Safe Routes to School

in Portland, Oregon

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Author: Shayna Rehberg

Advisor and Primary Reader: Professor Jennifer Dill, PhD

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Abstract

Over 66 percent of children in the United States walked to school in the 1970s, while less than 12 percent were walking or biking to school by 2002. Overweight in youth also doubled during this period. Increasing health problems for American children – such as obesity and type 2, "adult onset" diabetes – are associated with declining physical activity. Making it easier for children to walk and bike to school through Safe Routes to School programs constitutes one response to this looming public health issue. Making routes to school more amenable to walking and biking also presents an opportunity for urban planners and community organizers to make neighborhoods more connected, safe, and inviting for residents of all ages to walk and bike.

In this paper, I seek to evaluate the development of Safe Routes to School programs in Portland, Oregon. Leading up to this evaluation, I summarize existing literature on what influences children's travel to and from school, conduct a statistical analysis of student travel using nationwide data, review two travel surveys of Portland Public Schools, and give an overview of the history of Safe Routes policies. Only then do I move on to describe the range of Safe Routes programs in Portland before assessing the programs according to findings from the previous chapters, particularly the statistical analyses done on the influences on children's school travel. I end the paper with a discussion of the evaluation and lessons learned during the course of the project.

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Cover credit: Images from PDOT Safe Routes to School web site at http://www.trans.ci.portland.or.us/saferoutes/

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Acronyms

AB	Assembly Bill
BTA	Bicycle Transportation Alliance
CDC	Center for Disease Control and Prevention
FAR	Floor Area Ratio
GIS	Geographic Information System
HB	House Bill
LOS	Level of Service
NPTS	Nationwide Personal Transportation Survey
NTSP	Neighborhood Traffic Safety Partnership
ODOT	Oregon Department of Transportation
ODHS	Oregon Department of Health Services/Human Services
PDOT	City of Portland Office of Transportation
SB	Senate Bill
SRTS, SR2S	Safe Routes to School
USDOT	United States Department of Transportation
TAZ	Transportation Analysis Zone
TGM	Transportation Growth Management
TSP	Transportation System Plan
WPC	Willamette Pedestrian Coalition

1.0 Introduction

Americans are making only five percent of their total daily trips by walking, with 75 percent of trips one mile or less being made by driving (Moore, 2003). Similarly, although over 66 percent of children walked to school in the 1970s, less than 12 percent were walking or biking to school by 2002 (U.S. CDC in Marin County Bike Coalition, 2002). Driving more and walking and biking less have accident and public health implications that are especially serious for vulnerable parts of our population such as children.

More automobile usage corresponds to less physical activity; trips that were once or could be made by human power are being made by vehicle power instead. When activity levels decline, obesity and inactivity-related diseases set in. In this vein, studies of urban development in the United States and its effects on Americans' health are beginning to surface. In particular, research released in the *American Journal of Public Health* and the *American Journal of Health Promotion* in 2003 quantifies the toll that less compact, more suburban-style development has on health. Suburbs in the United States where good sidewalk networks are lacking, lots are large, and land uses are widely separated show significant elevations in inactivity, weight gain, and high blood pressure when compared to denser urban areas in the country (Ewing et al., 2003). Media like Reuters, *USA Today*, and *The Wall Street Journal*, and, closer to home, Portland's *Daily Journal of Commerce*, *The Oregonian* and Bend's *Bulletin* have heralded these study results in their headlines.

The 1999-2000 National Health and Nutrition Examination Survey (NHANES) estimated that 15 percent of youth ages 6 to 19 are overweight, an increase of 4 percent over the last NHANES conducted between 1988 and 1994. This marks a formidable trend in which the rate of overweight in youth has more than doubled in the last 25 years. Approximately five percent of youth ages 12 to 19 and seven percent of those ages 6 to 11 were overweight in the late 1970s (National Center for Health Statistics, 2000). These numbers signal a greater likelihood that today's children will become overweight adults in the future, which carries with it associated risks of heart disease and other chronic conditions stemming from overweight and inactivity. Rises in these diseases in children are already emerging. Major pediatric health centers in the

United States are registering record numbers of type 2 (otherwise known as "adult-onset") diabetes in children. While also related to a child's insulin resistance and heredity, type 2 diabetes in children is attributed to overweight and obesity (Fagot, 2000).

Increases in vehicle travel – and the urban designs which accommodate, promote, and even necessitate this travel – also diminish the safety of non-motorized travel, resulting in car-pedestrian accidents, car-bicyclist accidents, and deterrents to walking and biking. In 1999, children ages 5 to 15 accounted for over 25 percent of bicycle traffic fatalities in the United States. The same year, approximately 600 children under the age of 15 were killed as pedestrians in traffic-related incidents, and over 27,000 were injured as pedestrians in traffic-related incidents (National Center for Injury Prevention and Control, 2002).

In these ways, travel trends, transportation systems, and urban form are very much public health issues. Accordingly, planning professionals, public health professionals, and community members have come together to address these trends never before seen in children. One set of their responses has been the Active Living and Active Transportation movements. The movements complement "smart growth" design principles such as higher densities, mixed uses, shorter blocks, and narrower streets. "Active Living" seeks to integrate simple activity like walking and biking into everyday routines such as commuting, running errands, grocery shopping, and visiting friends. It draws on a cross-section of disciplines— urban planning, civil engineering, architecture and design, public policy and administration, health care, education, and community activism.

Safe Routes to School is a campaign for safety and active living specific to children. Safe Routes to School blends aspects of engineering, planning, education, and promotion to allow for more children to walk, bike, and otherwise travel by self-propelled means between home and school. Safe Routes programs develop through a combination of assessment, education, and community-building. Existing physical conditions on the street systems surrounding schools, travel patterns of the students, and policies governing school siting or influencing walking and biking, are evaluated. Safe and legal walking and bicycling practices are taught. Neighbors, teachers, local officials, and activists band together to lobby for local walking and biking facility

improvements, to support promotional efforts like Bike to School Day or "walking school buses", and to essentially provide for the continuation of Safe Routes programs in their neighborhoods.

In this paper, I examine Safe Routes program development in Portland, Oregon. First, I study influences on children's travel to school through a literature review as well as a statistical analysis of data from the 1995 Nationwide Personal Transportation Survey. In the following chapter, I present results from two different travel surveys of students from Portland public schools. Then I offer a brief history of Safe Routes policy development in Oregon, against a backdrop of Safe Routes policies elsewhere.

With this background established, I look at the different elements of Safe Routes to School programs undertaken in Portland, as currently led by the City of Portland's Office of Transportation (PDOT) and the Bicycle Transportation Alliance (BTA). Finally, I evaluate these organizations' Safe Routes programs against findings from the literature review, surveys, and statistical analysis described earlier in the paper. This final chapter ends with discussion and lessons I have learned from studying Safe Routes program development in Portland.

2.0 Literature Review

Historically, there has been a limited body of empirical studies and literature addressing the influences on children's modes of travel, let alone travel to school and the relationship of urban planning and policy to these choices. However, over the last few years, academic research and popular literature have begun to fill the void.

2.1 EPA Statistical Analysis of Travel Implications of School Siting in United States

The U.S. Environmental Protection Agency (EPA) recently released, in October 2003, an analysis of the statistical relationship between the location of K to 12 schools, the urban form surrounding the schools, socioeconomic characteristics of schoolchildren's households, and their modes of travel to and from school. The study's statistical analysis was based on results from two different household travel diary surveys held in Alachua County, Florida in late 2000 and early 2001. One survey was sponsored by the Gainesville Metropolitan Transportation Planning Organization (MTPO), and the other by the Florida Department of Transportation (FDOT). Of the 709 trips that the EPA study was able to confidently identify as K to 12 school trips, 548 trips (77.3 percent) were made by car, 105 trips (14.8 percent) by bus, 32 trips (4.5 percent) on foot, and 24 trips (3.4 percent) by bike (EPA, 2003).

Travel time, a variable in the study's regression analysis, was estimated using the region's transportation model. Travel time between transportation analysis zones (TAZs) is already figured for vehicles in the regional transportation model. Walking and biking were added to the model, assuming a three-mile-per-hour walking speed and a twelve mile-per-hour biking speed. School bus travel was determined as being relatively independent of travel time and more dependent on parent convenience and service availability. It was not added to the regional transportation model. The study found a significant inverse relationship between travel time and the likelihood of walking or biking to school. The inverse relationship was stronger for biking than walking, indicating that travel by bike is even more sensitive to increases in distance and travel time than walking (EPA, 2003).

The EPA study borrowed its built environment variables – employment, commercial, and residential density, commercial floor area ration (FAR), street density, and sidewalk coverage and width – from multiple sources. Density data was available through the Florida Standard Urban Transportation Model Structure, FAR and street density data through the county's geographic information system (GIS), and sidewalk data through the county's bicycle and pedestrian level of service (LOS) database. Of the built environment variables, sidewalk coverage along arterials and collectors provided the greatest influence on walking to school. However, none of the built environment variables presented significant influences on biking (EPA, 2003).

Socioeconomic variables used for the study were those that the two different travel diary surveys held in common, namely: number of household members, number of vehicles per household, number of vehicles per household member, annual household income, and driver's license owned by student. Household income and vehicle ownership per household member exerted negative influences on walking to school, vehicle ownership exerting the stronger negative influence of the two (EPA, 2003).

The EPA study cited research that found that four times as many students walked to schools that were constructed before 1983 than those constructed after 1983 (16 percent as compared to 4 percent) (Kouri, 1999, in EPA, 2003). This finding leads to the question: what is it specifically about older school construction and siting that make these schools more "walkable"?

2.2 CDC Report on Survey of Barriers to Children Walking and Biking to School in the United States

A Center for Disease Control and Prevention (CDC) article in the August 16, 2002 *Morbidity and Mortality Weekly Report* addresses barriers to children walking and biking to school by analyzing results from the 1999 national HealthStyles Survey. The survey was mailed to households who had indicated interest in participating in a survey about behaviors and attitudes related to health. Households were sampled – and survey results weighted – according to a representative cross-section of age, sex, marital status, income, race, household size, region, and

population density. Of more than 2,600 households that responded, 611 of them had children ages 5 to 18 and provided travel information about the children (CDC, 2002).

Roughly 11 percent of all school trips by children ages 5 to 18 were being made by walking, and 3 percent by biking. At both primary (ages 5 to 11) and secondary (ages 12 to 18) school levels, almost 19 percent of students walked and 6 percent biked at least once during the week. Families were asked whether the following factors served as barriers to children walking and biking to school: distance, traffic, weather, school policy, crime, other, or none. Distance and traffic posed the most serious barriers to walking and biking, earning 55 percent and 40 percent response rates respectively. Parents of primary school students reported barriers at rates similar to parents of secondary school students, with the exception of traffic and crime; traffic and crime ranked as greater barriers for families of primary students. Sixteen percent of respondents reported no barriers and the children of these respondents were six times likelier to walk or bike than those reporting at least one barrier (CDC, 2002).

2.3 McMillan Statistical Analysis of Relationship Between Children's Travel to School, Urban Form, and Family Attitudes in California "Safe Routes" Schools

Tracy McMillan, doctoral candidate in UC Irvine's Urban and Regional Planning program, has contributed empirical research on the relationship between children's travel between home and school, urban form, and family perceptions and attitudes. McMillan administered surveys to parents of students in six elementary schools that were participating in California's Safe Routes to School grant program and were scheduled for construction of travel safety improvements. Four of the schools were located in suburbs of the Bay Area, Los Angeles, and Orange County. The fifth school was located in a traditional neighborhood of south central Los Angeles, surrounded by a grid street system, while the sixth school was located in a small agricultural community and was flanked by both a small traditional downtown and suburban-style residential development.

The written survey achieved a response rate of 45 percent out of 2295 surveys sent home. The parent survey was supplemented by traffic data and urban form data collected in the field. The

largest influences on children's mode choice in this sample were parent-reported distances between home and school, parent-reported speeds along the route to school, the perceived convenience of driving a child to school, and the parents' birthplace. Higher reported speeds, longer reported distances, greater perceived convenience, and being born in the United States were all linked with a greater probability of being driven to school and a lesser probability of walking and biking to school (McMillan, 2002).

Interestingly, neighborhood safety factors (windows facing onto the sidewalk and few, if any, abandoned lots or buildings) were not significant in influencing a child's mode of travel (and, by proxy, the parents' decision about how their child should travel). Urban form factors including street trees, mixed commercial and office and residential uses, and short block lengths had significant but low magnitude effects on children's school travel, especially when compared to other factors such as reported distances between home and school of less than one mile. The effect of street trees' effect was positive while mixed uses and short block lengths were negative (McMillan, 2002). The findings regarding mixed uses and short block lengths are counter-intuitive, and McMillan offers potential explanations including: the study's geography was limited to just six sample sites and maybe they were not representative enough of urban form; seven other urban form variables were dropped early in the study due to multicollinearity; and characteristics that make attractive walking environments for adults may not necessarily do so for children (McMillan, 2002).

2.4 Bricker Study of Youth Mobility in Portland, Oregon

Research on student's travel has also been undertaken in Portland, Oregon. I will review quantitative research of Portland Public Schools students separately in Chapter 4.0 – Portland Student Travel Surveys. From 1996 to 1998 Scott Bricker, currently Education and Policy Director for the Bicycle Transportation Alliance (BTA), conducted a qualitative study of youth mobility in Portland with an emphasis on biking while a graduate student in the Urban and Regional Planning program at Portland State University. On a grant from the Urban Ecosystem Project, sponsored by the U.S. Department of Education's Title XI program, he spent a total of 18 months between 1996 and 1998 in three Portland middle schools— Ockley Green, George, and Portsmouth. During that time he assisted teachers with lesson plans, classroom activities,

and the drawing of connections between students' in-class and out-of-class experiences. His work's focus – and the research question for his graduate studies – was identifying measures that would increase kids' biking to school. He supplemented his work at the three schools with research on literature regarding children's cognitive development and perceptions of and relationships to their environment.

In his literature research, Bricker found that children, particularly of the elementary school age, are less mentally developed and possess small home ranges (Bricker, 1998). When traveling outside of their small home range, children are often passive travelers, which prevents them from forming a comprehensive, network view of their environment (Schaefer and Sclar in Bricker, 1998). Studies of children's cognitive development also revealed that they often overestimate distance, especially short-range distances, and they do so more than adults (Matthews in Bricker, 1998).

As an assistant educator in the three schools, Bricker taught students about mapping, transportation's relationship to urban development, and bicycle repair and riding skills. He also helped organize Bike Clubs and led "field trip" rides to places like Smith and Bybee Lakes, all with significant teacher support. During his time teaching, casually talking to students between classes, and holding extracurricular events, Bricker heard similar complaints of barriers to biking to school. Barriers consistently cited by students, teachers, and parents included streets with high traffic (high volumes and/or high speeds), unsafe bike parking at school, and insufficient bike education and promotion (Bricker, 1998).

2.5 Studies and Statistics Regarding Heavy Backpacks and "Stranger Danger"

In my own conversations with peers and colleagues about children walking and biking to school, questions about kids' heavy backpacks and vulnerability to crime have repeatedly come up. I have been asked whether these elements and their potentially deterring effects have been sufficiently accounted for studies about school trips. As for crime, McMillan's "neighborhood safety" variable was found to be insignificant in influencing children's travel to school, and 18 percent of respondents in the HealthStyles survey analyzed by CDC named "crime" as a deterrent to children walking and biking to school (this ranked fourth behind distance (55

percent), traffic (40 percent), and weather (24 percent)). Backpacks and school loads were not addressed in any of the studies I have reviewed up to this point. While I found no comprehensive academic literature on the two topics, I was able to find the following related studies and statistics.

The medical and physical therapy professions have focused particular attention the last few years on the relationship between children's school backpacks and back or spinal pain and injuries. In a news release from the American Physical Therapy Association (APTA), physical therapists claim that overly heavy or improperly worn backpacks – worn on one shoulder or hanging over the lower back – create high risk for injury in school children. An APTA study found that over half of students surveyed carried more than 15 percent of their body weight in their backpacks, easily exceeding the recommended 10 percent and maximum 15 percent. One-third of the children surveyed described having back pain that limited their activities and led them to visit a doctor. This correlation between pain, injury, and wearing backpacks can pose physical or psychological barriers to kids being able to walk or bike to school (APTA, 2003).

Medical researchers from the University of Michigan have re-examined these claims. Director Andrew Haig, M.D., director of the university's Spine Program, counters that obesity and inactivity may be more to blame for back pain than backpacks. His study of 184 elementary and middle school children found younger students carrying about six percent of their body weight and the older students about eleven percent. Yet, children who reported neck or back pain were not necessarily carrying heavier packs. Nor was there any connection found between pain and carrying backpacks on one or both shoulders (UMHS, 2003).

Body mass index (one measure of obesity) did rise and reported activity levels, including walking and biking to school, did drop significantly between elementary and middle school respondents. This corresponded to increases in complaints of neck or back pain from 15 percent for the elementary school students to 45 percent for middle school students (UMHS, 2003). While the study did not statistically verify the relationship between weight, activity, and back pain, this suggests that factors in addition to backpacks should be considered in children's health

and medical issues. Without statistical verification, however, it is currently uncertain as to how much heavy schoolbook loads and backpacks may discourage walking or biking to school.

High-profile kidnap, assault, and murder cases involving children have led, for one, to the roadside variable message board Amber Alerts. Fears of crimes against their children, often called "stranger danger", may influence parents' and guardians' decisions about their children's mode of travel between home and school. While academic literature specifically addressing the influence of crime against children on their trips to and from school was not found, Federal Bureau of Investigation statistics downplay the "danger of strangers." These statistics do not tie crimes to a location (i.e. in the home, on the way to school, etc.). However, the leading perpetrators of kidnapping and sexual assault against children under 12 years old are overwhelmingly family members and acquaintances (DOJ, 2000).

About 63 percent of kidnappings are committed by family and acquaintances compared to 24 percent by strangers. Family and acquaintances are responsible for approximately 85 percent of sexual assaults against young children, and strangers about six percent. For all crimes including assault, sexual offenses, and kidnapping, family and acquaintances account for 91 percent of perpetrators and strangers nine percent (FBI, 1997, in DOJ, 2000).

As a note, surveys of parents and children in a Lake City, Minnesota school district and in various hospitals and private doctor's offices in the United States, France, and Germany found that girls fear criminal concerns like burglars, strangers following them, and kidnappers far more than boys. Boys hold greater fears of failing and being criticized (Stickler, 1996).

Pending more definitive findings about the influence that heavy backpacks and potential crime against children has on children's mode of travel to and from school, Safe Routes programs may have greater success if they are able to:

- communicate to parents different causes of back pain or injury, and the relative risks of crime against their children;
- advise children about ways to respond to approaches from strangers and ways to wear backpacks;

- work with teachers to reduce book loads to be taken home; and
- help find partners or form groups with whom children can walk and bike to school.

To summarize, the following findings were made by the studies reviewed in this chapter.

Table 2.1. Summary of Findings of Influences on Walking and Biking to School

2003 EPA Statistical Analysis of Travel Implications of School Siting Surveys: Gainesville MTPO and FDOT travel diary surveys, 2000-2001, 709 trips, ages 5 to 18 (K-12), approx. 8% walking or biking	
Travel time	Negative for walking, More negative for biking
Built environment – sidewalk coverage on arterials & collectors	Positive for walking, Insignificant for biking
Built environment – land use density, street network density, sidewalk width	Insignificant for walking and biking
Household income and per capita vehicle ownership (vehicle ownership more influential)	Negative for walking
2002 CDC Report on Survey of Barriers to Walking and Biking Survey: HealthStyles mail survey, 1999 611 respondents with children, ages 5 to 18, approx. 14% trips - walking or biking	
Distance	Negative
Traffic	Negative
2002 McMillan Statistical Analysis of Urban Form and Children's Travel Survey: Parent Safe Routes Survey in 6 California schools, 2002 1032 responses, 996 trips, grades 3 to 5, approx. 30% walking and biking	
Reported speeds along route to school	Negative
Reported distances to school	Negative
Perceived convenience of driving child	Negative
Social time with other children during trip to school	Positive

Figure 2.1. Summary of Findings of Influences on Walking and Biking to School *(Continued)*

Parents born in the U.S.	Negative
Parents have lived in U.S. for more than 5 years	Positive
Neighborhood safety (windows, no/few abandoned lots and buildings)	Insignificant
Urban form – street trees	Significant but low magnitude

	positive effect
Urban form – mixed uses and short blocks	Significant but low magnitude negative effect
1998 Bricker Study of Youth Mobility and Biking Qualitative and informal research, 1996-1998, grades 6 to 8	
Interview: Unsafe bike storage	Negative
Interview: Bike education & promotion	Positive
Interview: High traffic volumes & speeds	Negative

3.0 NPTS Statistical Analysis of Children's School Travel

The research presented in the Literature Review represents a major contribution to the fields of urban planning and public health, and the understanding of their relationship to children and children's travel. Each study – McMillan's, EPA's, CDC's, and Bricker's – fills a certain niche. McMillan and the EPA have provided important information about the effects that urban form does or does not have on children's travel to school. McMillan's study also delves into the attitudes of students' families toward travel. These two studies are the only ones of the four that conducted rigorous statistical analysis on their subject, using detailed household and urban development data. However, their sample sites are limited to California and Florida. The HealthStyles survey that CDC helped administer revealed parent opinions about barriers to walking and biking to school. The survey was nationwide, yet CDC presents only basic statistical analysis of the survey in its report. Bricker provides the valuable but seldomly-heard child's point of view on travel, and his studies were primarily qualitative. In this chapter, I will attempt to bridge one of the gaps left by these studies by using nationwide data to conduct more rigorous statistical analysis of the influences on mode choice for school trips. Specifically, I am testing whether characteristics of the child, the household, and the physical environment influence whether children get to and from school by motorized means, or non-motorized means.

3.1 Data

My analysis is drawn from the 1995 Nationwide Personal Transportation Survey (NPTS), a special data set that – unlike census data – uses extensive travel diary and interview information to paint a picture of ***all*** trips taken by Americans and not just work trips. It is also the only comprehensive nationwide data set that captures travel by youth. However, NPTS does not provide detailed urban form or household attitude data like McMillan's and the EPA's data sets. The large scale of this survey probably makes gathering such in-depth data impracticable. Nevertheless, I analyzed similar variables to those analyzed by McMillan and the EPA when possible.

The 1995 NPTS survey process began with an introductory letter sent to households randomly sampled by residential phone listing. The introductory letter was followed by a phone call in which a "household interview" was conducted. After the phone interview, travel diaries were

mailed to participating households, specifying a 24-hour travel day and 14-day travel period for which detailed travel information would be collected. NPTS staff called within one week of the designated travel day in order to retrieve information from participants' travel diaries. The survey was conducted May 1995 to July 1996, during all weather and all days of the week including holidays, to capture seasonal variation in travel behavior. Ultimately, the sample was made up of 42,033 households throughout the country (all 50 states plus the District of Columbia), with oversampling in two states and assorted metropolitan areas that, for planning purposes, paid for extra sampling. The survey tracked trip information for household members 5 years and older. The adult respondent for the household reported the trips of children in the household of ages 5 to 14.

My initial screening of the NPTS data set included selecting children ages 5 to 14, traveling distances of 25 miles and less between home and school. I chose elementary and middle school age children in order to target the time of children's development when they are still forming many of their views and preferences. Elementary and middle school ages (ages 5 to 14) also precede the legal driving age, and so may show more diversity in the ways they get to and from school. Elementary and middle schools are also more numerous and evenly distributed throughout communities, creating more opportunities for walking and biking than high schools, which feed from multiple schools and are sparsely distributed. I selected trips of 25 miles and less from the data set in order to confidently capture all trips that would conceivably be made by walking or biking.

From my screened data set, I went about choosing demographic and environmental variables that I thought, based on the literature review and other input, would influence children's travel to and from school (Table 3.1). Modes of travel ranged from cars and trucks to public transit and school buses to walking and biking. Using SPSS statistical software, I collapsed vehicular modes into "motorized" and coded them "0", and walking and biking into "non-motorized" and coded them "1". I included the variables child age and sex to describe the children themselves. These traits may also speak to the stage of the child's development. I coded male as "0" and female as "1". Age and sex did not register as significant in the other statistical studies, but I wanted to see whether using a larger, nationwide data set that included a broader range of ages

than McMillan's data set, yielded different results. My thinking was that older age would positively influence children walking and biking to school as would being male. My general experience has been that older children and boys are granted more independence and responsibility for their travel.

Table 3.1. Variable Description

Trip mode	Motorized (personally operated vehicles and transit) or non-motorized (walk or bike) ("0" for motorized and "1" for non-motorized)
Child's age	Age of school child in years, ages 5 to 14
Child's sex	Male or female ("0" for male, "1" for female)
Household race	Race of adult survey respondent, collapsed into "white" and "of color" ("0" for white, "1" for of color)
Household income	In $1000s, "$100,000 and up" category re-coded to $150,000 (or 150)
Population density	People per census block group
Trip length	In miles, trip distance between home and school, from 0 through 25
Vehicle availability	Number of vehicles divided by number of drivers per household ("0" for not available, "1" for available)
Household size	Total number of people in household
Adults available	Number of adults minus number of workers in household
Number of children	Household size minus number of adults

I characterized the home by choosing household income and race from the data set. I divided household income into thousands of dollars so that during statistical analysis I could test the effect that each income increase of $1,000 had instead of just $1. Income was found to be significant and a negative influence on walking and biking to school in the other studies. I expected the same in my analysis. Household race was represented by the race of the adult respondent for the survey. This is a weak link in the data in that the race of the respondent may not accurately represent the race or races of the rest of household. Nonetheless, I collapsed race into "white" and "of color" in SPSS, assigning "0" to white and "1" to of color. I predicted that race may have a similar effect on travel as did "U.S residency for the last 5 years" in McMillan's study, which indirectly picked up on immigration. While people of color in the U.S. are not necessarily immigrants, I believed that immigrant and minority cultures would be more communal and resourceful than white American culture, and that this would promote would more walking and biking.

The NPTS data set provides population density down to the census block group, and I selected this variable as a proxy for showing how dense the surrounding land use was. NPTS presents the block group population density data by midpoints of density ranges; the midpoints start at 50 and work up to 30,000. I speculated that denser environments would increase the likelihood of walking or biking because they may be more developed, may have more people around to watch out for kids or for kids to walk or bike with, and may offer more sidewalks and other walking and biking amenities. This would generally coincide with the other studies' findings of the positive influence that sidewalk coverage, street trees, and viewing school trips as valuable social time have on the chances of children walking or biking to school. I described trips to and from school in terms of trip length in miles, which includes fractions of miles. I anticipated the same finding made in all prior studies—the longer the trip, the less likely a child will be to walk or bike.

With a base of the six independent variables above, I also experimented with the effects of household size, adults available, number of children, and vehicle availability (Tables 3.1). I added these variables as an attempt to further define household characteristics and travel options. The number of vehicles in a household was found to be significant in other studies of children's travel, and I computed a vehicle availability variable for this analysis as a way of honing the variable "number of vehicles." Vehicle availability was calculated as whether the household had one or more vehicles available per driver. If significant, I expected to see vehicle availability decrease the probability that kids would walk or bike to school.

While household size was not found significant in other studies of children's travel, I sought to verify these findings while modifying the variable (number of adults available and number of children) to test for other potential significance and influence. More children in a household could mean that there are too many children going to different schools so that they all need to be driven. Alternately, multiple children in a household could provide more opportunities for accompanying one another walking or biking to school. Similarly, a greater number of adults available could have mean that there is an adult available to drive, so that the child need not walk or bike, or that there may be an adult to accompany the child on the walking or biking trip to school. "Adults available" was calculated as the number of adults in the household less the

number of workers. This assumes that the adults not working are otherwise available, which may not necessarily be true, and this is one pitfall of the variable. However, if either of these variables demonstrated significance, I wanted to see whether they positively or negatively influenced walking and biking.

3.2 Descriptive Statistics

Descriptive statistics are an important way to get acquainted with the dependent and independent variables before further analysis. Table 3.2 gives a feel for the range and averages of the data that was used to test for the influences on school trip mode choice. These variables are presented unweighted, meaning not multiplied by factors so that they more accurately reflect the whole of the United States population. It was advised, however, that weighting would not be necessary in my analysis.

Table 3.2. Descriptive Statistics

Dependent Variable

Mode of travel	Motorized	1,955	88.9%
	Non-motorized*	245	11.1%
	Total (N)	*2,200*	*100.0%*

Independent Variables

		Minimum	*Maximum*	*Mean*	*Median*
Child's age		5	13	9.2	9.0
Household income ($)		2,500	150,000	49,210.6	42,500.0
Population density (people per block group)		50	30,000	4,299.2	1,500
Trip distance (miles)		0	25	3.6	2.0
Household size		2	10	4.5	4.0
Adults available		-2	4	0.4	0.0
Number of children		1	8	2.5	2.0
Child's sex	Male		1193	52.0%	52.0%
	Female		1101	48.0%	48.0%
	Total		2294	100.0%	100.0%
Household race	White		1837	81.7%	81.7%
	Of color		412	18.3%	18.3%
	Total		2249	100.0%	100.0%
Vehicle available	Not available		358	16.1%	16.0%
	Available		1860	83.9%	83.9%
	Total		2218	100.0%	100.0%

Similar to findings from CDC's report on the national HealthStyles survey, approximately 11 percent of elementary- and middle-school-age children's school trips were made by walking or biking. This mode split is higher than splits found in the EPA's study (approximately 8 percent walking or biking) but considerably lower than those found in McMillan's (approximately 30 percent walking or biking). Table 3.3 provides a more detailed breakdown of the mode split for this study.

Table 3.3. 1995 NPTS Mode Splits for School Trips, Ages 5 to 14

Mode	Frequency	Percentage
Automobile	487	22.1%
Van	217	9.9
SUV	69	3.1
Truck	54	2.4
Subtotal	*827*	*37.5*
Bus	33	1.5
Subway/L	4	0.2
Taxi	3	0.1
School Bus	1,088	49.5
Subtotal	*1,128*	*51.3*
Bike	21	1.0
Walk	224	10.2
Subtotal	*245*	*11.2*
TOTAL	***2,200***	***100.0***

Cross-tabulations are descriptive statistics that help illustrate relationships among variables. The following cross-tabulations (Tables 3.4, 3.5, and 3.6) show correlations between mode and child's age, sex, and trip distance. Child's age cross-tabulated with mode (Table 3.4) shows a general increase in school trips made by walking or biking as children get older. However, the same appears so for motorized modes. With changes in mode inconsistent between ages, further analysis will be helpful in deciphering whether there is a significant relationship between the two.

Table 3.4 Cross-tabulation of Child Age and Mode

Age		Motorized Mode	Non-motorized Mode	*TOTAL*
5	*Count*	165	16	181
	% of Total Trips	7.5%	0.7%	8.2%
6	*Count*	205	11	216
	% of Total Trips	9.3%	0.5%	9.8%
7	*Count*	225	24	249
	% of Total Trips	10.2%	1.1%	11.3%
8	*Count*	219	39	258
	% of Total Trips	10.0%	1.8%	11.7%
9	*Count*	230	23	253
	% of Total Trips	10.5%	1.0%	11.5%
10	*Count*	228	33	261
	% of Total Trips	10.4%	1.5%	11.9%
11	*Count*	239	33	272
	% of Total Trips	10.9%	1.5%	12.4%
12	*Count*	222	36	258
	% of Total Trips	10.1%	1.6%	11.7%
13	*Count*	222	30	252
	% of Total Trips	10.1%	1.4%	11.5%
	TOTAL	1,955	245	2,200
	(Mode % of Total Trips)	(88.9%)	(11.1%)	100.0%

Boys make up a greater proportion of the sample overall, and both their motorized and non-motorized trips outnumber girls' (Table 3.5). It is difficult to tell whether the differences in mode splits between male and female are significant. Further analysis will help answer this.

Table 3.5. Cross-tabulation of Child Sex and Mode

Sex		Motorized Mode	Non-motorized Mode	*TOTAL*
Male	*Count*	998	143	1,141
	% of Total Trips	45.4%	6.5%	51.9%
Female	*Count*	957	102	1,059
	% of Total Trips	43.5%	4.6%	48.1%
	TOTAL	1,955	245	2,200
	(Mode % of Total Trips)	(88.9%)	(11.1%)	100.0%

The cross-tabulation between mode and trip distance is particularly illuminating (Table 3.6). More than 97 percent of walking and biking trips made to and from school are made when home is no more than a mile away. Conversely, almost three-quarters of motorized trips are made when home is more than a mile away.

Table 3.6. Cross-tabulation of Trip Distance and Mode

Distance (miles)		Motorized Mode	Non-motorized Mode	*TOTAL*
0 – 0.25	*Count*	53	97	150
	% of Total Trips	2.4%	4.4%	6.8%
0.26 – 0.50	*Count*	180	71	251
	% of Total Trips	8.2%	3.2%	11.4%
0.51 – 0.75	*Count*	37	20	57
	% of Total Trips	1.7%	0.9%	1.9%
0.76 – 1.00	*Count*	257	51	308
	% of Total Trips	11.7%	2.3%	14.0%
1.01 – 2.00	*Count*	332	2	334
	% of Total Trips	15.1%	0.1%	15.2%
2.01 – 3.99	*Count*	264	2	266
	% of Total Trips	12.0%	0.1%	12.0%
4.00 – 25.00	*Count*	832	2	834
	% of Total Trips	37.8%	0.1%	37.6%
	TOTAL	1,955	245	2,200
	(Mode % of Total Trips)	(88.9%)	(11.1%)	100.0%

3.3 Models

Descriptive statistics gave me a vague idea of what relationships may exist between the independent variables and dependent variable (mode), but I decided to use regression analysis to more clearly determine the relationships. Given the binary nature of my question – what will make it more likely that children make school trips by motorized or non-motorized means – I chose binary logistic regression, or binomial logit analysis, to help me find answers. If my regression analysis found certain variables to have significant influence on mode choice for school trips, then these would be prime areas for Safe Routes to School programs to target.

I tested six different models to see which combination of variables would best explain the likelihood that one of the two mode choices would be made. Variables used in the base model and six variations are listed in Table 3.7. When I initially ran binomial logit analysis on all seven models, household income and vehicle availability were consistently coming up insignificant when both were present in the same model. When vehicle availability was taken out, income moved closer to significance. This led me to run a cross-tabulation of all the independent variables, which indicated that there is likely a strong collinearity between income

and number of vehicles in a household. Because of this collinearity and the fact that they shared similar explanatory power with the other models, I removed models including vehicle availability (Models 1, 3, and 5) from the remaining analysis. The following results and discussion address the Base Model and Models 2, 4, and 6.

Table 3.7. Variables By Model

	BASE MODEL	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
Child's age	X	X	X	X	X	X	X
Child's sex	X	X	X	X	X	X	X
Household race	X	X	X	X	X	X	X
Household income	X	X	X	X	X	X	X
Population density	X	X	X	X	X	X	X
Trip length (miles)	X	X	X	X	X	X	X
Vehicle availability		X		X		X	
Household size		X	X				
Adults available				X	X		
Number of children						X	X

3.4 Results

All four models achieved similar predictive power, roughly 53 percent (Figure 1). This means that the combinations of variables used in the Base Model and Models 2, 4, and 6 help explain just over 53 percent of the reasons why a child may be more likely – or not – to travel between home and school by non-motorized means. Given the numerous, interacting, and highly personalized bases for travel decisions, the ability to predict different mode choices is usually quite elusive. Building a model with an R Square value or explanatory power exceeding 10 or 15 percent is exceptional.

Using standard two-tailed significance at the 0.05 level, the most significant variables throughout the models were, in order of magnitude, trip length, child's age, and population density around the home site (Tables 3.8, 3.9, 3.10, and 3.11.). Specifically, the longer the trip between home and school, the less likely the child would be to travel by non-motorized means. For instance, using the odds ratio Exp(B) from the base model results, increasing trip distance by one mile

Table 3.8. Base Model Results

	Statistics (n=1898)			
Variable	B	Wald	Significance	Exp(B)
Child's sex	***-0.495***	***6.959***	***0.008***	***0.610***
Child's age	***0.203***	***25.698***	***0.000***	***1.225***
Household race	***0.603***	***6.737***	***0.009***	***1.828***
Household income	-0.004	1.832	0.176	0.996
Population density	***0.000***	***18.182***	***0.000***	***1.000***
Trip length	***-2.183***	***112.726***	***0.000***	***0.113***
Constant	***-1.551***	***14.459***	***0.000***	***0.212***
Nagelkerke R-square		*0.5300*		

Table 3.9. Model 2 Results *(with household size)*

	Statistics (n=1898)			
Variable	B	Wald	Significance	Exp(B)
Child's sex	***-0.495***	***6.931***	***0.008***	***0.610***
Child's age	***0.203***	***25.681***	***0.000***	***1.225***
Household size	0.001	0.000	0.992	1.001
Household race	***0.603***	***6.729***	***0.009***	***1.828***
Household income	-0.004	1.832	0.176	0.996
Population density	***0.000***	***18.166***	***0.000***	***1.000***
Trip length	***-2.183***	***112.726***	***0.000***	***0.113***
Constant	***-1.554***	***9.326***	***0.002***	***0.211***
Nagelkerke R-square		*0.5300*		

Note: Bold indicates results significant at the 0.05 level, two-tailed

makes it almost 89 percent less likely that children will travel by non-motorized means. The older the child, the more likely she or he would be to travel by non-motorized means. A one-year increase in age makes it over 22 percent more likely that the child will make his or her school trip by walking or biking. And the greater the density of people around the home site, the

Table 3.10. Model 4 Results *(with adults available)*

	Statistics (n=1898)			
Variable	B	Wald	Significance	Exp(B)
Child's sex	***-0.497***	***7.007***	***0.008***	***0.608***
Child's age	***0.207***	***26.225***	***0.000***	***1.230***
Household race	***0.580***	***6.166***	***0.013***	***1.786***
Household income	-0.003	1.526	0.217	0.997
Population density	***0.000***	***16.450***	***0.000***	***1.000***
Trip length	***-2.182***	***112.706***	***0.000***	***0.113***
Adults available	0.138	0.830	0.362	1.148
Constant	***-1.631***	***15.215***	***0.000***	***0.196***
Nagelkerke R-square		*0.5307*		

Figure 3.7. Model 6 *(with number of children)*

	Statistics (n=1898)			
Variable	B	Wald	Significance	Exp(B)
Child's sex	***-0.498***	***7.018***	***0.008***	***0.608***
Child's age	***0.203***	***25.684***	***0.000***	***1.225***
Household race	***0.606***	***6.778***	***0.009***	***1.833***
Household income	-0.004	1.725	0.189	0.996
Population density	***0.000***	***18.058***	***0.000***	***1.000***
Trip length	***-2.183***	***112.715***	***0.000***	***0.113***
Number of children	0.020	0.072	0.788	1.020
Constant	***-1.605***	***12.441***	***0.000***	***0.201***
Nagelkerke R-square		*0.5301*		

Note: Bold indicates results significant at the 0.05 level, two-tailed

more likely he or she would be to travel by non-motorized means. In a separate run of the logit analysis in which I divided population density by 1000, the odds ratio registered 1.060, which indicates that for every increase in block group population density of 1000 people, children will be six percent more likely to get to school by non-motorized means.

Child's sex and household race were also significant variables throughout the models. Girls are less likely to make their school trips by non-motorized means. In particular, they are almost 40 percent less likely to walk or bike than boys. Children from households of color are more likely to make their school trips by non-motorized means. According to the range of odds ratios provided by the four models, children from households of color may be anywhere from 78 to 84 percent more likely to travel by walking or biking than children from white families. The model constant was also consistently significant. Given that the explanatory power of the models never exceed 54 percent, the constant captures some of the explanatory power not provided by other variables in a model. A significant constant, in this case, is a good reminder that other significant factors are missing from this analysis.

Interestingly, I found household income (all models), household size (Model 2), the number of adults available (Model 4), and the number of children in the household (Model 6) all to be insignificant. This means that they do not statistically affect the probability that children will travel by certain means between home and school. Household income's insignificance conflicts with findings from EPA's and McMillan's statistical studies. This deserves further study.

3.5 Discussion

The most significant variables found in this analysis – trip length, child's age, and population density – designate target areas for policy, planning, and programming. Keeping distances between school and home of manageable walking and biking distance is the responsibility, in part, of good planning, especially long-term facilities siting and planning. However, even the best efforts to plan and build for manageable distances between home and school may be frustrated by educational policy shifts toward charter schools, magnet schools, and school vouchers. These programs have the potential to send a child from one edge of a district to the other.

The indication that greater densities may encourage walking and biking to school points brings up issues of urban design. With distance, income, and race controlled for in the analysis, this proxy for land use suggests that there is something in the kind of surrounding development – be

it intersection frequency, eyes on the street, or traits commonly characterizing "pedestrian friendly" environments – that makes it more likely that children will walk or bike to school. It is up to planners to repeat these kinds of traits in urban designs in order to encourage more walking and biking.

The relationship between child age and the likelihood of walking or biking to school probably corresponds to the level of a child's development as she or he moves from elementary school to middle school to high school. While the distinction was not made in this analysis, walking tends to present itself as more accommodating of different development levels although there may still be some level of maturity that parents or guardians require before allowing children to walk alone, or on their own with other children.

Girls were found to be less likely to walk or bike to school than boys. This finding potentially follows the social conditioning that boys should take care of themselves and girls are more to be taken care of, or that boys are tougher and more able to protect themselves than girls. While this may, of course, vary between families and parenting styles, the analysis undeniably asserted this trend in travel between home and school.

Given that income and population density are controlled for in the analysis, the greater likelihood that children from families of color will walk or bike to school offers interesting potential. Given that many communities of color and immigrant communities are more oriented toward group and family activity, it is possible that children from families of color are more often traveling together with other children, allowing for safer passage to school. There may also be other cultural values in immigrant communities and communities of color that promote the vesting of greater responsibility in children.

Education should be geared to overcome some of the social barriers that girls and children from white families face in walking and biking to school. Bike safety training at school or other community venues could help, as could identifying routes to school that provide the best combination of good sidewalks, crossings, bike lanes, and amenities. To make traveling to and from school more of a group activity, children can be informally networked to other children in

their neighborhood as walking or biking partners, or schools and other community programs can help formally lead Walking School Buses or “bike-pools”.

The potential for planning, policy, and programming to allow for more children to walk and bike to school will be addressed in greater detail throughout the rest of this paper.

4.0 Portland Student Travel Surveys

Although the literature review and NPTS statistical analysis from the previous two chapters have yielded important findings, there are still other factors influencing children's trips to and from school. Models from the NPTS statistical analysis showed relatively strong explanatory power – around 53 percent – in naming some of the influences on children's mode choice, but that still leaves around 47 percent to be explained. The following two local surveys attempt to fill in some of what may be missing from these other studies.

4.1 Portland Office of Transportation (PDOT) Barriers to Walking and Biking Survey

4.1.1 Background

In July 1997, PDOT released a report entitled "Identifying and Addressing Barriers to Increased Bicycling and Walking to School in Portland, Oregon." With a grant from Oregon's Transportation Growth Management (TGM) program, PDOT surveyed the travel behaviors of students in 14 middle schools, one elementary school, and one high school within Portland's main school district, Portland Public Schools. Surveys and interviews were conducted on assorted dates in the fall of 1996, a season whose weather ranged from warm and sunny to cold, windy, and rainy. Because staff from PDOT's bike program were conducting the surveys, biking behavior was of particular interest. Because of its biking focus, PDOT did not target elementary school age children for whom biking is not typically an appropriate means of transportation because of their limited cognitive development and judgment skills. On the other end, high school students were also not pursued because of substantial social pressure *against* walking and biking ("uncool") and *for* driving or getting rides (acceptable or "cool"). Therefore, the study focuses on middle school students.

4.1.2 Survey of Modes of Travel

On different days of fall 1996, 13 different Portland schools participated in a one-day travel survey. Homeroom teachers took a hand count of the different ways students had gotten to school that morning. There were almost 4,000 student responses. The results are shown in Table 4.1.

Bussing represents the dominant means of getting to school, whether by district-provided buses or regional transit agency TriMet's buses. Bussing in Portland Public Schools is provided to elementary students living more than a mile from school, to middle school students living more than a mile-and-a-half away, and is no longer offered to high school students. Clearly, many

Table 4.1. Portland Middle School Mode Split

Mode to School	Percentage
Rode Bus	43.3%
School bus 38.0%	
TriMet bus 4.3%	
Driven	29.8%
Walked	22.9%
Biked	3.1%
Other (skated, took taxi, etc.)	0.8%
Total	*99.9%*

middle school students and their families are taking advantage of this policy. Additionally, Portland Public Schools offers magnet schools, at least one of which was included in this survey, which draw students district-wide and make trips potentially less amenable to walking and biking. The mode splits for each of the 11 middle schools can be found in Appendix A.

Being driven constitutes the second most frequent used mode, although walking is not far behind. While not specified in these survey responses, interviews and other surveys have shown that children are often dropped off by parents on their way to work— parents who view driving as safer and/or more convenient. Combined walking and biking splits of roughly 25 percent are large in comparison to other studies. Approximately 11 percent of school trips were made by walking and biking by children ages 5 to 14 according to the 1995 Nationwide Personal Transportation Survey and by youth ages 5 to 18 according to CDC's report on the 1999 national HealthStyles survey. Less than eight percent of school trips were made by walking and biking by 6th through 8th grade students during a one-week survey at Tubman Middle School in Portland and by K to 12 students in Florida highlighted in EPA's 2003 report on the travel implications of school siting.

4.1.3 Surveys of Physical Conditions

PDOT surveyed the existing conditions around each of the sample schools, in a study area that spanned up to 1.5 miles from school given that this area was still within the school's service area boundary. The physical characteristics and conditions included:

- Ramps: proportion of intersections with curb ramps on all four corners
- Sidewalks: proportion of streets with sidewalks along both sides
- Crossings: proportion of intersections with a four-way stop, pedestrian-activated signals or pedestrian recall signals
- Topography: proportion of street segments that are "flat"
- Street lanes: proportion of arterial segments that have just two travel lanes
- On-street parking: proportion of street segments with "heavy" on-street parking (advantage for pedestrians, disadvantage for bicyclists)
- Traffic calming: proportion of street segments with traffic calming devices (e.g. traffic circles, speed bumps, curb extensions)
- Traffic volumes: proportion of street segments with less than 3,000 vehicles daily
- Traffic speed: proportion of street segments with average vehicle speeds of 35 to 45 mph

Schools were ranked by each characteristic above and then were ranked for overall bicycle- and pedestrian-friendliness by adding up the school's rank in each category and then dividing by the total number of categories. PDOT recognized that some of the physical characteristics bear greater influence on walking and biking than others, so the ranking was recalculated after weighting crossings, traffic volumes and speeds, topography, and sidewalks more heavily. Although without reference, PDOT's report cites that these are the most significant environmental influences on children's travel. Table 4.2 (on the following page) compares the new, weighted bicycle- and pedestrian-friendly rankings to the students' travel behaviors.

Interestingly, with and without weighting, some schools which ranked high for conditions amenable to walking and biking corresponded to high walking and biking mode splits, while other high-ranking schools did not. This suggests that other important non-physical influences may be at work. PDOT proceeded with the interviews described below in hopes of identifying these other influences.

4.1.4 Interviews with Students, Parents, and School Staff

PDOT staff interviewed students and parents during advertised ice cream and pizza socials at three different schools: Northeast Community School (a magnet school), Mt. Tabor Middle School, and Floyd Light Middle Schools. Staff from these schools were also conferred with.

Table 4.2. Comparison of Weighted Environment Ranking to Walking and Biking Behaviors

Rank	Bicycle-Friendly School Environments			Pedestrian-Friendly School Environments		
	Weighted Ranking	**Bicyclist Mode Split**	**Bicyclists Per Classroom**	**Weighted Ranking**	**Pedestrian Mode Split**	**Pedestrians Per Classroom**
1	Sellwood	NE Community	NE Community	NE Community	Ockley Green	Ockley Green
2	NE Community	Lane	Lane	Sellwood	Hosford	Mt. Tabor
3	Beaumont	Floyd Light	Ockley Green	Beaumont	Beaumont	Lane
4	Hosford	Ockley Green	Mt. Tabor	Hosford	Mt. Tabor	Beaumont
5	Floyd Light	Sellwood	Binnsmead	Mt. Tabor	Binnsmead	Binnsmead
6	Mt. Tabor	Binnsmead	Sellwood	Floyd Light	Floyd Light	Hosford
7	Ockley Green	Mt. Tabor	Floyd Light	Ockley Green	Lane	Sellwood
8	Binnsmead	Jackson	Jackson	Binnsmead	Sellwood	Jackson
9	Lane	Hosford	Hosford	Lane	Gray	Gray
10	Gray	Beaumont	Beaumont	Gray	Jackson	Floyd Light
11	Jackson	Gray	Gray	Jackson	NE Community	NE Community

Students and parents from Northeast Community School explained that the students walked because they live close to school, there was not other means available, and that there were other kids to walk with. Parent and students also noted that there was a restaurant owner at the intersection of NE Knott and Martin Luther King, Jr. Boulevard (MLK) who regularly watches over kids crossing the street there.

Biking at Northeast Community School occurred at more than twice the rate of walking (about 18 versus 7 percent). Students reported biking to school both alone and in groups. Reasons for biking ranged from preferring not to walk and no money for riding the bus to covered and safe bike racks, organized bike rides, and strong advocacy from school staff, administration, and students' families. In fact, the strong support of parents and volunteerism of Community Cycling Center were repeatedly referred to in explaining the high biking mode splits for the school.

Families that drove and were driven cited weather, heavy schoolbook loads, bikes not in riding condition, convenience for parents on their way to work, and that the students enjoyed being driven.

Many students of Mt. Tabor Middle School families walked to school (about 30 percent), and very few biked (3 percent). Given this mode split, the interview discussions focused mainly on the walking environment between home and school. Most students reported walking with other students on "main streets" on the way to school. Parents and students explained that walking provided social time for the kids, was convenient because they lived nearby, or was the one of the only options because rides were not available.

Almost of third of Mt. Tabor students were driven to school. However, many children were driven to school and then walked home. Reasons given for driving included convenience, not enough time in the morning to walk or bike, weather, and safety.

Problems with walking and biking were described as difficult or unsafe crossings, busy traffic around the school itself, busy arterial streets, and inadequate sidewalks and general safety. Accordingly, families suggested more and better street crossings (especially of major transportation routes like I-84) and reducing arterial traffic in order to improve walking and biking conditions. At Mt. Tabor, the discussions appeared to focus more on the physical environment as opposed to the community support described at Northeast Community School. There was mention that the Mt. Tabor Neighborhood Association would be a good candidate for

leading the community in creating safer walking and biking conditions, however that initiative was not yet in motion.

At Floyd Light Middle School in outer southeast Portland, most students rode the bus (68 percent). Some were driven to school (about 16 percent), and some walked (13 percent) and biked (2 percent). Families reported that most of the students' walking and biking was done along busy streets, either crossing the streets by running at an unmarked crossing or riding their bikes of the sidewalks of the busy streets. Those that walked said they did so because they lived so close and that parents would not give them a ride (mostly because they lived so close). Bike riders preferred biking because riding the bus took too long and was often crowded and not fun. Those being driven cited long bus rides, out-of-direction sidewalks and walking routes, greater safety of driving, after-school activities, and not enough time in the morning as reasons.

Overall, families participating in the interviews felt that bicycles in disrepair, inadequate facilities (particularly sidewalks), and weather were the main barriers to walking and biking. Likewise, better facilities like more and better sidewalks and curb ramps and techniques including traffic calming to slow down traffic on streets like SE Stark were key improvements. Again, although there was mention of biking and walking education and the need for staff role models, the community support network was cited less in these interviews than those of Northeast Community School.

4.2 Bicycle Transportation Alliance (BTA) Safe Routes to School Parent Survey at Tubman Middle School

4.2.1 Background

In winter and spring of 2003, I developed a Safe Routes to School Parent Survey in collaboration with educator Tom Moes from the Bicycle Transportation Alliance (BTA). I synthesized survey questions and survey format from a previous Safe Routes survey done at Robert Gray Middle School in southwest Portland, templates from a Safe Routes to School handbook published by the U.S. Department of Transportation, and feedback from a field area project review group with

which I was involved at the time. The product was a four-page parent survey that was sent home with students when Moes was leading a week of Bike Safety and Awareness and Safe Routes instruction at Tubman Middle School in April 2003. In general, the survey sought to find the distance between home and school, how students were getting to and from school, and parents' feelings about what is wrong with or could be better about routes to school. A copy of the survey itself is in Appendix B.

4.2.2 Mode Split

Parent respondents reported 286 trips of 350 possible trips (10 trips a week to and from school, made by 35 students) in returned surveys. The average reported distance was about 25 blocks or about 2 ¾ miles. The number and mode split of the trips are broken down below.

Table 4.3. Mode Split of Trips To and From Tubman Middle School

To School	# Trips	% Trips
School bus	67	46.5%
Driven by parent/guardian	39	27.1%
TriMet bus	26	18.1%
Walk	11	7.6%
Driven by other	1	0.7%
Total	*144*	*100.0%*

From School	# Trips	% Trips
School bus	62	43.7%
Driven by parent/guardian	41	28.9%
TriMet bus	28	19.7%
Walk	11	7.7%
Total	*142*	*100.0%*

In this sample, riding a school bus is the dominant means of getting to and from school. Bussing – whether by district-provided school buses or local transit agency TriMet's buses – and being driven by a parent or guardian account for more than 90 percent of the trips reported. This high mode split for vehicles may reflect the fact that Tubman Middle School is one of a few magnet schools in Portland Public Schools and draws students from around the district. Walking is the least chosen means of travel, and one respondent who marked biking did so without defining the number of trips by bike. These indefinite answers were left out of the initial analysis of results

and then used for analysis that categorized students as either walkers and bikers or non-walkers and -bikers.

4.2.3 Routes to School: Problems and Improvements

Parents were asked to respond to statements about potential barriers to walking and biking to school. Ranking the statements ranged from 1 for "disagree strongly" to 5 for "agree strongly", making 3 the neutral point.

The following problems rated highest, in order, as barriers to walking and biking. The numbers to the right represent their average scores, on a scale of 1 to 5. None of the average scores near the top of the scale or "strongly agree". They tend to fall between neutral and agree.

1)	Cars drive too fast	3.75
2)	Convenient to bus	3.50
3)	Too much traffic around school	3.46
4)	School too far away	3.40
5)	Streets dangerous	3.39
6)	Too much traffic in neighborhood	3.39

Parents were also asked to respond to potential improvements for walking and biking to school. They could rank potential improvements from "1" to "7", with 1 being the most important and 7 the least important. All of the improvements earned an average rating between 2 and 4.5, but the highest rated improvements are listed below, in order of importance. Their average scores are listed to the right.

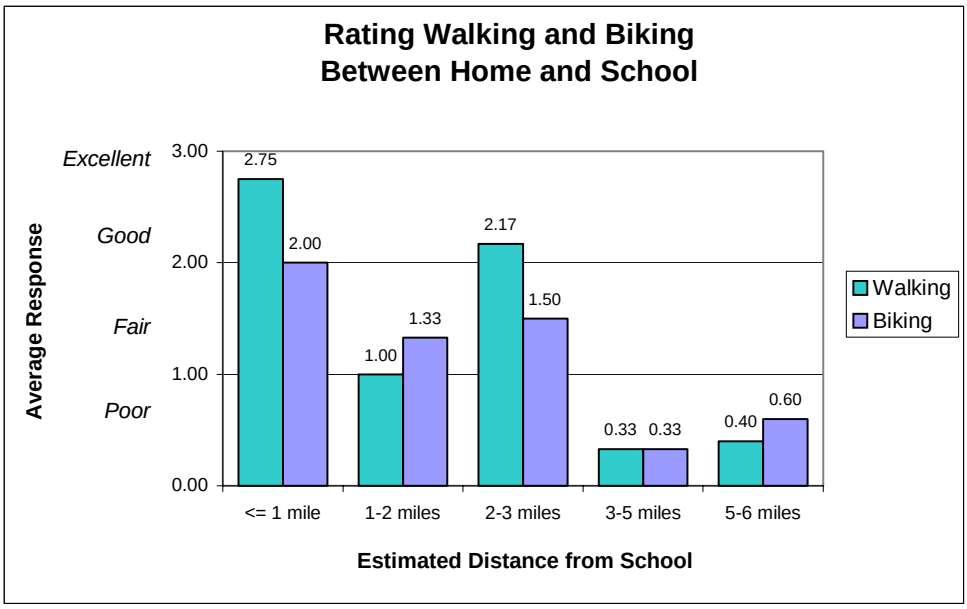
1)	Slowing cars down	2.34
2)	Safety training	2.78
3)	Better paths and sidewalks	2.84
4)	Crossing guards	3.06

Interestingly, better paths and sidewalks rank relatively high although poor sidewalks did not register as a top concern, on average, in the section above. Further, I observed crossing guards (usually parent volunteers) working on the street in front of the school on the few days I visited, but perhaps parents would like to see more guards, in more or different locations. It is also possible that parents responding to the survey do not know that the school currently has crossing guards.

Differences by Distance

Responses to questions about overall ratings, problems, and improvements were then analyzed by distance from school. Responses from the 22 respondents that reported the distance between home and school in miles were divided into five distance categories: less than or equal to one mile, between one and two miles, between two and three miles, between three and five miles, and between five and six miles. While these results do not qualify as statistically significant, they suggest some potential effects of distance from school.

Figure 4.1. Rating Walking and Biking by Distance (n=22)



While there is not a perfectly direct relationship between distance from school and walking and biking ratings, nor a large sample size, the ratings generally decline as one moves further from school, which is to be expected. The highest marks given to walking and biking solidly belong to the respondents a mile or less away from school. Although there is a sharp downturn in ratings between one and two miles, they pick up again between two and three miles and then drop dramatically beyond three miles. The anomalous drop in ratings between one and two miles brings some urgency to identifying barriers – difficult crossings, steep slope, busy or high-speed streets, missing sidewalks – that may exist in this radius from school.

Comparisons were also made between distance and average ratings of barriers to walking and biking. While not all the barriers may be sensitive to distance, attention was given to any of the barriers that demonstrated a generally direct relationship to distance, or barriers that may be expected to have a linear relationship but did not show one.

The only characteristics that increased consistently with distance were "Cars Drive Too Fast" (Figure 4.1) and "Streets Too Dangerous" (Figure 4.2). Barrier characteristics that generally increased with distance were "School Too Far Away" (Figure 4.3) and "Too Much Traffic in Neighborhood" (Figure 4.4). Interestingly, "School Too Far Away" jumped drastically from strong disagreement to degrees of agreement when moving beyond one mile from campus. Disagreement also dropped off slightly when parents five to six miles away responded. Agreement with "Too Much Traffic in Neighborhood" grows between two and five miles away and then slackens beyond five miles.

Figure 4.2

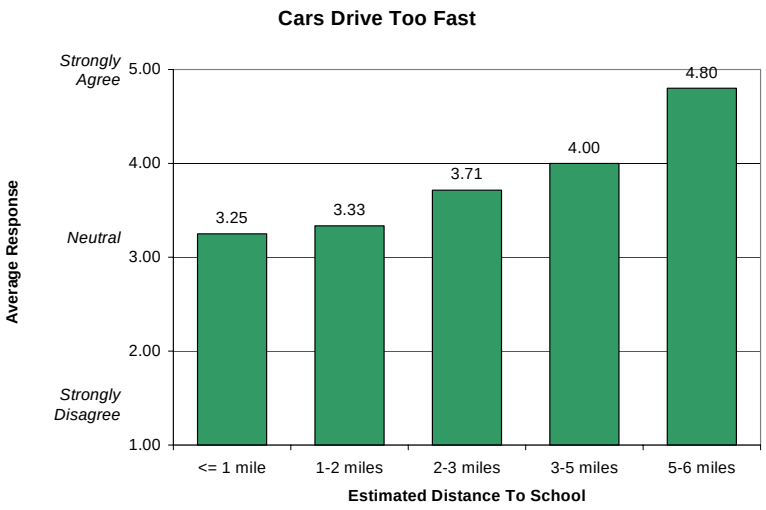
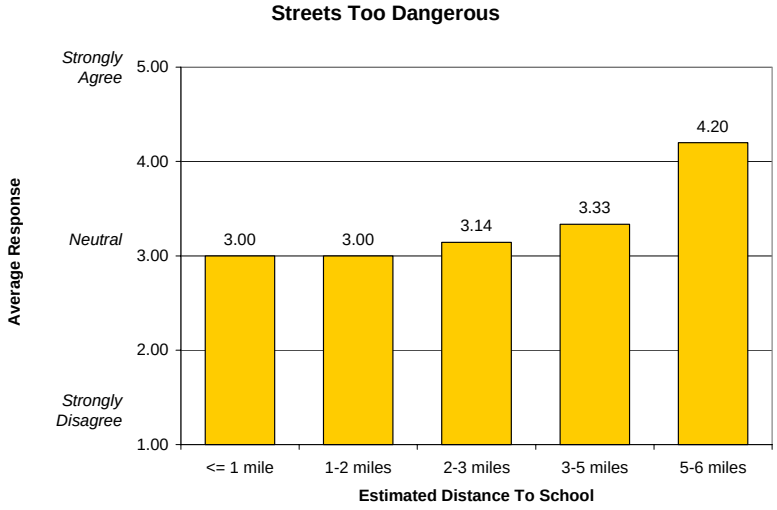


Figure 4.3



"Poor sidewalk conditions" (Figure 4.5), although ranking relatively high in responses about improvements for routes to school, does not demonstrate a lot of strength of agreement or disagreement as a barrier. Judging by their responses, parents close to and the farthest from school feel a mild dissatisfaction with sidewalk conditions. The others, living between one and five miles away are more neutral or approving of sidewalk conditions.

Figure 4.4

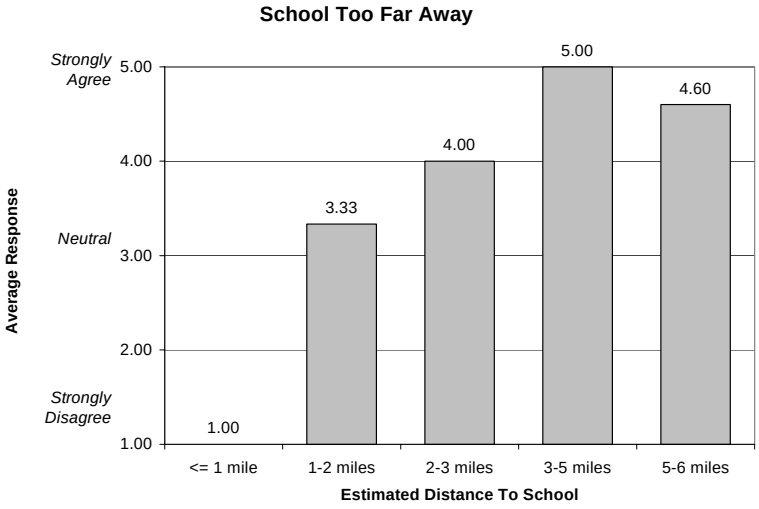


Figure 4.5

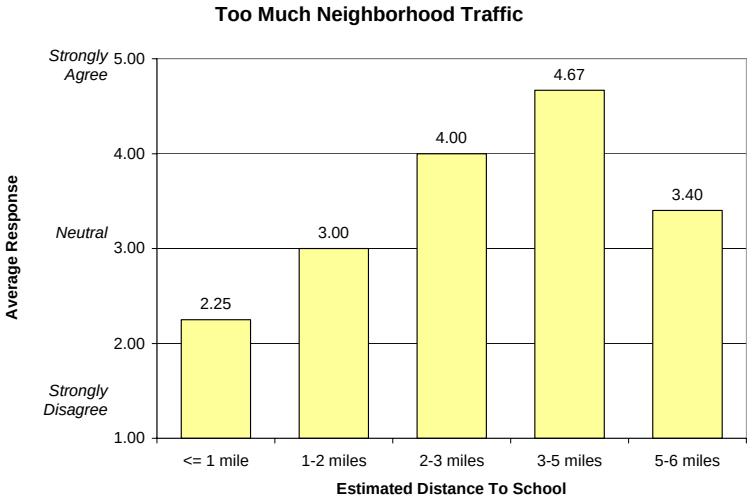


Figure 4.6

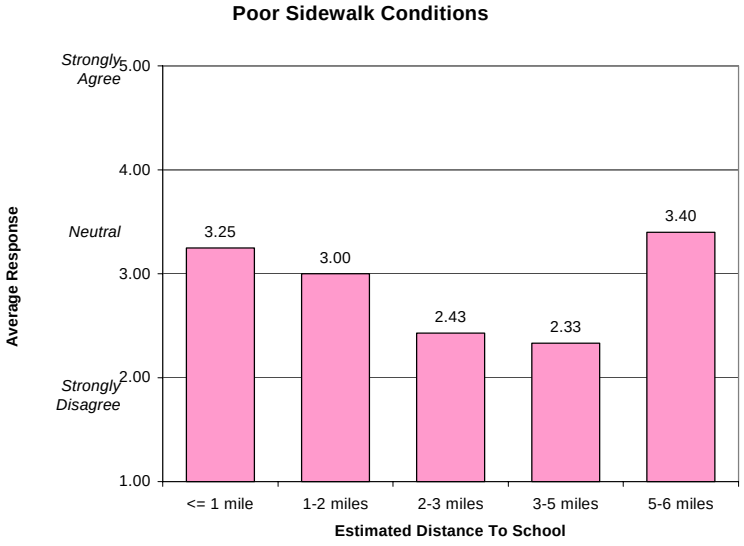
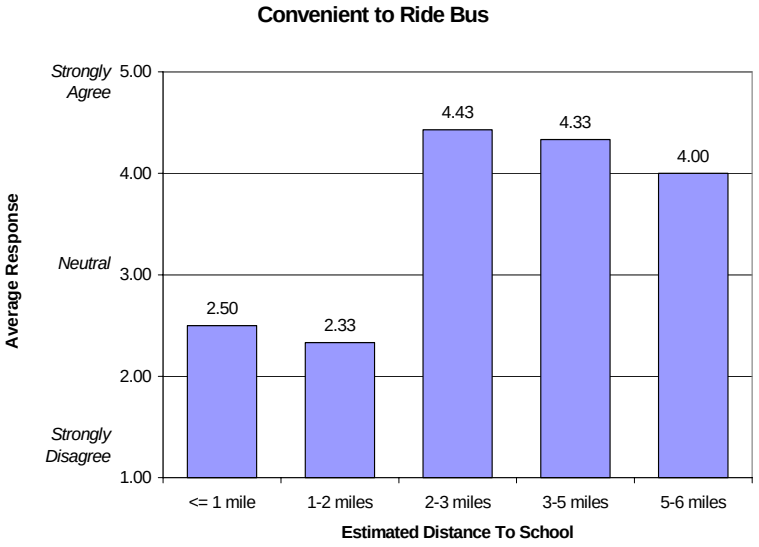


Figure 4.7



As may be expected, average responses to "Convenient to Ride Bus" switch radically from disagreement to agreement when distance from school exceeds two miles. This suggests that there is a threshold beyond which bussing becomes markedly more convenient. If this is the case, then below this threshold would be the target distances for promoting walking and biking. This idea is supported by the steep decline in walking and biking seen beyond one mile in the NPTS data from the previous chapter. Even though slight, strength of agreement about the convenience of bussing declines between two and six miles. One possible explanation for this is that the longer bus rides make more stops and take more time, thus reducing their convenience.

Differences Between Walkers and Bikers and Non-Walkers and –Bikers

One other distinction was made in the results to test for possible correlations. Respondents were classified as "Walkers/Bikers" or "Non-Walkers/Bikers" based on whether their child biked or walked for at least one trip during the week; seven children were "walkers/bikers" and 28 children were "non-walkers/bikers". I compared average responses to overall walking and biking ratings, barriers, and improvements between the two groups.

Table 4.4. Differences in Rating Overall Walking and Biking Environment (n=35)

	Walkers/Bikers	Non-walkers/bikers	Difference
Overall Rating 3 = Excellent 2 = Good 1 = Fair 0 = Poor			
Overall rating: Walking	2.50	1.28	1.22
Overall rating: Biking	1.25	1.08	0.17

In rating overall walking and biking environment (Table 4.4), higher average responses indicated more positive impressions of the walking and biking environment between home and school. Walking and biking ratings for the walkers/bikers were both higher than for the non-walkers and -bikers. This is logical. However, overall biking ratings were lower for both groups, especially for walkers/bikers. This may be because six of the seven walker/bikers were walkers and would be expected to show a higher opinion of the walking environment. This may also indicate that biking is viewed as a more difficult activity than walking, and is a more challenging activity for which to create a supportive environment.

According to their average responses (Table 4.5), parents of both walkers/bikers and non-walkers/bikers never register strong agreement that certain barriers exist. The strongest average responses barely reach 4.00, which would roughly correspond to "agree". Yet, parents of walkers/bikers almost always responded to statements about potential barriers to walking and

biking with less agreement than parents of non-walkers/bikers. This is rational. There were instances when parents of walkers/bikers more strongly agreed that certain barriers existed, including "too much traffic around school", "sidewalks in poor condition", or "somewhere else to go after school". However, something to do with these parents' attitudes and beliefs may play a significant role here, because these opinions did not ultimately prevent these parents from letting their son or daughter walk or bike to school.

Table 4.5. Differences in Rating Problems With Walking and Biking Routes

	Walkers/Bikers	Non-walkers/bikers	Difference
Rating Problems 5 = Strongly agree 3 = Neutral 1 = Strongly disagree			
Cars drive too fast	3.29	3.86	-0.58
School too far away	1.86	3.79	-1.93
Convenient to ride bus	2.71	3.69	-0.98
Too much traffic-neighborhood	2.57	3.59	-1.01
Too much traffic-school	3.50	3.45	0.05
Streets dangerous	3.29	3.41	-0.13
Does not like to walk	1.43	3.03	-1.61
Bike storage not secure	2.57	2.96	-0.39
Child threatened	2.33	2.93	-0.60
Sidewalks in poor condition	2.86	2.72	0.13
Somewhere else to go after school	2.29	2.28	0.01

Interestingly, parents for walkers/bikers consistently assigned less importance to strategies meant to improve walking and biking conditions (Table 4.6). This may follow that because they perceive fewer hazards or feel their children are more capable of dealing with hazards than do parents of non-walkers/bikers, they assign less significance to measures meant to address hazards. Again, that they allow their children to walk and bike is a sign that, although they still

may want improvements, conditions are not currently poor or dangerous enough to warrant stopping their kids from walking or biking.

Table 4.6. Differences in Rating Improvements to Routes and Walking and Biking

	Walkers/Bikers	Non-walkers/bikers	Difference
Rating Improvements 1 = Most important 7 = Least important			
Slowing cars down	3.00	2.22	0.78
Safety training	3.60	2.63	0.97
Better sidewalks & paths	3.60	2.70	0.90
Crossing guards	3.40	3.00	0.40
Walking/biking w/ adults	4.20	3.41	0.79
Walking/biking w/ other children	3.80	3.59	0.21
Maps of safe routes	5.80	4.15	1.65

The two groups put the improvements in a similar order of importance. There are two improvements – crossing guards and walking/biking with other children – that come closest to being rated of the same importance by both groups. Particularly in the case of walking/biking with other children, this similarity may present the opportunity to link walker/bikers with non-walkers/bikers – whether through the classroom, parent organizations, or neighborhood organizations – so that more parents would let their children walk and bike. When combined with kids' responses to similar survey questions, the top three or four problems (Table 4.5) and improvements (Table 4.6) rated by families of non-walkers/bikers suggest areas for Tubman Middle School Safe Routes Programs to target. Turning non-walkers/bikers into walkers/bikers will require working with the whole family— not just the parents and not just the students. Further, as shown by the survey at Tubman Middle School and PDOT's survey of several middle schools, making routes to school safer will entail changes not only to transportation infrastructure, but to student and parent education, family attitudes, and public safety enforcement.

5.0 Safe Routes to School Policy Development

While not always having the benefit of the analysis and findings from studies highlighted in the previous chapters, communities around the world have mobilized for the health and safety of their children. The development of Safe Routes to School policies are the palpable results of these communities coming together. Their efforts and achievements are described in the sections below.

5.1 International and National Safe Routes to School Programs

Safe Routes can be thought of as an outgrowth of traffic calming, a movement to reclaim streets as a public space tracing back to the Netherlands in the 1960s. In the Dutch town of Delft, residents were unable to enlist the government's help in addressing the hazards and nuisance caused by traffic cutting through their neighborhood. So they crafted ways of taming this traffic themselves; they took to digging up the cobblestones of their streets and arranging them in ways to purposely slow down through-traveling traffic (Ernish et al., 1998).

Similar community concerns in Odense, Denmark led to the birth of "Safe Routes to School" in 1978. At that time, Odense had the highest child pedestrian fatality rate in western Europe (Transportation Alternatives, 2001; Ernish et al., 1998). In response, community members organized questionnaires and mapping exercises for children to complete regarding their routes to school, particularly the hazards they encountered. Results were compiled by community groups and distributed to each school's administration. The findings were then released to teachers and parents in public forums for feedback. Afterwards, teachers, parents, school administrators, and local police collectively drafted traffic calming and low-speed zones proposals intended to make the school routes safer. After some review, most of the proposals were implemented and later evaluated. After roughly a year of implementation, child pedestrian accident and death rates in Odense declined by 90 percent (Ernish et al., 1998).

Established Safe Routes programs – and web sites describing them – can be found in jurisdictions in England, New Zealand, Australia, and Germany. In the United States, the mayor

of Chicago and the National Safety Council adopted the country's first Safe Routes initiative in 1997 (Davidson, 2002). California led the way in 1999 by passing the country's first statewide Safe Routes legislation that dedicated funds to a Safe Routes grant program. Following California, statewide legislation has also succeeded in Pennsylvania, Florida, Texas, Oregon, and Washington in addition to the adoption of various Safe Routes programs at the local level (Transportation Alternatives, 2001).

5.2 California Safe Routes to School

California's powerful Safe Routes program began with the passage of Assembly Bill 1475 (AB 1475) in 1999. Proponents of the bill stressed the danger faced by children as pedestrians in the state at the time: California had the 12th highest child pedestrian fatality rate in the country, with "being struck by a car while walking" as the second most frequent cause of death for children ages 5 to 12 (Bay Peds, 1999).

Given the funding flexibility allowed by federal transportation packages ISTEA (Intermodal Surface Transportation Efficiency Act) and TEA-21 (Transportation Equity Act for the 21st Century), California representatives were able to petition for re-allocation of federal Hazard Elimination/Safety Program funds in order to finance Safe Routes programs. According to AB 1475, state highways, local streets, and Safe Routes would each receive one-third of the funding, roughly $20 million each in 1999. California's Department of Transportation Caltrans, in cooperation with the California Highway Patrol (CHP), would administer the program, soliciting proposals from local jurisdictions throughout the state. The applicants would have to clearly demonstrate their need, providing plans identifying hazards and safe alternatives, substantiating the effectiveness of the alternatives, and showing evidence of community support (Caltrans, 2002).

When awarded, Safe Routes funds could be used for construction and, potentially, for reimbursing costs of education, enforcement, or promotion associated with the construction. All construction would have to occur on public property. Potential projects include:

(1) sidewalk improvements,

(2) traffic calming and speed reduction mechanisms,
(3) pedestrian and bike crossing improvements,
(4) on-street bike facilities,
(5) off-street bike and pedestrian facilities, and
(6) traffic diversion improvements (Caltrans, 2002).

On the heels of AB 1475's passage, California's Marin County Bicycle Coalition received National Highway Traffic Safety Administration funds in 2000 in order to establish a national model of a Safe Routes to School program (Marin County Bicycle Coalition, n.d.). The Coalition, with assistance from the Marin County Foundation and the California Department of Health Services, undertook a nine-school pilot project for Safe Routes. The schools participated in a combination of sharing literature, formulating safe routes plans with technical consultation from transportation engineers, organizing Walk- and Bike-to-School Days, and holding Frequent Rider Miles contests to reinforce walking, biking, carpooling, or bussing to school. By the end of the project, 57 percent more children were walking and biking to school and 29 percent less were being driven to school as the only passenger (Marin County Bicycle Coalition, n.d.). According to Marin Safe Routes Program Coordinator Wendi Kallins, this progress has continued beyond the pilot project into established programs. All participating schools consistently increase the number of children walking to school and decrease the number of children being driven as the only passenger. This trend is subject, however, to a slight drop-off in the fall and then recovery in the spring.

Kallins highlights the most successful program elements in Marin County. Organized events and contests have been the most effective ways to grab initial attention, particularly from the students. For continued, long-term success, Kallins relies on a combination of promotion and education along with engineering. Promotion and education provide a way for Safe Routes to maintain a constant presence in the schools. Engineering, on the other hand, is a slow and intermittent process. However, Kallins believes that engineered infrastructure improvements have some of the most lasting effects, with interventions for crossing safety (e.g. lights, crosswalks, or crossing guards) being among the most effective. As part of Marin County Bicycle Coalition's duty as a national model, Kallins compiled a *Safe Routes to School Handbook* full of lesson plans, survey templates, and promotion ideas that was published by USDOT's National Highway Traffic Safety Administration in September 2002.

As a sign of continuing support for this kind of work in California, the state's Safe Routes to School grant program was extended to January 2005 by the passage of Senate Bill 10 in 2001.

5.3 Oregon Safe Routes to School

Safe Routes legislation was adopted in Oregon during the 2001 Legislative Session. House Bill 3712 (HB 3712), as signed into law by Governor John Kitzhaber on August 9, 2001, read:

> "City and county governing bodies *shall* work together with school district personnel to identify barriers and hazards to children walking and bicycling to and from school. The cities, counties and districts *may* develop a plan for the funding of improvements designed to reduce the barriers and hazards identified" (Oregon State Legislature, 2001) [emphasis added].

While better than no legislation, the final legislation is essentially an unfunded planning requirement left to communities to figure out how to implement. This version of the bill was a significant departure from the original, introduced bill, which underwent two sets of amendments before making it to the governor's desk. As introduced five months earlier, HB 3712 was summarized as follows: "Requires the Department of Transportation to establish Safe Routes to School Grant Fund. Requires transfers of specified moneys to fund. Increases expenditure limitations for department" (Oregon State Legislature, 2001). In this form, the proposed legislation mandated funding for cities, counties, and school districts to reduce barriers faced by children walking or biking to and from school.

Opposition to earmarking of the State Highway Fund for any purpose – even for a cause as sympathetic as Safe Routes – stripped the bill of its grant fund in the first round of amendments. This left the bill as a planning requirement that jurisdictions and school districts work collaboratively to identify barriers to walking and biking to school. The Senate amendments further scaled back the legislation by specifying that a plan to mitigate identified barriers may – but not must – be made.

6.0 Portland Safe Routes to School Programs

Given limited support from the state level, local Oregon jurisdictions have been left to creatively piece together Safe Routes programs. In Portland, the City's Office of Transportation (hereafter "PDOT") and the Bicycle Transportation Alliance (BTA) have been the organizations spearheading local Safe Routes programs. The sections below describe the program activities of each organization.

6.1 Bicycle Transportation Alliance (BTA)

6.1.1 "Traffic Safety Fines for Safety Education" Initiative in Oregon's 2003 Legislative Session

The BTA and the Willamette Pedestrian Coalition were the principal community sponsors of Oregon's original Safe Routes legislation (HB 3712). The amended HB 3712 that passed in 2001 was a planning requirement with no money, so the groups continued their efforts to win state backing for Safe Routes by testifying to the Oregon House Interim Transportation Committee in 2002. During the most recent legislative session (2003), the BTA joined with the City of Portland, the League of Oregon Cities, and a handful of traffic safety and advocacy groups to form the Oregon Traffic Safety Coalition. Advised by Mark Lear of PDOT Traffic Investigations and represented by City of Portland lobbyist Susan Schneider, the coalition proposed legislation during the 2003 session to increase fines for traffic violations like speeding and reckless driving. The increase in revenue would be dedicated to Safe Routes programs and other traffic safety improvements.

As proposed, HB 3240 ("Traffic Safety Fines for Safety Education"), would have added roughly $1 million yearly to statewide and local coffers. Introduced in early March 2003, the bill was faced with a slow session where PERS and budget issues dominated. Ultimately, the Oregon Traffic Safety Coalition's bill died in committee, but not for want of an ethically and politically agreeable source of funding. Procedural and technical difficulties that the bill may have posed for ODOT were blamed for killing the bill. However, a bill increasing citation fees for *Portland*

only and marking the increased revenue for traffic safety programs *did* pass. The City of Portland is in the process of programming this revenue, and will be working closely with its community partners like BTA to determine how much can be directed to Safe Routes programs (BTA, 2003).

6.1.2 National and International Safe Routes Collaborations

The BTA has joined its commitment to Safe Routes with that of others nationally and internationally. The organization's Education and Policy Director Scott Bricker plans to collaborate with doctoral candidate Tracy McMillan of University of California at Irvine and David Engwicht, a community-building and traffic-calming advocate in Australia, in writing journal articles dealing with Safe Routes and youth mobility. BTA brought the 2nd Annual Bicycle Education Leaders Conference to Portland in June 2003, with Safe Routes to School as a central session topic. Bricker chairs the National Safe Routes to School Funding Committee to pursue federal funding and policies supporting Safe Routes. He will also lead work on a contract from the League of American Bicyclists that BTA received in fall of 2003 to develop a national Safe Routes to School curriculum.

According to Martha Roskowski of American Bikes, current proposals for the reauthorization of TEA-21 dedicate funding for Safe Routes to School at varying levels. The bill that passed the Senate Environment and Public Works Committee on November 12, 2003 includes $70 million for Safe Routes. The House's version "Transportation Equity Act: A Legacy for Users" (TEA-LU), passed November 19, 2003, sets aside $250 million for Safe Routes to School. However, how the money will be allocated has yet to be resolved and the whole transportation package is not expected to be under consideration for passage until after Congress reconvenes in January 2004.

6.1.3 Safe Routes for Kids Program

BTA's Safe Routes for Kids Program, which started in 1998, is now made up of its Safe Routes for Kids curricula, Bike Safety Program, Bike/Walk-to-School Challenge, and a new Safe Routes

to School Program. The organization works to secure grants, sponsorship, and volunteers from a multitude of entities in order to carry out its Safe Routes programs, including:

- Oregon Department of Transportation
- Cycle Oregon
- PGE/Enron Foundation
- Alliance for Community Traffic Safety (ACTS) Oregon
- AmeriCorps' Northwest Service Academy (NWSA)
- REI
- IBM
- Quality Bike Products (QBP)
- SAFECO
- PDOT Transportation Options Division
- PDOT Constructions and Maintenance Division
- Portland Wheelmen
- Portland Area Bike Dealers Association (PABDA)
- KPFF Consulting Engineers

(BTA, 2002a).

With these community and corporate partners, the BTA has been able to offer its Safe Routes for Kids programs to almost half of Portland's middle schools during the 2002-2003 and 2003-2004 school years, including:

1) Buckman Elementary School
2) Fernwood Middle School
3) Environmental Middle School
4) Gregory Heights Middle School
5) Ockley Green Middle School
6) Portsmouth Middle School
7) Robert Gray Middle School
8) Sellwood Middle School
9) Tubman Middle School
10) West Sylvan Middle School

(BTA, 2002a).

Figure 6.1. BTA "Safe Routes for Kids" and Bike Safety Program Schools

Source: RLIS 2003 and RLIS Lite 2002

BTA has led the development of two curricula – *Safe Routes for Kids: Transportation Alternatives and Solutions* and *Safe Routes for Kids: Bicycle Safety Program*. The curricula combine lesson plans, lecture notes, videos, inside- and outside-class activities, and tests in a manner that meets state education goals in math,

science, and writing as well as health and physical education. The abbreviated seven-lesson plan for *Safe Routes for Kids: Bicycle Safety Program* covers:

- Bicycle ridership and safety;
- Helmet, gear, bike parts and repair;
- Traffic simulation and traffic laws;
- Bike fitting, controlling, signaling, and stopping;
- Riding with traffic; and
- Neighborhood rides (BTA, 2002b).

BTA's strongest Safe Routes work has been done through its nationally acclaimed Bicycle Safety and Awareness Program, funded with annual grants from ODOT's Transportation Safety Division. The first grant in 1998 awarded the BTA $250,000 over three years, but the grants since 2000 have been shrinking. The *Safe Routes for Kids* curricula form the basis for the Bike Safety and Awareness in-class education and instruction. The in-class lessons are then put into practice by leading class rides. The BTA will arrange to have bikes provided for children given permission to participate if they do not have their own bikes to use. Helmets and safety vests are passed out. Volunteers, often adult BTA members or parents of participating students, are assigned to supervise three to five student riders. After bike safety checks, rides depart from school grounds and, for almost a whole class period (30 to 40 minutes), explore the neighborhoods surrounding the school. During the rides, stopping, signaling, shifting gears, riding in a straight and single file line, moving to different positions in a lane for regular travel or turning, and announcing cars approaching from ahead or behind are repeatedly practiced. There is usually five to ten minutes reserved at the end of the period for a game or bike relay contest in the school yard before returning to class.

Figure 6.2. BTA Bike Safety Program Ride

Source: BTA web site www.bta4bikes.org

Expanding upon its success with its in-school Bike Safety and Awareness Program, BTA launched its first Safe Routes to School program at Harriet Tubman Middle School in Spring

2003. BTA/AmeriCorps employee Tom Moes was given a week in April 2003 to team with health teacher Kathy Smith in presenting Safe Routes curriculum. The full lesson plan is attached as Appendix C. The week begins with an introduction to the idea of Safe Routes to School and a discussion of different modes of travel and the advantages and disadvantages of each mode.

Students are then asked to draw mental or "cognitive" maps of how they picture their neighborhood and route to school. Cognitive maps emphasize the experience of place—the depiction and relative location of personal landmarks like the restaurant with strong smells coming from it, the vacant lot with flowers and trash in it, the shop where sometimes the owner says "hi" to you, or the house with the friendly cat or barking dog.

Following cognitive mapping, students are introduced to maps of the school area and given an orientation about the features on a map like scale and direction. The lesson is reinforced and practiced with a game, or "scavenger hunt", in which the kids have to identify different map features or find different places given distance and direction. Later, the students combine their cognitive mapping and map orientation lessons by marking a large map of the school area with their home and route to school.

Finally, the class prepares for a walking survey of the area around school. In-class time is taken to explain characteristics of the sidewalk, traffic, intersections, crossings, and general environment to be evaluated during the survey. The survey itself is essentially a field trip, where the students are sent out on a designated route with separate duties to report characteristics and to record them according to location. A proposed walking student survey can be found in Appendix D.

Throughout the week, students are asked to keep a journal of their trips, and the experiences they have when traveling to and from school— what they see, who they see, what they smell and hear. At the beginning of the week, a parent survey is also sent home asking how their children travel to school in an average week, and what they think and feel about problems with walking and biking to school and about improvements that might be made to allow for more walking and

biking. These are collected by the end of the week, and can serve as part of the school's Safe Routes database.

The week at Tubman Middle School was scheduled in conjunction with the school's 3rd Annual Bike/Walk-to-School Challenge, a two-week event sponsored by the BTA and health teachers Kathy Smith and Jessica Lawrence. In general, the Challenge is introduced by a letter sent home to parents and guardians, providing reasons why walking and biking are important, maps and directions for joining group rides, getting helmets, bike repairs, and safety instruction as well as advertisement for prizes to be won by Challenge participants, in particular a pizza party for the top ten finishers. At Tubman, letters were sent home the first week in April to announce and explain the Challenge, which would take place April 14 to 24. Posters and promotion for the event were also mounted in hallway display cases around the school. Forty children participated in a Bike-/Walk-to-School Challenge held in May 2003 at Portsmouth Middle School, also in North Portland. During the nine-day event an average of 12 students walked daily and an average of nine biked.

6.2 City of Portland Office of Transportation (PDOT)

6.2.1 Early PDOT Safe Routes Work

The forerunner of Safe Routes to School programs in Portland was the City's Kids on the Move program. Shannon Parker of PDOT administered Kids on the Move. The program started around 1994 with federal grants from the Reclaiming Our Streets program. It provided strictly in-class transportation safety education and was geared to elementary school students with an emphasis on walking. Kids on the Move did partner with Portland Parks, Oregon Museum of Science and Industry (OMSI), and the Portland Zoo in order to extend its curriculum and workshops outside of class. Kids on the Move was terminated in 2001 due to budget cuts. However, its elementary school curriculum can now be accessed through PDOT's new Safe Routes web site.

PDOT's Bike Program did receive funding from the state's Transportation Growth Management (TGM) program in 1996. The funds were used to study the travel modes of Portland Public

Schools students and the environments surrounding a number of Portland schools as well as hold interviews with students, parents, and school employees. The survey report, entitled *Identifying and Addressing Barriers to Increased Bicycling and Walking to School in Portland, Oregon,* was published in July 1997. Findings are discussed earlier in this paper in the chapter on Portland Student Surveys.

Dakota Inyoswan of PDOT's Traffic Operations currently administers a range of Safe Routes programs in Portland. She coordinates whatever grants, city funding, and City staff support that may be available for Safe Routes work with different organizations around the city. PDOT provided program support for mini-grants that Oregon's Department of Health Services/Human Services received in 2001-2002 from CDC to establish six pilot Safe Routes programs in Oregon. One school in Madras, and five schools in Portland were designated as pilot sites. Portland schools included:

1) Gregory Heights Middle School
2) Robert Gray Middle School
3) West Sylvan Middle School
4) Hauton B. Lee Middle School; and
5) Prescott Elementary School

All six projects entailed surveying walking and biking conditions around the schools. From this, a base map of street classifications, signals, flashing school crossing beacons, and bus stops is created for each school. Smaller, more detailed maps are generated to send home with students so that they and their families can mark hazards and notes on the map corresponding with their route to school.

In 2003, Buckman Elementary School received Oregon Department of Environmental Quality employee Issa Simpson on grant for a program called Walk There. The project featured a unique combination of promoting health, safety, and intergenerational connections by pairing seniors and school children for walks to school. According to Inyoswan, the school was the "media school" for Oregon Walk to School Day in fall 2003. Three hundred students and parents from Buckman Elementary School participated in International Walk To School Day 2003. Three walking school buses were coordinated for three different guided walking routes.

In Winter 2003, PDOT and Inyoswan were brought on board to support Southwest Neighborhoods, the neighborhood association coalition in southwest Portland, in creating comprehensive Safe Routes programs for schools in their neighborhoods. The plan for the first year of their collaboration is to form teams of neighborhood activists with support from the City to:

- formulate an overarching Safe Routes Vision and Strategy for southwest Portland;
- select target schools and resources; and
- lead the development of community Safe Routes task forces, plans, maps, and reports for these target schools.

The coalition had recently completed a mapping and signing project for trails throughout southwest Portland called Southwest Trails, and Safe Routes would have been a natural extension of this project. However, dire financial straits for local schools – combined with Portland Public Schools' declining enrollment and quest to liquidate under-utilized and surplus facilities – took over the coalition's agenda, and Safe Routes program development was put on hold.

6.2.2 Family-Friendly Bikeway Maps

PDOT offers bikeway maps for each of Portland's geographic quadrants. The maps are well-designed and produced and offer large and easy-to-read text and graphics. (See Appendix E for Northeast Portland's Family-Friendly Bikeway Map.) They illustrate bike lanes and off-road trails, shared roadways (with no designated bike lane), streets with heavy traffic, steep roadways, and intersections or connections that are difficult or dangerous for bikes. Schools, parks, pools, libraries, and bike shops are all marked. On the flip-side of the large map are bicycle safety tips, fun ride suggestions, and resource listings for safety programs, group rides, and bike maintenance and repair.

The bikeway maps provide a valuable base map from which Safe Routes maps, which are more specialized to each school, can be formed. The maps can be used not only to develop Safe

Routes to School, but also to advise kids and their families on other recreational and practical trips.

6.2.3 Safe Routes to School Web Site

A tangible product of PDOT work on Safe Routes to School thus far is its newly minted Safe Routes to School Web Site (available at http://www.trans.ci.portland.or.us/saferoutes/), supported by City funding and a three-year ODOT Safe Communities grant (See sample pages in Appendix F). The web site design is clean, attractive, and fun, and offers a clear step-by-step tour through its elements:

(1) What Safe Routes programs are and why they are needed, and links to other Safe Routes programs;

(2) Half- to three-quarter-mile vicinity maps of every Portland public school tailored to every mode of travel (for example, location of sidewalks and crossing signals for walking) (sample walking map in Appendix G);

(3) How to report travel problems in school vicinities; and

(4) Curriculum and activities for students, parents, and teachers, plus resources and instructions on how to get involved.

PDOT's Dakota Inyoswan sees to it that the web site is publicized in materials that PDOT mails out or takes to community meetings. The web site link makes it into emails from PDOT, and the department shares publicity for the web site with the its community partners. All in all, the Safe Routes web site serves as a tribute to work done so far and provides a solid foundation for future Safe Routes to School work in Portland.

6.2.4 2002 Transportation System Plan (TSP)

While Oregon Safe Routes legislation has not been formally codified by the City of Portland, Safe Routes provisions are made in PDOT's Transportation System Plan (TSP), which was adopted by Council in October 2002.

State and local planning goals promote multi-modal transportation system and land use planning that supports walking and biking. Portland's Transportation System Plan (TSP) emphasizes balance and accessibility in its transportation system. General references to safe connections between neighborhoods and schools as well as other activity centers are made throughout the plan. As set out by the TSP Citizen Advisory Committee Vision in 1998:

> "Neighborhoods, schools, commercial and employment centers, entertainment and recreation areas are all well served by a highly developed, safe, and convenient transportation system. City neighborhoods are easily walkable and, in addition, efficiently served by off-street and on-street bicycle and pedestrian systems, and a convenient transit system that includes buses, trolleys, streetcars, and light rail. The system is well balanced among all transportation modes and, for most trips, transportation choices exist" (PDOT, 2002a, p. 8-3).

Other indirect provisions for Safe Routes are noted in the Bicycle Modal Plan section of the TSP's Modal Plans and Management Plans Chapter (Chapter 5). Most district and neighborhood plans in the city concentrate on bicycle access and route signage for neighborhood destinations such as schools and parks. City Connectivity Policy 6.20, directs that bicycle and pedestrian access is to be improved for parks, schools, and transit routes whether there is street access or not (PDOT, 2002a).

References to Safe Routes to School are made explicitly in the TSP's Pedestrian Modal Plan section. The section describes Safe Routes programs and PDOT's involvement in facilitating discussions, taskforces, school mapping, surveying, education sessions, and modest pedestrian improvements in school zones. Larger improvements including curb extensions, pedestrian refuge islands, speed bumps, raised crosswalks, traffic circles, and flashing beacons will depend on the ability to secure additional funding. Safe Routes to Schools is highlighted as a culmination of education, enforcement, and engineering strategies being developed as a part of PDOT's Neighborhood Traffic Safety Plan (PDOT, 2002a).

6.2.5 Neighborhood Traffic Safety Partnership (NTSP)

Local alliances of City agencies, neighborhood groups, and other advocacy organizations comprise started coalescing in Fall 2002 to form the Neighborhood Traffic Safety Partnership

(PDOT, 2002b). The Partnership approach repackages and seats Safe Routes to School in a larger framework of neighborhood safety and livability. In preparation for its NTSP Summit November 9, 2002, PDOT drafted the Neighborhood Traffic Safety Partnership Strategy to provide as a toolkit for professionals, residents, and advocates striving for safer and more livable streets (PDOT, 2002b). The Strategy recommends that (a) a Portland Traffic Safety Commission be formed and chartered by City Council, (b) this Commission implement traffic improvements as laid out in the NTSP Strategy, and (c) a Violator Pays Initiative be instituted (See Appendix H for NTSP Summary).

Arguments for comprehensive traffic planning, a Traffic Safety Commission, and the NTSP Strategy are based on Portland neighborhood demand, accident and child activity statistics, and challenges posed by ongoing budget cuts. The NTSP points to persistent citizen demands for attention to speeding traffic, pedestrian safety, and bicyclist safety in their neighborhoods. These issues have ranked as three of the four most pressing citizen concerns in the City's last few years of Service Efforts and Accomplishments publications according to the NTSP "Violator Pays Initiative" Letter of Support (PDOT 2002b). Further, the NTSP cites that survival rates for pedestrians struck by vehicles declines from 95 percent when the vehicle is traveling 20 mph to 10 percent when the vehicle is traveling at 40 mph. The partnership also refers to the trend in children's travel to school; the percentage of children walking or biking to school declined from roughly two-thirds in the 1970s to less than one-tenth in 2002 (PDOT, 2002b).

While the need for safety and access is growing, the city's capacity to respond is shrinking. PDOT's budget was cut by $5.3 million for fiscal year 2002-2003. Due to similar budget constraints, the Portland Police Bureau can devote only four to six officers per shift to traffic enforcement and collision investigations. To combat these trends, part of NTSP's strategy involves campaigning for the Violator Pays Initiative. This initiative mirrors the current statewide legislative efforts of the Oregon Traffic Safety Coalition discussed earlier; the proposal is to increase city surcharges on moving violations so that the new revenue can be applied toward neighborhood traffic calming and traffic safety measures (PDOT, 2002c). PDOT's web site offers a form letter of endorsement for the Violator Pays Initiative, which calls on all the arguments above to rally support for the initiative (Appendix I).

The 2003 Oregon Legislature passed a version of this initiative. As mentioned earlier in this chapter, an increase in traffic fines in Portland will be dedicated to traffic safety in the city. In late October, Portland City Council formed the Community and School Traffic Safety Account to receive this funding. The City concurrently created the Traffic Safety Coordination Council to decide how to allocate the funds. PDOT Director Brant Williams and Police Chief Derrick Foxworth co-chair the council whose members include bike and pedestrian advocates, police officers, and school district and neighborhood representatives. According to Inyoswan of PDOT and BTA's latest newsletter, it is possible that the account could receive upwards of $2.5 million annually. In general, the money will be divided between the three categories of traffic safety in Portland: education, engineering, and enforcement. According to Inyoswan, this recent flurry of activity should combine with work already being done by the City and community partners like BTA to form an integrated Portland Safe Routes to School Program within the next couple years.

7.0 Evaluation and Lessons Learned

7.1 Evaluation of Portland Safe Routes Programs

This chapter seeks to evaluate the variety of Safe Routes-related work being done by the City and community organizations like BTA, based on findings from the literature and locally conducted surveys regarding influences on children's travel between home and school. Findings from the statistical analyses summarized in Table 7.1 are used as the primary evaluation criteria, and findings from other surveys and interviews are treated as supplementary criteria.

Table 7.1. Summary of Influences on Walking and Biking

Note: Italic indicates findings of statistical regression analyses

Trip Characteristics Travel Time, Distance, Traffic, Safety	**Effect**	**Study**
Travel time	*Negative for walking, More negative for biking*	*2003 EPA Statistical Analysis of Travel Implications of School Siting (Ages 5 to 18 (K-12))*
Reported distances to school	*Negative*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Distance	Negative	2002 CDC Report on Survey of Barriers to Walking and Biking (Ages 5 to 18)
Trip distance	*Negative*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
School too far away	Negative	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Interview: Close to school	Positive	1996 Portland TGM Middle School Travel Survey (Grades 6 to 8)
Traffic	Negative	2002 CDC Report on Survey of Barriers to Walking and Biking (Ages 5 to 18)
Interview: High traffic volumes & speeds	Negative	1998 Bricker Study of Youth Mobility and Biking (Grades 6 to 8)
Reported speeds along route to school	*Negative*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Cars drive too fast	Negative	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Slowing cars down	Positive	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Too much traffic around school	Negative	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)

Table 7.1. Summary of Influences on Walking and Biking *(Continued)*

Too much traffic in neighborhood	Negative	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Streets dangerous	Negative	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Neighborhood safety (windows, no/few abandoned lots and buildings)	*Insignificant*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Interview: Walking with other kids	Positive	1996 Portland TGM Middle School Travel Survey (Grades 6 to 8)
Interview: Organized rides and parent, school staff, community group advocacy and support	Strongly positive	1996 Portland TGM Middle School Travel Survey (Grades 6 to 8)
Crossing guards	Positive	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Built Environment / Urban Form Sidewalks, Density, Mixed Uses, Block Length, Windows, Trees	**Effect**	**Study**
Built environment – sidewalk coverage on arterials & collectors	*Positive for walking, Insignificant for biking*	*2003 EPA Statistical Analysis of Travel Implications of School Siting (Ages 5 to 18 (K-12))*
Built environment – land use density, street network density, sidewalk width	*Insignificant for walking and biking*	*2003 EPA Statistical Analysis of Travel Implications of School Siting (Ages 5 to 18 (K-12))*
Urban form – street trees	*Significant but low magnitude positive effect*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Urban form – mixed uses and short blocks	*Significant but low magnitude negative effect*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Neighborhood safety (windows, no/few abandoned lots and buildings)	*Insignificant*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Population density	*Positive*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
Better paths and sidewalks	Positive	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Family Characteristics Child's sex and age, Household Income and Vehicle Ownership, Race, Birthplace, Residency, Attitudes	**Effect**	**Study**
Household income and per capita vehicle ownership (vehicle ownership more influential)	*Negative for walking*	*2003 EPA Statistical Analysis of Travel Implications of School Siting (Ages 5 to 18 (K-12))*

Table 7.1. Summary of Influences on Walking and Biking *(Continued)*

Perceived convenience of driving child	*Negative*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Social time with other children during trip to school	*Positive*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Parents born in the U.S.	*Negative*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Parents have lived in U.S. for more than 5 years	*Positive*	*2002 McMillan Statistical Analysis of Urban Form and Children's Travel (Grades 3 to 5)*
Child's age	*Positive*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
Child's sex: male	*Positive*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
Child's sex: female	*Negative*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
Household of color	*Positive*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
White household	*Negative*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
Household income, household size, adults available, Number of children	*Insignificant*	*1995 NPTS Statistical Analysis (Ages 5 to14)*
Convenient to bus	Negative	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)
Interview: No ride, no money for bus	Positive	1996 Portland TGM Middle School Travel Survey (Grades 6 to 8)
Other Influences / Miscellaneous	**Effect**	**Study**
Finding: many middle schools that ranked highly in friendly walking and biking environments did not necessarily possess high walking and biking mode splits	Mixed	1996 Portland TGM Middle School Travel Survey (Grades 6 to 8)
Interviews: Inclement weather, heavy backpacks, heavy traffic around school, busy arterials on way to school, few and poor sidewalks and crossings, convenience for commuting parent, too little time in morning, concerns about crime, bus ride too long or too crowded, no direct walking or biking routes, after-school activities, bike in disrepair	Negative	1996 Portland TGM Middle School Travel Survey (Grades 6 to 8)
Interview: Unsafe bike storage	Negative	1998 Bricker Study of Youth Mobility and Biking (Grades 6 to 8)
Interview: Covered and safe bike parking	Positive	1996 Portland TGM Middle School Travel Survey (Grades 6 to 8)

Table 7.1. Summary of Influences on Walking and Biking *(Continued)*

Interview: Bike education & promotion	Positive	1998 Bricker Study of Youth Mobility and Biking (Grades 6 to 8)
Biking and walking safety training	Positive	2003 Tubman Middle School Safe Routes Parent Survey(Grades 6 to 8)

7.1.1 Trip Characteristics

Distance and Travel Time

Consistently the most influential factors in children's travel between home and school found in the literature and surveys are travel time and distance between home and school. In order to directly influence these factors, Safe Routes Programs would have to become involved in school siting matters and educational policies such as school vouchers and transfers. Short of directly effecting the distance to school, the BTA's school programs and PDOT's outreach need to convince families that even distances up to and greater than a mile (but probably not much more than two) can be very manageable for biking and walking. School rides that BTA has led have elicited the response from kids "Wow- I didn't know that school was that close" or "that I could get there that fast". The challenge will be convincing more kids and parents as well.

PDOT and BTA are not currently engaged in conversations about educational policy, like the federal No Child Left Behind program. Influencing school siting applies to situations where schools are being built or re-built, which is not the situation in Portland. In fact, Portland Public Schools is experiencing declining enrollment and is looking to sell "surplus" property and facilities rather than expand (ODOE, 2002; PPS, 2002). Hence, this is not an area in which PDOT or BTA have focused their efforts.

Traffic Speed

BTA and PDOT programs are targeting traffic speed in direct and indirect ways. As a means of garnering funding for Safe Routes, BTA, the City of Portland, and others led the Violator Pays Initiative. The bill, as introduced during the 2003 Oregon Legislative Session, served the dual

purpose of deterring speeding and reckless driving by raising the cost of citations while funneling the increase in revenue from citations to local Safe Routes programs.

Otherwise, BTA and PDOT address traffic speed and volume by conducting school area traffic counts, holding parent and student Safe Routes surveys in Portland schools, and identifying the specific street segments where safety is an issue for families. PDOT's Neighborhood Traffic Safety Partnership (NTSP), which has fostered the creation of the Safe Communities Coalition and, just recently, the Traffic Safety Coordination Council, is one of the more comprehensive citywide responses to, among other things, traffic speed and volume on neighborhood streets. Funding from a 2003 increase in traffic fines will be allocated by the Traffic Safety Coordination Council to help fund public safety enforcement, driver education, traffic calming installments in neighborhoods (e.g. traffic circles, bulb-outs, and speed bumps), as well as Safe Routes surveying to identify high-speed, high-volume, and unsafe roadways.

Once gains in reducing traffic speeds and volumes are made, another critical aspect of influencing children's travel is updating families about the progress, because it has been shown that the family's perception of the conditions – and not always the actual conditions – inform the child's mode of travel. This information can be shared through the communication lines and relationships that BTA has established with schools and parents, and that PDOT is establishing with neighborhood associations and other community groups through NTSP.

Further, PDOT's bikeway maps highlight streets of shared use between motorized and non-motorized traffic, suggesting routes that may have some but slower traffic than major arterials and potentially more "eyes on the street" than quiet neighborhood streets. PDOT's Safe Routes web site also offers parents, principals, and school bus staff step-by-step instructions to report roadway safety concerns, which are routed to PDOT's Traffic Safety Hotline (503-823-SAFE) and the office's Traffic Investigations Section.

7.1.2 Built Environment and Urban Form

Population Density

Increasing population density is used as a proxy for a more dense and mixed-use urban form by the statistical analysis done for this study. As population becomes denser, the likelihood of a child walking or biking to school increases. Because other factors such as income and distance are controlled for, this suggests that there is something about population-dense environments – possibly shorter block lengths, more people and "eyes on the street", more accepting attitudes, more interesting surroundings – that makes walking or biking more appealing.

For BTA or PDOT to support increasing population density often means to support the comprehensive planning and project planning efforts of the local regional government, Metro, and of City of Portland's Bureau of Planning. In terms of Safe Routes programs, BTA has demonstrated this support by incorporating lessons on land use and the complementary relationship between efficient, dense, and mixed-use development and human-powered transportation in its *Safe Routes for Kids: Transportation Alternatives and Solutions* curriculum. PDOT promotes density, compact urban design, and the provision of safe and multi-modal travel through its Transportation System Plan (TSP), an element of the City's comprehensive plan.

Sidewalk Coverage

One of the features of the school area maps featured on PDOT's Safe Routes web site (http://www.trans.ci.portland.or.us/saferoutes) is the highlighting of sidewalks. Safe Routes field surveys orchestrated by PDOT, BTA, and partner organizations focus particularly on the condition of sidewalks – whether narrow or wide, flat and smooth or cracked and buckled – and the presence of sidewalks. This reflects the fact that insufficient sidewalks and paths are often cited in surveys as deterrents to walking and biking, or giving permission to walk or bike.

PDOT's NTSP advocates for funding for capital projects including sidewalks and traffic calming measures. BTA and Willamette Pedestrian Coalition (WPC) led efforts to secure state funding in

the 2001 Legislature, and they joined forces with City of Portland, the League of Oregon Cities, and others during the 2003 Legislature to continue their quest for dedicated state funding. Dedicated state funding would likely be allocated as grants, as other states with Safe Routes Funds do, and these grants would finance capital projects meant to improve school area crossings, sidewalks, and traffic controls. BTA is also taking this crusade for funding safety improvements nationwide, by chairing the National Safe Routes to School Funding Committee.

7.1.3 Family Characteristics and Attitudes

Household characteristics and attitudes found to be significant in statistical analyses of children's travel to and from school are more difficult to target with Safe Routes programs. The following are ways in which current programs begin to address these characteristics, plus suggestions for ways to further address them.

Child's sex and age

Having a strong presence in schools is perhaps the single most powerful measure in equalizing the influence that a child's sex has on her or his means of travel. Teaching biking and walking safety and providing encouragement equally to boys and girls may not overcome all social conditioning, but may take some of the edge off. Events such as group rides organized by BTA and the Community Cycling Center, national Walk to School Day sponsored locally by Willamette Pedestrian Coalition, and the Walk/Bike/Skate-to-School Challenge hosted by the BTA are all opportunities to break down gender barriers to walking and biking by showing how fun, safe, and social walking and biking can be.

Age is of particular interest to organizations like BTA and PDOT, who have recognized that the earlier they can work with children, the better. Children absorb so much and are notorious for coming home from school and sharing newly learned lessons and skills. In its TGM survey of barriers to walking and biking, PDOT focused on middle schools because of its interest in gauging biking. PDOT did so because biking is a mode that is not necessarily appropriate for younger elementary school children but is difficult to sell in high school when driving licenses

and being cool become dominant forces. PDOT's Safe Routes web site provides mapping and resources for all levels of schools in Portland, yet elementary and middle schools far outnumber high schools. To focus on younger children, PDOT's web site features its Kids on the Move curriculum, designed for elementary school children, with an emphasis on walking. One of the more unique projects in the city, Walk There, is also geared toward elementary school students. The programs joins the students with seniors for walking to school with the hope, in part, of making lifetime walkers of boys and girls by starting them young.

BTA targets middle schools in its Safe Routes work. Elementary school children, again, are usually not cognitively developed enough to safely bike themselves to school in urban conditions. However, the substance and presentation of the BTA curricula *Safe Routes for Kids: Transportation Alternatives and Solutions* and *Safe Routes for Kids: Bike Safety Program* are ideally suited to elementary and middle school grade levels. Expanding its partnership with Willamette Pedestrian Coalition and other advocacy groups, and continuing its multi-modal promotion through Walk/Bike/Skate-to-School Challenges and "walking school buses" will better connect younger children with modes more appropriate for them than biking.

Household Income and Vehicle Ownership

Household income and vehicle ownership tend to increase the likelihood that a child will be driven – and not walk or bike – to school. Income and class status are powerful influences to overcome. The greatest hope for getting at this parental influence is likely through the schools and kids. Being in schools allows organizations like the BTA to captivate children who then try to enlist parents— parents whose consent is needed for the students to participate in off-campus walking surveys or whose volunteer time is needed to chaperone off-campus rides. In terms of equitable attention to different economic classes of neighborhoods and schools, BTA and PDOT school programs have pretty evenly stretched across the city into both lower income and wealthier neighborhoods.

Well-presented and persuasive information may appeal to some higher income, multiple-vehicle families. PDOT has made inroads with its Safe Routes web site. The site design is sharp,

attractive, and the step-by-step information accessible. Given higher "wired" rates of middle and upper income segments of our society, these online Safe Routes resources may hold larger audience and sway with families in these socioeconomic groups.

The perception that walking or biking is more dangerous than being driven – one that higher income families or frequent drivers may hold – may also be combated with literature sent home from school or publicized through neighborhood meetings regarding the relative risks of walking and biking (e.g. kidnapping, assault, being hit by a vehicle) versus being in a car (e.g. car accidents). Probably even more reassuring, though, is having the student involved in a structured school Safe Routes program or Bike/Walk-to-School Challenge, receiving guidance on safety, and being coordinated with other students for group rides and walks. These are all programs that BTA and PDOT currently provide, but could offer on an even larger scale with more funding support and more community groups dedicated to the ongoing support of Safe Routes work in their neighborhoods.

Race, Birthplace, and Residency

The negative effect that being from a white household has on the likelihood of walking and biking is a challenging factor to pinpoint in Safe Routes programs. However, PDOT and BTA extend their Safe Routes services to white families in Portland simply by virtue of the city's racial composition— more than three quarters of the city's population is white according to the 2000 Census. Otherwise, there are no other elements of their Safe Routes programs currently designed to draw white families into walking and biking more than families of color.

When a child's parents are born in the United States, the child is more likely not to walk or bike to school. PDOT and BTA programs do not directly address this, but there are ways in which some of the programs seek to reverse what may be categorized as uniquely American traits. As an example, the program Walk There – a partnership between PDOT and Oregon DEQ to bring senior adults and children together to walk to school – takes on American trends towards less walking and more travel by vehicle, and the alienation of elder members of our society. BTA curriculum on transportation alternatives and connections to land use also seeks to teach students

about the benefits of reversing post-World-War-II American tendencies toward widely separating land uses and promoting auto-dependence.

Interestingly, parents having lived in the United States for more than five years – suggesting that, at one time, the parents may have not lived in the United States – corresponded to the greater likelihood that the household's children would walk or bike to school. While not addressed in current BTA and PDOT Safe Routes programs, there might be lesson plans or events that celebrate and emulate the more social and less auto-dependent nature of other cultures and countries, which may be contributing to these greater probabilities of walking and biking.

Convenience

Families in which parents believed that driving and dropping off children at school – often on the way to work – is very convenient, decreases the likelihood that children will walk or bike. This attitude may be weakened if children participate in PDOT and BTA Safe Routes or walking and biking events at school, and are able to persuade their parents of the relative safety and benefits of getting themselves to school. However, adult-to-adult conversations may be necessary in mitigating beliefs of convenience. Literature sent home from school or presented at neighborhood meetings about the congestion and traffic loads generated by parents dropping off children. This has not been a key point presented in letters announcing a week of upcoming Safe Routes programs at school, on PDOT's Safe Routes web site, or in the NTSP Strategy, but may be easily integrated into these materials in the future, especially if the issues of congestion and demands on parents' time become more pronounced.

While it may not be the appropriate role for them, PDOT and BTA could advocate for later school start times, which may force some parents not to drive their children. Later start times were about to be instituted at Mt. Tabor Middle School when PDOT was conducting its 1996 TGM survey. Alternately, PDOT and BTA could promote in their programs what was done frequently also at Mt. Tabor Middle School. If parents are determined to drop off children at school in the morning, then heavily promote that the children walk home in the afternoon.

Social Time

Other parents may value the social time with other children that walking or biking to school can provide. PDOT, BTA, and other community partners emphasize this in their Safe Routes work, for one, by concentrating their efforts on schools themselves. Schools are inherently social environments, where kids easily connect with other kids. Coordinating group walks and rides are ways that organizations like the Willamette Pedestrian Coalition (WPC) and BTA promote not only the social, but also the safety benefits of walking and biking.

The promotion of walking and biking in groups may be enhanced by events and contests like the Bike/Walk-to-School Challenge where walking and biking become friendly competitions with prizes for incentives. Events and contests market the fun and even coolness of walking and biking. PDOT's innovative Walk There program expands the idea of the social aspects of children getting to school by their own power to include children developing relationships with older adults, not just other children.

7.1.4 Other Influences on Travel

Some factors influencing a child's trip to school were repeated in the results of surveys such as CDC's HealthStyles Survey, PDOT's TGM survey, and the Tubman Middle School Safe Routes Parent Survey, but were not always picked up in statistical analyses by EPA, McMillan, and myself. These factors include: inclement weather, heavy backpacks, crime, too much traffic around school, unsafe bike storage, and biking/walking training and promotion. BTA and PDOT have made a solid start of bringing training and promotion to Portland schools, but more funding and community buy-in to continue and spread these programs are necessary. Fortunately, support appears to be on its way with the City's Community Traffic Safety Account, as described earlier.

While dressing appropriately for different weather is taught through BTA Safe Routes for Kids and Bike Safety curricula, the issue of heavy backpacks is not specifically addressed by PDOT or BTA programs. Yet, if findings from the UMHS study that more of children's reported back

pain can be attributed to physical inactivity than heavy backpacks, then PDOT and BTA facilitation of walking and biking does address the core issue.

PDOT has the technical assistance necessary to advise schools on more secure bike storage as the agency manages bike parking throughout the city. However securing money for storage improvements and finding space for improved storage are the challenges left to the schools and PDOT to resolve.

PDOT and BTA programs promote not only safety around traffic, but safety against crime. PDOT's Kids on the Move and BTA's Bike Safety Program and Safe Routes for Kids curricula have been the key components in promoting all-around safety. While study results like McMillan's and other statistics may indicate an insignificant or minimal risk of crime for children walking and biking to school, BTA group rides and walking school buses, plus community involvement in and awareness of Safe Routes that BTA and PDOT has recruited, help protect against potential risk. In addition to community safety is the public safety enforcement provided by Portland Police. However, with thin budgets, Portland Police has only been able to devote a few officers per shift to traffic safety, let alone patrolling school areas for safety against crime.

Last, BTA and PDOT have worked grant-by-grant to organize initial assessments of walking and biking barriers at various schools, and to start to build community task forces to carry on this kind of work. To address a commonly cited barrier to walking and biking – heavy traffic around schools – grants from Safe Routes Funds in other states have been used to install traffic calming bumps, bulb-outs, circles, and signals. PDOT and BTA plan to move onto these sorts of infrastructural improvements once they complete school area assessments. Ways to mitigate heavy traffic around schools without using construction include turning streets around schools into one-way streets, designating student drop-off areas away from the school's main entrance, and providing crossing guards.

7.2 Discussion and Lessons Learned

Overall, Safe Routes programs organized by PDOT and BTA appear to address many of the important influences on children's travel to and from school. Because most of these programs are relatively young, more time and monitoring will be necessary to empirically judge the effectiveness of their programs. This will entail establishing baseline school travel data, and then conducting periodic surveys in order to track changes, all part of what would ideally be each school's Safe Routes "database". Surveys, such as the one used at Tubman Middle School, must be field tested and then modified to improve the survey's clarity and ease of use as well as capture greater detail about children's travel and routes to school.

In particular, I could improve the Tubman survey by maintaining consistency between the rating systems used for problems with routes to school and potential improvements. For example, both sections could have used a one-to-five scale of strongly disagree to strongly agree, with a follow-up question after each section asking for parents to list the top three problems and improvements. Providing a map and asking parents and guardians to identify locations of hazards and potential improvements would probably have been more useful with more landmarks provided on the map. Around Tubman, this could have included Legacy Emanuel Hospital and businesses like the Nike Factory Store. Even if they do not signal initial interest in ongoing Safe Routes work, it would also help to keep track of parents that respond to surveys in order to urge them to participate when it comes time to build a Safe Routes community task force for the school.

Perhaps the greatest improvement to the survey would have come from spending more time in and around the school itself. Being there and forming relationships with the teachers, administration, and students and casually observing conditions in the vicinity just before and after school would have allowed for customizing parent survey questions. Spot observations at Tubman Middle School revealed that, for instance, a parent volunteer often acts as a crossing guard on the street in front of school. Becoming acquainted with people and conditions would have also allowed for tailoring of some of the Safe Routes curriculum, especially in terms of classroom dynamics. What is the tone in class? Are the students relatively calm or high-energy? What are their interests and how can these be connected to the curriculum?

PDOT and BTA share a core commitment to making communities more walkable and bikeable for children and others, and the two organizations rely on each other to produce Safe Routes programs in Portland. For BTA's pilot Safe Routes week at Tubman Middle School, PDOT put together vicinity maps for in-class activities and for showing routes and meeting places for group rides during the coinciding Bike/Walk-to-School Challenge. While early grant work and a few recent grants bring PDOT or PDOT partners into schools, BTA serves as the primary representative for Safe Routes programs in schools. Their presence includes Bike/Walk-to-School Challenges, the Bike Safety program, and their emerging Safe Routes program. The *Safe Routes for Kids* curricula form the basis for BTA's school presence, and these curricula received direct assistance from PDOT in their development, production, and publication.

Advancing Safe Routes programs in Portland, though, will depend on these two organizations' ability to strengthen their collaboration with others and see to the formation of community task forces to lead Safe Routes work on a neighborhood basis. With Safe Routes emphasizing not just biking but walking and other human-powered modes, coalitions are called for. BTA has already established a good working relationship with Willamette Pedestrian Coalition (WPC), and Portland Safe Routes programs will benefit from having a pedestrian voice that is as well developed and promoted as its bicyclist voice.

Community task forces rely on parents and school staff who, having received introductory letters, permission forms, and survey forms, respond to Safe Routes school programs with interest. Canvassing may be necessary to also bring in nearby businesses. The other tack for developing task forces will be through NTSP efforts and outreach to neighborhood associations, business associations, or other neighborhood groups. These task forces will be crucial in providing the continued vigilance and grassroots connections necessary to sustain good Safe Routes programs.

PDOT also has other resources to draw on from within its own office. Its TravelSmart program – a collaboration of the City and TriMet based on models from Perth, Australia – targets Portland residents who have expressed interest in finding ways to reduce auto-dependence in their daily

lives. This personalized program could serve as an ideal inroad for Safe Routes, when clients are families with children. The program could help determine routes, network the children with other clients' children in the neighborhood that walk or bike, modify routes and arrangements at one of the program's several check-in points, and, most of all, offer reassurance, encouragement, and a human touch to something about which some parents may feel fear or hesitation.

With their access to City resources and their presence in schools and the community, PDOT and the BTA are critical to the success of Portland's Safe Routes to School programs. With the recent development of the Community Traffic Safety Account, the city is that much closer to an integrated Safe Routes Program that implements the education, encouragement, engineering, and enforcement measures necessary to create more walking and biking to school. However, Safe Routes programs in Portland and the rest of Oregon will have to be exceedingly strong if they are to withstand the challenges posed by sweeping policies of school siting, land use planning, and educational objectives.

Keeping distances between school and home of manageable walking and biking distance is the responsibility, in part, of good planning, especially long-term facilities siting and planning. This is particularly challenging when our current school facility model consists of numerous, evenly distributed elementary school feeding into fewer middle schools feeding into even fewer, distant, large high schools. So in order to do good planning, a solid, cooperative relationship between local planning departments and school districts must exist. This is a relationship that is not always prescribed or reinforced by state and local land use planning.

In Oregon, schools as public services and facilities are incorporated into land use planning in a cursory manner. School capacity does not carry the same power to shape development that other public services do. In fact, according to ORS 195.110, insufficient school capacity is invalid grounds for denying a development application, such as a subdivision proposal (LCC, 2001). Yet, development applications must obtain "service provider letters", supplying proof that other public services, such as water and sewer, possess sufficient capacity to serve the development. When development applications that promise to have significant impact on schools are approved,

land use law in Oregon requires that planning agencies merely notify the affected district(s) (LCC, 2001).

For high-growth school districts in Oregon planning to expand facilities, their long-range facility plans are added as an element in local comprehensive plans (LCC, 2001). Yet, this does not mean that comprehensive plans and school facility plans are created in concert with one another. Much as school districts themselves, facility plans are made to react to comprehensive plans, not necessarily influence their formation.

Growing school districts in Oregon usually face an additional set of challenges in planning for school facilities. As has occurred in Beaverton, Oregon, potential school sites within the urban growth boundary (UGB) may already be planned for other residential or industrial development. Alternatively, they may be constrained by environmental factors (including state land use planning Goal 5 resources) and other planning objectives, like high-density, mixed-use, multi-modal light rail station areas that prohibit school siting (AEA, 2002).

Even the best efforts to improve school facility planning and its coordination with land use planning may be frustrated by educational policy shifts toward charter schools, magnet schools, and school vouchers. The most current incarnation of such policy is the Bush administration's "No Child Left Behind" program. When a child's school fails to make "adequate yearly progress", as defined by the state, for two years in a row, the school is labeled as "needing improvement". Children attending these schools must be given the choice to attend another school in the district, one which is not designated as "needing improvement". Up to its spending cap, the district must provide transportation for children who transfer (USDOE, 2003). Five elementary schools, eight middle schools, and ten high schools in Portland Public Schools did not meet their Adequate Yearly Progress goals according to the state's 2002-2003 AYP Report (ODOE, 2003). The drive to provide top-notch education and training in global marketplace skills – math, science, technology, international relations – fuels creation of private or "magnet" schools that draw on students from around the district, not just from local neighborhoods.

In a positive sense, these large-scale issues of planning, siting, and educational policy provide motivation to efficiently build and program school facilities, while constantly improving the school learning environment. The issues provide a huge challenge and rallying focus for the communities of Portland who not only love and want the best health and education for their children, but value schools as core places that give their neighborhoods heart, identity, and pride.

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Appendix A. City of Portland Office of Transportation (PDOT) Travel Survey of Middle Schools, 1996

Middle School	Driven By		School Bus	TriMet Bus	Walked	Biked	Other
	Parent	*Friend*					
Beaumont	30.2%	7.2%	11.0%	13.8%	34.9%	1.6%	1.3%
Binnsmead	23.4%	3.3%	45.9%	3.3%	21.9%	2.0%	0.2%
Floyd Light	14.1%	2.0%	68.3%	0.4%	13.3%	1.8%	0.0%
Gray	27.4%	1.9%	55.1%	0.8%	13.7%	0.8%	0.3%
Hosford	30.8%	4.1%	16.3%	12.2%	33.5%	1.8%	1.4%
Jackson	24.6%	4.6%	55.1%	1.4%	12.9%	1.1%	0.3%
Lane	26.5%	5.6%	28.8%	3.8%	26.7%	8.4%	0.2%
Mt. Tabor	26.1%	6.0%	24.0%	8.5%	30.9%	2.5%	1.8%
NE Community School	55.8%	2.6%	0.0%	13.0%	7.8%	18.2%	2.6%
Ockley Green	32.5%	3.0%	5.9%	13.8%	39.9%	3.9%	1.0%
Sellwood	22.5%	7.0%	44.3%	4.1%	18.1%	2.1%	1.8%
TOTAL	***25.4%***	***4.4%***	***38.0%***	***5.3%***	***22.9%***	***3.1%***	***0.8%***

Appendix B. Tubman Middle School Safe Routes Parent Survey

Appendix C. BTA's Tubman Middle School Safe Routes Lesson Plan

Appendix D. Proposed Tubman Middle School Student Walking Survey Form

Appendix E. PDOT'S Northeast Portland Family-Friendly Bikeway Map

Appendix F. Sample PDOT Safe Routes Web Site Pages

Appendix G. Sample PDOT Safe Routes Web Site School Area Walking Map

Appendix H. City of Portland Neighborhood Traffic Safety Partnership (NTSP) Summary

PORTLAND'S NEIGHBORHOOD TRAFFIC SAFETY PARTNERSHIP & STRATEGY

The Neighborhood Traffic Safety Partnership is a community-based education, enforcement, and engineering effort designed to minimize traffic safety concerns and support safe, healthy, and efficient transportation choices.

TRAFFIC SAFETY IMPACTS ON SAFETY AND LIVABILITY

IMPACTS ON SAFETY

Improved Road Safety for All Users

- Reduced traffic speeds
- Reduced frequency and severity of collisions
- Reduced traffic fatalities and injuries
- Reduced hazards to non-motorized users
- Increased crossing gaps for peds & bikes
- Increased perception of safety for all users

Improved Neighborhood Safety

- Improved crime prevention
- Reduced incidents of crime

IMPACTS ON LIVABILITY

Increased Perception of Safety Supports Healthy Choices

- Increased walking and bicycling
- Increased public transit use
- Increased physical activity
- Improved health and fitness

A Sense of Home and Community

- More attractive streetscape
- Reduced traffic-related noise
- Reduced levels of air pollution
- Increased social interaction with neighbors

THE "3Es": TRAFFIC SAFETY TOOLS THAT WORK

EDUCATION

Youth and School Education Programs
- Safe Routes to School
- Classroom Instruction
- Traffic Safety Days

Community Education Programs
- TravelSmart
- Speed Watch

ENFORCEMENT

Traditional Enforcement
- Police
- Traffic Fines

Strategic Enforcement
- Targeted Locations
- Court Watch

Automated Enforcement
- Photo Radar
- Red Light Cameras

ENGINEERING

Auto Speed Reduction

Pedestrian & Bicycle Safety Improvement

Auto Collision Reduction

Traffic Volume Management

School Safety

NEIGHBORHOOD TRAFFIC SAFETY PARTNERSHIP

The primary purpose of the NTSP is to identify strategies and policies that ensure the efficient and effective delivery of traffic safety and traffic calming services throughout the city.

Engineering and Design Guidelines	Mainstreaming Practices	Traffic Safety Action Plans	Implementation Strategy for "3Es"
Streamlined Speed Bump Purchase Projects	Area Planning	Neighborhood Speed Reduction Action Plan	Traffic Safety Commission
High Volume Purchase Projects	Project Identification and Design	School Safety Action Plan	Community Work Groups
Complex Local Service Street Projects	Development Review	State of Portland's Traffic Safety Report	Violator Pays Initiative
Area Traffic Calming Projects	Maintenance Activities		Enhanced Community Partnerships
School Safety Projects			Missing Link Capital Improvements

Source: City of Portland Office of Transportation, 2002

Appendix I. City of Portland Violator Pays Initiative Letter of Endorsement

September 16, 2002

Dear Mayor Katz:

This letter is written in support of a strategy to add a surcharge on each moving violation to help finance traffic safety efforts in the city of Portland. We believe that it is fair to charge people who violate traffic laws this additional fee to support much needed traffic safety and traffic calming efforts in our neighborhoods.

We share a concern with other Portland residents, neighborhood associations, and community organizations that traffic safety problems continue to erode our quality of life, including our ability to walk, bike, and take transit.

> For the past few years, Portland's Service Efforts and Accomplishments report has identified speeding cars, pedestrian safety, and bicycle safety as three of the four biggest problems in neighborhoods.

We recognize the major role that traffic safety plays in maintaining and enhancing road safety, neighborhood livability, and public health. A safe transportation environment makes our streets lively and friendly for all users, encourages community interaction, and attracts customers to local businesses.

> Relatively minor increases in speed have major impacts on public safety. Consider that a pedestrian struck by a car traveling 20 mph has a 95% chance of survival; at 30 mph, a 60% chance of survival; at 40 mph, only a 10% chance of survival.
>
> The percentage of children walking or bicycling to school has declined from two-thirds in the 1970s to less than 10% now. This decline in physical activity corresponds to an increase in childhood obesity.

We support the City of Portland's efforts to provide services that protect neighborhoods from the negative impacts of traffic. We are impressed by the partnerships Portland Transportation has formed with Portland Police Traffic Division, School Police, school districts, pedestrian and bicycle organizations, public health advocates, insurance providers, and our neighborhoods to develop effective education, enforcement, and engineering tools for traffic safety.

At the same time, however, we are aware of the declining revenue for transportation and enforcement services in Portland and the dramatic consequence this decline has had on traffic safety services.

> As a result of a revenue stream that is losing pace with inflation, Portland Transportation was forced to reduce services for fiscal year 2002-03 by $5.3 million.
>
> At any one time, Portland has only four to six police officers dedicated to provide traffic enforcement and investigate collisions on over 1,700 miles of streets.

We know that traffic fines are a powerful tool to support driver compliance with traffic laws. We believe that traffic fines can result in additional positive results that benefit our neighborhoods. People who speed, run red lights, disregard other traffic control devices, and endanger pedestrians and bicyclists should pay for the education, enforcement, and engineering measures required to mitigate their reckless driving behavior.

The strategy to add a surcharge on each moving violation is a promising initiative to increase funding for traffic safety efforts in Portland neighborhoods. We urge your support for this strategy as we work together to provide a safe environment for everyone who lives, plays, and works in our neighborhoods.

Sincerely,

_____

Representing Neighborhood Association

_____

District Coalition

_____

Other Organization

Source: City of Portland, 2002