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Impact of the Safe Routes to School program on walking and biking: Eugene, Oregon study

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ABSTRACT

Policymakers in many countries, including the United States, United Kingdom, and Australia, have introduced programs to increase walking and biking to school through education, encouragement, and infrastructure improvements. The U.S. government has allocated over $1.1 billion to the federal Safe Routes to School program since 2005. However, there are few evaluations of the Safe Routes to School program. Our study used a robust quasi-experimental research design to measure the impacts of Eugene, Oregon's Safe Routes to School program on walking and biking. Using data collected between 2007 and 2011 at 14 schools with and without Safe Routes to School programs, we showed that the Safe Routes to School program was associated with increases in walking and biking. Education and encouragement programs were associated with a five percentage point increase in biking. Augmenting education programs with additional SRTS improvements such as sidewalks, crosswalks, covered bike parking, and Boltage was associated with increases in walking and biking of 5–20 percentage points. The study results illustrate the potential for the Safe Routes to School program to change behavior and should encourage other communities to plan for multi-modal school travel.

1. Introduction

The 2005 federal transportation bill created the Safe Routes to School (SRTS) program to "enable and encourage children…to walk and bicycle to school" and "to make bicycling and walking to school a safer and more appealing transportation alternative" (Federal Highway Administration, 2006). The legislation provided each state's Department of Transportation with funds to improve infrastructure within two miles of elementary and middle schools and to develop safety and encouragement programs. Over $1.1 billion has been authorized for the program as part of the original legislation and continuing resolutions through September 30, 2012 (National Center for Safe Routes to School 2013).

Previous studies have found increases in biking and walking as a result of SRTS interventions. In Auckland, New Zealand, schools with comprehensive school-level plans to encourage walking and biking through education, enforcement, and infrastructure improvements increased shares of walking and biking from 40.5% to 42.2% after three years (Hinckson et al., 2011). The Boarnet et al. (2005) evaluation of infrastructure improvements funded by California's state SRTS program found increases from 10% to 850% in the number of children walking to school at eight elementary schools and a decrease at one elementary school. Marin County (California) had one of the first SRTS programs in the United States. Evaluations of the Marin SRTS program showed an increase in walking from approximately 15% of students before the program began to over 20% two years later; biking increased from approximately 5% to 15% of students (Staunton et al., 2003). The National Partnership for SRTS analyzed school travel at ten low-income schools receiving a SRTS intervention and found mixed results. The student-reported proportion of students walking to school decreased at four schools, increased at three schools, and remained the same at one school after SRTS intervention (McMillan and Cooper 2009).

These studies suggest the potential for the SRTS program to change school travel behavior. However, the studies did not compare travel behavior at schools receiving SRTS interventions to schools without interventions. The lack of a control group raises validity concerns. For example, without a control group, it is impossible to establish whether increases in walking are due to the SRTS interventions, seasonal weather differences, or the maturation effect of the children aging by nine months (since many studies compare fall to spring). Similarly, the lack of control schools makes it difficult to account for shocks that may affect travel behavior in all families, such as changes in gas prices or employment. Some studies have used more robust research designs to evaluate the SRTS program. Mendoza et al. (2011) conducted a cluster randomized controlled trial of a walking school bus program (where adults chaperone

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children on the walk to school) for fourth-graders at eight low-income Houston public schools. They found students who received the walking school bus intervention walked to school more and increased their moderate-to-vigorous physical activity. However, the walking school bus was led by researchers, making it unclear what the program impacts would be for a school-sponsored effort. Wen et al. (2008) analyzed the impacts of a two-year SRTS program on 10–12-year-olds in Sydney using a cluster randomized controlled trial. They found increases in walking were higher for the treatment group. However, the effect was only evident using parent reports of school travel mode.

More research is needed on the impacts of the SRTS program using stronger research designs (Mackett 2013). Our study uses a quasi-experimental research design to evaluate the impacts of the SRTS program in Eugene, Oregon on walking and biking to and from school. The advantage of our approach is that it utilizes control schools and observes schools from 2007 to 2011. However, unlike some previous research, our study reflects real-world implementation of SRTS programs, as opposed to researcher-implemented programs. We find the SRTS program is associated with increases in walking and biking, and this effect remains after controlling for school-level factors that influence adoption of the program. The remainder of the paper describes the study area, our methodology, data, and results.

2. Study area

The 4J School District serves residents of Eugene, Oregon and surrounding areas, covering 155 square miles in the southern Willamette Valley. The district is comprised of 22 elementary schools, two K-8 schools, seven traditional middle schools, and four conventional high schools. Additionally, there are 4 alternative high school programs in the district, 1 of which is a program that exists on multiple campuses. Student attendance is roughly 16,500. Families in Eugene are assigned to a neighborhood school based on their location. However, all families are allowed to enter a lottery to be reassigned to any other neighborhood or magnet school. Previous research has shown that families attending a "choice" school tend to travel longer distances and to walk and bike less frequently (Yang et al., 2012).

The SRTS program became fully operational in the 4J School District in the fall of 2007 with the appointment of a full-time SRTS program manager. The program funds and administers a variety of interventions aimed at increasing walking or biking to and from school by K-8 students. Interventions are broadly classified into 4 categories, also known as the 4E's: engineering, education, encouragement, and enforcement. Engineering interventions are usually infrastructure improvements, such as sidewalk construction, crosswalks, and traffic signal improvements. Education programs aim to improve students' active commuting skills and awareness, as well as increase the safety of walking and biking activities. Similarly, encouragement interventions seek to raise the awareness of active commuting benefits among both students and their parents. "Walk and Bike to School Day" is one example of a program designed to increase enthusiasm for active commuting. The fourth "E" enforcement includes intervention measures such as the funding of street crossing guards, the placement of speed feedback trailers near schools, and increased police presence to enforce speed limits in school zones.

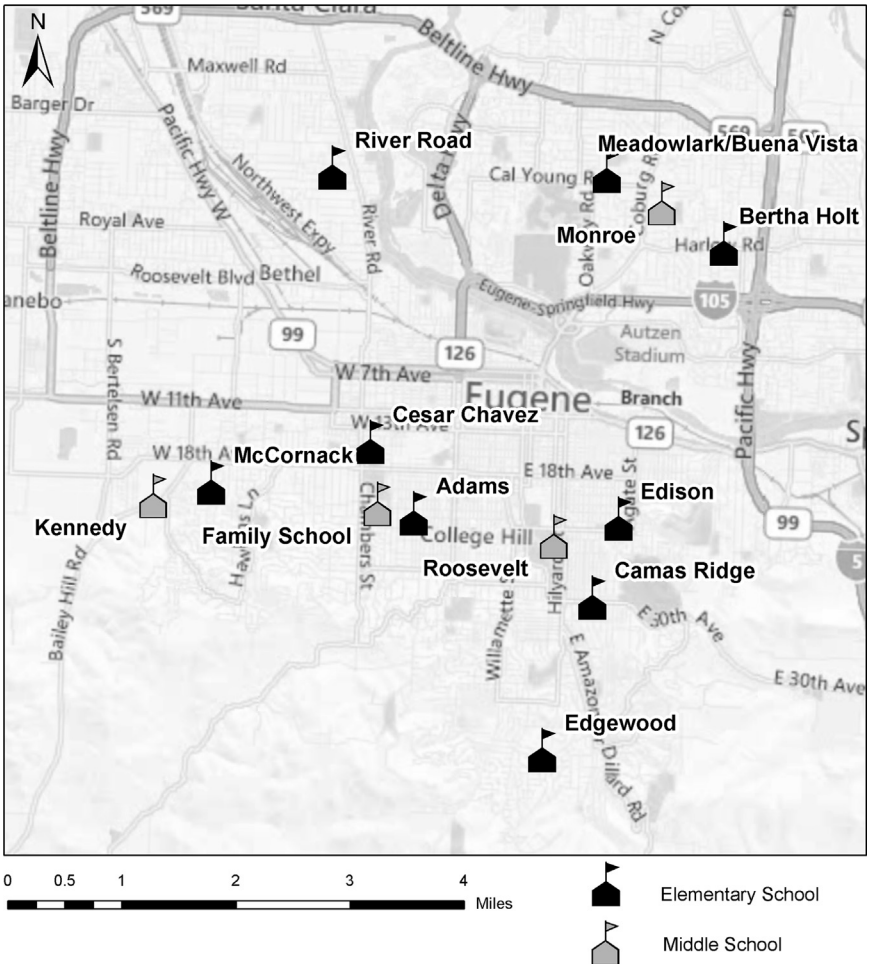

Fig. 1. Map of Eugene 4J schools.