnson, Nicholas, Phil Oliff, and Erica Williams. "An Update on State Budget Cuts." Center on Budget and Policy Priorities. Updated February 9, 2011, www.cbpp.org/files/3-13-08sfp.pdf.
- ¹⁰ Knoblauch, R, B Tustin, S Smith, and M Pietrucha. "Investigation of Exposure-Based Pedestrian Accident Areas: Crosswalks, Sidewalks, Local Streets, and Major Arterials." Washington DC: US Department of Transportation, 1987.
- ¹¹ Tester, JM, GW Rutherford, Z Wald, and MW Rutherford. "A matched case-control study evaluating the effectiveness of speed humps in reducing child pedestrian injuries." *American Journal of Public Health* 94 (2004): 646-50.
- ¹² Garder, Per. "Pedestrian Safety at Traffic Signals: A study carried out with the help of a traffic conflicts technique." *Accidents Annual and Prevention* 21 (1989): 435-444.
- ¹³ Pegrum, B. "The Application of Certain Traffic Management Techniques and Their Effect on Road Safety." *Proceedings of the National Road Safety Symposium*. Perth: Department of Shipping and Transport; 1972: 277-286.
- ¹⁴ "Pedestrians: 2009 Data" and "Bicyclists and Other Cyclists: 2009 Data" Washington, DC: National Highway Traffic Safety Administration, 2009. Available at www-nrd.nhtsa.dot.gov/Pubs/811394.pdf and www-nrd.nhtsa.dot.gov/pubs/811386.pdf.
- ¹⁵ "Pedestrians: 2009 Data" and "Bicyclists and Other Cyclists: 2009 Data" Washington, DC: National Highway Traffic Safety Administration, 2009. Available at www-nrd.nhtsa.dot.gov/Pubs/811394.pdf and www-nrd.nhtsa.dot.gov/pubs/811386.pdf.
- ¹⁶ Borse, Nagesh, Julie Gilchrist, Ann Dellinger, Rose Rudd, Michael Ballesteros, and David Sleet. *CDC Childhood Injury Report. Patterns of Unintentional Injuries among 0-19 Year Olds in the United States, 2000-2006*. Atlanta: Centers for Disease Control and Prevention, December 2008.
- ¹⁷ Lawrence, Bruce, Soma Bhattacharya, Eduward Zaloshnja, Paul Jones, Ted Miller, Phaedra Corso, and Claudia Steiner. "Medical and Work Loss Cost Estimation Methods for the WISQARS Cost of Injury Module." Calverton, MD: Pacific Institute for Research and Evaluation (PIRE), September 2009.
- ¹⁸ WISQARS (Web-based Injury Statistics Query and Reporting System). *2005 Cost of Injury Reports*. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Office of Statistics and Programming. Database queried for injuries and fatalities to child pedestrians and bicyclists ages 5 to 14, accessed June 2, 2011, wisqars.cdc.gov:8080/costT/.
- ¹⁹ Vaughn, Amber, Sarah Ball, Laura Linna, Lauren Marchetti, William Hall and Dianne Ward. "Promotion of Walking for Transportation: A Report From the Walk to School Day Registry." *Journal of Physical Activity and Health* 6 (2009): 281-288
- ²⁰ Duperrex, OJM, IG Roberts and F Bunn. "Safety education of pedestrians for injury prevention." *Cochrane Database of Systematic Reviews* 2 (2002), doi: 10.1002/14651858.CD001531
- ²¹ Zegeer, Charles, Cara Seiderman, Peter Lagerwey, Mike Cynecki, Michael Ronkin and Robert Schneider. "Pedestrian Facilities Users Guide: Providing Safety and Mobility." McLean, VA: Federal Highway Administration, March 2002.
- ²² Federal Highway Administration. "Traffic Volume Trends, December 2010." Accessed May 29, 2011, www.fhwa.dot.gov/ohim/tvtw/10dectvt/10dectvt.pdf.
- ²³ INRIX, Inc. "INRIX National Traffic Scorecard 2010 Annual Report, Key Scorecard Findings." Accessed June 2, 2011, www.inrix.com/scorecard/summary.asp.
- ²⁴ Hymel, Kent. "Does traffic congestion reduce employment growth?." *Journal of Urban Economics* 65 (2009): 127-135.
- ²⁵ Hartgen, David and Gregory Fields. *Gridlock and Growth: The Effect of Traffic Congestion on Regional Economic Performance*. Los Angeles: Reason Foundation, June 2009.
- ²⁶ INRIX, Inc. "INRIX National Traffic Scorecard 2010 Annual Report, Key Scorecard Findings." Accessed June 2, 2011, www.inrix.com/scorecard/summary.asp.
- ²⁷ INRIX, Inc. "INRIX National Traffic Scorecard 2010 Annual Report, Key Scorecard Findings." Accessed June 2, 2011, www.inrix.com/scorecard/summary.asp; and Federal Highway Administration. "Traffic Volume Trends, December 2010." Accessed May 29, 2011, www.fhwa.dot.gov/ohim/tvtw/10dectvt/10dectvt.pdf.
- ²⁸ McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedrosa. "U.S. School Travel 2009: An Assessment of Trends." *American Journal of Preventive Medicine* (August 2011) (In press).
- ²⁹ McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedrosa. "U.S. School Travel 2009: An Assessment of Trends." *American Journal of Preventive Medicine* 41 (August 2011): 2, 146-151.

- ³⁰ *Digest of Education Statistics, 2010*. Tables 184, 186 and 187. Washington, DC: U.S. Department of Education, National Center for Education Statistics, 2011.
- ³¹ *School Safety Busing: Serious Safety Hazards in Cook County, 1980-2006*. Chicago: Center for Neighborhood Technology, January 2007.
- ³² Toole Design Group. *Maryland Statewide Student Travel Policy Survey*. Hanover, MD: Maryland Department of Transportation, February 2011.
- ³³ Babcock, Stephane. "STN Fuel Survey: Schools feeling pinch from rise in prices." *STN Online*, March 14, 2011. Accessed June 1, 2011, www.stnonline.com/home/top-stories/3218-stn-fuel-survey-schools-feeling-pinch-from-rise-in-prices.
- ³⁴ American Association of School Administrators. "AASA Fuel and Energy Snapshot Survey." July 2008. Accessed May 30, 2011, archives.aasa.org/content.cfm?ItemNumber=10639.
- ³⁵ Campbell, Sarah. "Rising gas prices a growing pothole for school systems." *Salisbury Post*, March 27, 2011. Accessed May 30, 2011, www.salisburypost.com/News/032711-School-transportation-costs-qcd.
- ³⁶ Thornton, William. "Rising gas prices drain Birmingham area school budgets." *The Birmingham News*, April 11, 2011. Accessed May 30, 2011, http://blog.al.com/spotnews/2011/04/rising_gas_prices_drain_birmin.html.
- ³⁷ McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedroso. "U.S. School Travel 2009: An Assessment of Trends." *American Journal of Preventive Medicine* 41 (August 2011): 2, 146-151.
- ³⁸ Lutfiyya, May Nawal, Rosemary Garcia, Christine Dankwa, Teriya Young and Martin Lipsky. "Overweight and Obese Prevalence Rates in African American and Hispanic Children: An Analysis of Data from the 2003-2004 National Survey of Children's Health." *Journal of the American Board of Family Medicine* 21 (2008): 191-199.
- ³⁹ Hallmark, Shauna, Eric Fitzsimmons, David Plazak, Tom Michael Welch, and Eric Petersen. "Use of Physical Devices for Calming Traffic Along Major Roads through Small Rural Communities in Iowa." *Transportation Research Record: Journal of the Transportation Research Board* 2078 (January 16, 2009): 100-107.
- ⁴⁰ Dabson, Brian, Thomas G. Johnson, and Charles W. Fluharty. *A RUPRI Policy Brief: Rethinking Federal Investments in Rural Transportation: Rural Considerations Regarding Reauthorization of the Surface Transportation Act*. Columbia, MO: Rural Policy Research Institute, April 2011.
- ⁴¹ Dalton, Madeline, Meghan Longacre, Keith Drake, Lucinda Gibson, Anna Adachi-Mejia, Karin Swain, Haiyi Xie and Peter Owens. "Built Environment Predictors of Active Travel to School Among Rural Adolescents." *American Journal of Preventive Medicine* 40 (March 2011): 312-319.
- ⁴² Zhu, Xuemei and Chanam Lee. "Walkability and safety around elementary schools: Economic and ethnic disparities." *American Journal of Preventive Medicine* 34 (January 2008): 282-290.
- ⁴³ Macpherson, Alison, Ian Roberts and Barry Pless. "Children's exposure to traffic and pedestrian injuries." *American Journal of Public Health* 88 (December 1998).
- ⁴⁴ National Center for Safe Routes to School. "Understanding the progress of SRTS today and tomorrow." (presentation at the Safe Routes to School National Review Group meeting, Washington, DC, March 8, 2011.)
- ⁴⁵ Ogden, Cynthia and Margaret Carroll. "Prevalence of Obesity among Children and Adolescents: United States, Trends 1963-1965 through 2007-2008." Atlanta: Centers for Disease Control and Prevention. National Center for Health Statistics, June 2010.
- ⁴⁶ Trasande L and S Chatterjee. "The impact of obesity on health service utilization and costs in childhood." *Obesity* 17 (2009): 1749-54.
- ⁴⁷ Marder, William and Stella Chang. "Childhood Obesity: Costs, Treatment Patterns, Disparities in Care and Prevalent Medical Conditions. New York: Thomson Medstat Research Brief, 2006. Accessed June 3, 2011, www.medstat.com/pdfs/childhood_obesity.pdf.
- ⁴⁸ Cawley, J. "The impact of obesity on wages." *Journal of Human Resources* 39 (2004): 451-74.
- ⁴⁹ Cawley J, JA Rizzo, and K Haas. "Occupation-specific absenteeism costs associated with obesity and morbid obesity." *Journal of Occupational and Environmental Medicine* 49 (2007): 12, 1317-1324.
- ⁵⁰ Gates D, P Succop, B Brehm, G Gillespie and B Sommers. "Obesity and presenteeism: the impact of body mass index on workplace productivity." *Journal of Occupational and Environmental Medicine* 50 (2008): 1, 39-45.
- ⁵¹ Witters, Dan, Jim Harter, Katie Bell and Julie Ray. "The Cost of Obesity to U.S. Cities." *Gallup Management Journal* (January 27, 2011).
- ⁵² Stevens, Tara, To Yen, Sarah Stevenson and Marc Lochbaum. "The importance of physical activity and physical education in the prediction of academic achievement." *Journal of Sport Behavior* 31 (2008): 4, 368-388.
- ⁵³ Shore, Stuart, Michael Sachs, Jeffrey Lidicker, Stephanie Brett, Adam Wright and Joseph Libonati. "Decreased scholastic achievement in overweight middle school students." *Obesity* 16 (2008): 7, 1535-1538.
- ⁵⁴ Wang, Claire, Steven Gortmaker, Arthur Sobol, and Karen Kuntz. "Estimating the Energy Gap Among US Children: A Counterfactual Approach." *Pediatrics* 118 (2006): 1721-1733.
- ⁵⁵ Rahman T, RA Cushin, and RJ Jackson. "Contributions of Built Environment to Childhood Obesity." *Mt. Sinai Journal of Medicine* 78 (2011): 49-57.
- ⁵⁶ Davison, Kirsten and Catherine Lawson. "Do attributes in the physical environment influence children's physical activity? A review of the literature." *International Journal of Behavioral Nutrition and Physical Activity* 3 (2006).
- ⁵⁷ Jerret M, R McConnell, CC Chang, J Wolch, K Reynolds, F Lurmann, F Gilliland and K Berhane. "Automobile traffic around the home and attained body mass index: a longitudinal cohort study of children aged 10-18 years." *Preventive Medicine* 50 (2010): S50-S58.
- ⁵⁸ Cooper AR, LB Andersen, N Wedderkopp, AS Page, and K Froberg. "Physical activity levels of children who walk, cycle or are driven to school." *American Journal of Preventive Medicine* 29 (2005): 3, 179-184.
- ⁵⁹ Rosenberg DE, JF Sallis, TL Conway, KL Cain, and TL McDenzie. "Active transportation to school over 2 years in relation to weight status and physical activity." *Obesity* 14 (2006): 10, 1771-1776.

- ⁶⁰ Mendoza JA, K Watson, N Nguyen, E Cerin, T Baranowski, and TA Nicklas. "Active Commuting to School and Association with Physical Activity and Adiposity Among US Youth." *Journal of Physical Activity and Health* 8 (May 2011): 4, 488-495.
- ⁶¹ Sirard JR, WF Riner, KL McIver, and RR Pate. "Physical activity and active commuting to elementary school." *Medicine and Science in Sports and Exercise* 37 (2005): 12, 2062-2069.
- ⁶² Hill, James, Lorraine Ogden, Susan Rodearmel, Nanette Stroebele, and Holly Wyatt. "Small Changes in Dietary Sugar and Physical Activity as an Approach to Preventing Excessive Weight Gain: The America on the Move Family Study." *Pediatrics* 120 (2007): e869-e879.
- ⁶³ Calculated based on the current miles drive to school as cited in McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedroso. "U.S. School Travel 2009: An Assessment of Trends." *American Journal of Preventive Medicine* 41 (August 2011): 2, 146-151, and with gasoline at \$4 per gallon.
- ⁶⁴ *Digest of Education Statistics, 2010*. Tables 184, 186 and 187. Washington, DC: U.S. Department of Education, National Center for Education Statistics, 2011.
- ⁶⁵ Marder, William and Stella Chang. "Childhood Obesity: Costs, Treatment Patterns, Disparities in Care and Prevalent Medical Conditions. New York: Thomson Medstat Research Brief, 2006. Accessed June 3, 2011, www.medstat.com/pdfs/childhood_obesity.pdf.
- ⁶⁶ Garrett-Peltier, Heidi. "Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts." Amherst, MA: Political Economy Research Institute, June 2011.
- ⁶⁷ Local Government Commission Center for Livable Communities. "Fact Sheet: The Economic Benefits of Walkable Communities." Accessed May 30, 2011, www.lgc.org/freepub/community_design/factsheets/walk_to_money.html.
- ⁶⁸ O'Neill, David, "Smart Growth: Myth and Fact." Washington, DC: The Urban Land Institute, 1999.
- ⁶⁹ Parsons Brinkerhoff. "Metropolitan Transportation Infrastructure Survey." Washington, DC: U.S. Conference of Mayors, May 2011. Accessed June 3, 2011, <http://usmayors.org/transportationsurvey/documents/survey.pdf>.





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