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Safe ways to school

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Abstract

The great dependency on the automobile in American society has led to a decrease in self-mobility of American youth. Today, only a 10% of all trips to school are made by walking and bicycling. The vast majority of home-to-school trips are performed by private automobile. This trend has many negative impacts on traffic operations of local streets, the environment, and the health and safety of the children. Encouragement of non-motorized modes of transportation for student commutes to and from school has been recognized as an attractive alternative to the automobile use.

This paper discusses methods for encouraging safe walking and bicycling to school through a review of goals and initiatives of Safe Ways to School programs. Existing programs are grouped into four models, namely traffic calming, funding, encouragement, and enforcement, based on their objectives and methods used to achieve these objectives. As an example, the paper discusses the Safe Ways to School for Michigan Children program, a pilot Safe Ways program in the state of Michigan.

Overall, the paper describes the benefits and the process for developing Safe Ways to School programs and demonstrates the importance of the combination of engineering, education, and encouragement, plus enforcement for the success of such efforts.

1 Introduction

The use of the automobile currently dominates all trip types and has become an integral part of the American culture. A steady decline in human-powered travel is evident, as is the dependency of Americans on the automobile. According to the United States Department of Transportation, from 1975 to 1995 there was a

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42% decline in walking by American adults [1]. Much of that decline has been attributed to sprawling suburbs that make walking unsafe or unpleasant. It is estimated that, over 75% of the time, Americans choose to drive to destinations less than one mile from their homes. The excessive use of the automobile has led to many problems including traffic congestion, air pollution, energy consumption, noise, traffic injuries and fatalities, and lack of investment on alternative modes of transportation.

This reality greatly affects the mobility and travel choices of American children. While more than two-thirds of all children walked or biked to school thirty years ago, only 10 percent do so today. Less that one in three of the home-to-school trips within a distance of 1 mile is made on foot. Only 2% of kids leaving within 2 miles from school choose to bicycle. Unfortunately, the decline in human-powered travel habits in children is not balanced by other physical activities. Obesity, heart disease, and other lifestyle-related diseases are on the rise in both adults and children. Today, one in four American children is obese, and as the American Medical Association reports, 60% of overweight 5 to 10 year old children already have at least one risk factor for heart disease [2].

Moreover, the perception that children are safer when driven by parents to school and other activities is not well founded. In fact, motor vehicle crashes are the leading cause of death for children of every age from 4 to 14 years old based on mortality data available from the National Center for Health Statistics. Analysis of crash records for the year 2000 indicates that, in the United States alone, an average of six children 0-14 years old were killed and 797 were injured daily in motor vehicle crashes [3]. Nationwide crash statistics further confirm that children vehicle occupant deaths have been reduced by 5% since 1975, while child pedestrian and bicycle deaths declined by 75%.

Thus it is desirable to intensify our efforts to promote walking and bicycling as modes of travel to and from schools, while ensuring the safety and comfort of children. To encourage walking and improve mobility and safety of children, a synergy of engineering, education, and enforcement is required. Improved facilities that meet high safety and quality of service standards should be provided as well as environments free of crime and violence. Effective walking promotions should be a part of overall transportation and land-use planning. Communities should be urged and assisted in initiating pedestrian safety programs at the local level. Such programs can assist in understanding pedestrian issues better, identifying impediments to non-motorized transportation at the local level, and initiating actions to remove existing barriers and encourage safe walking practices for children and their parents.

In the recent years, an increasing number of communities have demonstrated an interest in reclaiming streets and neighborhoods and implementing initiatives that promote walkability and safe non-motorized transportation practices. Many of these programs specifically target students and parents and are collectively referred to as "Safe Ways to School" initiatives. Safe Ways to School programs are typically supported by transportation professionals, public health advocates, neighborhood improvement organizations, and local officials who are working together to make streets safer for pedestrians and bicyclists along school routes.

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This paper reviews the goals and methods of existing Safe Routes to School programs and highlights the implementation requirements. Moreover, the paper describes in detail the Safe Ways to School for Michigan Children program, an innovative program that promotes walking to and from Michigan schools while ensuring the safety and comfort of children in their commutes. This paper describes the benefits and the process for developing Safe Ways to School programs and demonstrates the importance of the combination of engineering, education, and encouragement for the success of such efforts.

2 Components of community-based safe walking initiatives

There are three major components toward successful promotion of safe walking at the community level [4]:

1. Engineering and planning,
2. Education, and
3. Enforcement of regulations.

Providing a safe pedestrian environment is vital for the encouragement of pedestrian activities. The role of engineers and planners is to develop and refine the physical facilities that help safeguard pedestrians. These include roadways, sidewalks, crosswalks, lights, and traffic control devices. Additional attention should be given to pedestrian users with special needs (such as children and the elderly) that are a more vulnerable and a significant segment of pedestrian population.

The behavior of pedestrians and drivers is a major factor in preventing crashes with pedestrians. Education of parents and children on rights and responsibilities and promotion of the "share the road" philosophy among all road users can improve conditions for walking and reduce the probability of a pedestrian-vehicle crash occurrence. Emphasis should also be given on public education campaigns targeting driving behavior that particularly endangers vulnerable users such as young pedestrians. This behavior includes excessive speeding, signal violation, driving under the influence, inattention, and aggressive driving. Also, the incorporation of pedestrian and bicycle safety education into the school curriculum is a very important step toward the promotion of traffic safety.

Public education regarding benefits of walking on health, longevity, the environment, and quality of life may also influence attitudes and preferences of transportation network users with respect to mode selection. National and local marketing campaigns should also be used as tools to encourage people of all ages to walk more often for transportation or recreation.

Moreover, legislation should be in place to provide regulations necessary to ensure that both pedestrians and drivers share responsibility for pedestrian safety. Law enforcement agencies should properly maintain crash records, investigate crashes, cite violators, and protect pedestrians and motorists alike by enforcing regulations on sharing the roadway. Strict enforcement of school zone speed limits is a critical component of a successful Safe Ways to School program. Engineering, education, and enforcement go hand in hand in creating a safe

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environment for pedestrians and encourage walkability. Moreover, concerted and combined efforts of many agencies and interested parties are necessary to mobilize federal, state, and local authorities, decision makers, advocacy groups, and the public in general, toward an increase of pedestrian activities and creation of walk-friendly environments in American neighborhoods. At the school level, the establishment of a School Traffic Safety Team may act as a catalyst and greatly assist in setting achievable goals, selecting appropriate activities, developing an action plan, implementing activities, and assessing their impacts. Members of the School Traffic Safety Team may include the School Principal, the School District Transportation Director, local traffic engineer, school crossing guards, law enforcement personnel, and representatives of teachers, parents, and students [5].

A description of existing programs is summarized next based on a detailed summary of Safe Routes to School programs in the United States offered in the report entitled "A Project of Transportation Alternatives" [6].

3 Types of safe ways to school programs

The desire to reduce pedestrian injuries, restore childhood mobility, improve basic health, and reduce automobile traffic near schools has inspired a wide variety of "Safe Routes to School" programs across the United States. Some Safe Routes to School projects have existed under other names for decades, and have been recently recast as Safe Routes to School. Others are new to this country. Details and contact information for many of these programs can be found in the summary of Safe Routes to School programs in the United States [6].

There are many different components involved in the creation of a Safe Routes to School program, but generally such programs can be grouped under these four broad approaches:

1. The Traffic Calming Model
2. The Funding Model
3. The Encouragement Model
4. The Enforcement Model

Many programs combine aspects of these models, and the different models can also co-exist in a single state or community.

3.1 The traffic calming model

The Traffic Calming Model is fundamentally based on changing the behavior of motorists through changes in street design. It is defined as the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users [7]. Redesigning of streets around schools using speed humps, traffic circles, and wider sidewalks are examples of traffic calming solutions.

Safe Routes to School in Britain, Denmark, Germany, Holland, and the United States (including the Bronx Borough in New York and the city of

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Arlington in Virginia) are examples of the Traffic Calming Model for Safe Routes. Many traffic calming based programs also employ education and enforcement strategies. This model can also include increased enforcement — especially speeding — and increased safety education for motorists — for instance "Kill Your Speed, Not a Child" marketing.

The goals of the Traffic Calming Model include the following:

1. To measurably reduce crashes, injuries and deaths involving child pedestrians or cyclists near schools.
2. To create congenial and safe walking and /or cycling routes on primary travel corridors to and from schools so as to measurably increase the share of children walking and cycling to school.

Methods employed to support these goals focus primarily on changes in the physical environment near schools that help to slow motor vehicle speeds, and reduce the exposure of child pedestrians to turning and backing vehicles. Traffic calming techniques that can be employed near school sites to improve safe walking are grouped into four categories [8]:

1. Raising the surface of the street in certain locations -for example by installing speed humps,
2. Adding fixtures forcing motorists to drive around -such as landscaped islands in the middle of intersections,
3. Narrowing the street to create the perception of a crowded place, which helps control driver speed, and
4. Partially or totally blocking the street, forcing drivers to seek alternative routes.

In addition to traffic calming initiatives, the Traffic Calming-based Safe Ways to School programs may include community based planning and consensus building process as well as public events to increase political and community support for constructing traffic calming and pedestrian improvements. Finally, an important component of some programs is increased police traffic enforcement at and around the school site.

3.2 The funding model

The best example of the Funding Model is California's legislation dedicating one third of federal Surface Transportation Safety funds to local Safe Routes to School programs. The Funding Model is really a means to an end, not an end in itself. This said, it is probably the biggest bang per advocacy resources invested. A handful of advocates in California won $20 million a year for local Safe Routes Programs. This is an extraordinarily effective way of using limited time and resources. Funding a range of well thought out Safe Routes projects at the local level also encourages innovation. Several states are considering safe routes funding legislation, including Oregon, Montana, Florida, and Texas.

The goal of the Funding Model is to reduce child pedestrian and cycling crashes, and to encourage cycling and walking to schools statewide. The means to achieving this goal is by winning funding for localities to create engineering, education and enforcement campaigns. Funding also supports programs to create

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congenial street designs, and motivate children and parents to choose walking and bicycling as a mode of transportation to and from school, instead of the automobile.

A successful Safe Ways to School initiative following the Funding Model requires active support of state and/or local elected officials and/or government agencies, and is likely to involve extensive coalition building among a broad list of proponents from health, education, safety, public interest and local government organizations.

3.3 The encouragement model

Encouragement campaigns are the cheapest, quickest and easiest way for non-government organizations to direct public and political attention to promote walking and cycling to school. Encouragement typically takes the form of Walking School Buses and group rides [9]. These can be accompanied by marketing and behavioral change methods ranging from coloring books and prizes for kids, to street fairs, meetings, and brochures targeting parents. The goal of an encouragement campaign is to promote walking and cycling to school and thus, increase the number of non-motorized trips to and from school.

Encouragement campaigns can be developed into a consensus building and marketing tool to win increased community, political and governmental support for traffic calming and increased police enforcement and engineering changes. They can also include public awareness campaigns and outreach to the press, community, and political leaders.

3.4 The enforcement model

Numerous police departments across the country have child traffic safety campaigns with a goal to reduce child pedestrian and cycling crashes. Typically the police use crash maps to find schools with the highest number of children struck by cars. Police enforcement is assigned accordingly to such findings. Many enforcement campaigns also include police visits to schools, where children are educated on safe cycling and walking and given safety literature and prizes. Enforcement campaigns are often a short-term response to community anger after children are killed or injured. More effective campaigns are usually part of a broader, sustained traffic enforcement strategy.

4 The Michigan safe ways to school initiative

4.1 Background

The Safe Ways to School for Michigan Children program is a pilot program that promotes walking to and from Michigan schools while ensuring the safety, and comfort of children. Sponsored by the Office of Highway Safety Planning and developed by Michigan State University, this program encourages students,

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parents, teachers, and school administrators to work together to make walking a safe and enjoyable part of everyday life.

The goals of the program are:

1. To encourage children to walk to and from school through education and promotional efforts, and
2. To ensure the safety of children and parents during their commutes to school.

In order to meet the program goals, a need exists to assess traffic safety conditions in the vicinity of school sites, to identify existing problems, and to determine strategies for their remedy. Moreover, education of school officials, parents, and students on safe ways to school is essential.

More specifically, the Safe Ways to School for Michigan Children program consists of three components. The first component deals with data collection and analysis of current travel patterns of students based on student and parent surveys. The second component focuses on assessment of traffic safety near school sites with respect to geometric design, traffic control, presence of sidewalks and bikeways, parking and loading zones etc. The last component includes education of students and parents on pedestrian and cycling safety and their active voluntary engagement on walking/biking activities.

4.2 Approach

The philosophy of the program is that first society should ensure that the environment in the vicinity of the school supports safe walking and then encourage students to choose walking or cycling as the mode of transportation to and from school. The following activities are typically planned as part of the Safe Ways to School for Michigan Children program:

1. Assessment of Travel Patterns
   a. Student Surveys
      - Provide baseline data on student travel mode choices to school
      - Encourage student participation and involvement
   b. Parent Surveys
      - Establish reasons for current travel choices
      - Summarize perceived traffic safety in the vicinity of the school
      - Identify barriers to and opportunities for walking or bicycling
      - Solicit volunteer parent help for promoting safe walking and bicycling
2. School Site Safety Assessment
   a. Site Inspection
      - Assess traffic safety near school sites with respect to geometric design, traffic control, presence of sidewalks and bikeways, parking and loading zones etc
      - Determine locations that need attention (if any)
      - Select and recommend safe routes to school
   b. Review of Crash History
      - Analyze crash records

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- Determine locations that appear to show increased safety risks (if any)

3. Education and Promotion of Safe Walking Practices
   a. Presentations to students and the community on the benefits of walking and bicycling and safety practices
   b. Presentation to local officials, agencies, parents, and advocates focusing on school safety design principles
   c. Promotion of active involvement programs for children, such as:
      - Participation in the Walk-our-Child-to-School-Day [10]
      - Determination of a Safe Walk Route to school
      - Organization of a Walking School Bus [11]
      - Promotion of a Car-Free Day in the community
      - Initiation of a School Safety Patrol Program
      - Training of Crossing Guards

4.3 Benefits

The most important benefit for schools participating in the Safe Ways to School for Michigan Children program is the potential for improved traffic safety for students on the way to and from school. Another benefit is that the school receives an engineering assessment of the infrastructure used to transport kids to and from school along with a report on locations that need improvements. Moreover, education of students, parents, and others about safe walking and cycling practices and encouragement of students to engage in walk to school activities are of major importance. In addition to the benefits from physical activity, such as reducing the risk of heart diseases, the students often have fun walking with others, socializing, and making new friends. Finally, participating schools receive positive local media coverage for their commitment of support and promote pedestrian safety initiatives and health lifestyles.

5 Conclusions

The use of the automobile currently dominates all trip types and has become an integral part of the American culture. Today, many American towns and neighborhoods fail to meet the needs of pedestrian users in terms of convenience and safety. Lack of sidewalks, urban sprawl, motorist speeding, and enforcement often compromises the travel efficiency, comfort and safety of non-motorized users.

On the other hand, walking as a mode of transportation, recreation, and exercise has been recognized as a healthy and desirable alternative to the automobile use with many benefits for the individual and the society as a whole. Benefits from moderate exercise such as walking and cycling are of particular importance to kids in creating healthy lifestyles. Thus, a new movement is emerging in the U.S.A that is focusing on how to motivate children to be more physically active on their commutes to and from school.

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In order to encourage more children to walk and cycle, improvements in the infrastructure maybe needed, along with education of parents, students, and motorists on safe walking practices. Successful Safe Ways to School programs focus on collaborative ventures among neighborhood groups, traffic engineers, law enforcement agencies, and local officials who work together to ensure accessibility, safety, and comfort and encourage both parents and their kids to take advantage of the many benefits of getting around on foot or by bicycle.

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