Efforts to improve conditions for walking and bicycling near schools can increase safety and travel by foot and bicycle. These initiatives can also save school districts money by reducing the need for hazard busing, a practice where districts bus students living within walking distance of their schools because the students face hazardous walking and biking conditions. Currently U.S. school districts spend $100 to $500 million annually on hazard busing. Our analyses show that school districts could make walking and biking safer for children and save money by working with their local communities to remove hazards.

Methods
We interviewed Safe Routes to School (SRTS) State Coordinators about examples of cost savings due to SRTS and conducted a simulation to estimate the cost of busing based on the number of students who need hazard busing.

Cost Savings Due to Walking and Bicycling Improvements
Many school districts around the country have reduced the cost of school bus transportation through implementation of SRTS programs. We found the following illustrative examples of the economic impacts of SRTS investments:

• The City of Austin constructed a pedestrian bridge to connect a large apartment complex with the local elementary school. The district will save $130,000 annually in school busing costs just at this one school.

• A New Jersey town implemented SRTS initiatives to improve safety when it had to eliminate school bus service due to a significant reduction in state funding. The elimination of busing saved the town $100,000 a year in transportation costs.

Where Can Safety Improvements Provide the Most Cost Savings?
We used school bus routing software to simulate the potential impacts of SRTS programs on busing costs at four North Carolina schools. The research team analyzed three scenarios for each school. The scenarios differed in the number of children within one mile of the school that received hazard busing.

Our results show that hazard busing can lead to large increases in costs, but that the magnitude of cost increases depends on the geographic
context of the school. As Figure 1 shows, at School A, in which nearly 80 percent of students live within one mile of school, providing all students with hazard busing costs 330 percent more than providing no busing to students within a mile of school. At the more suburban School D, in which 20 percent of students live within a mile of school, providing all students with hazard busing costs just 40 percent more than the no hazard busing scenario.
Our results show that improving infrastructure to eliminate hazardous conditions is money well spent, particularly near schools where most students live within walking distance. One important thing to note, however, is that certain states have policy incentives to bus children who live close to school. In North Carolina, for example, districts are reimbursed based on the efficiency of their school bus transportation. Since the reimbursement metric is based on efficiency rather than absolute costs, it could be tempting to encourage those living near school to ride the bus in order to reduce the overall cost per student for busing.

Another difficulty of reducing busing costs by eliminating hazardous walking conditions is that the costs and benefits accrue to different agencies. Infrastructure improvements are financed by the municipality or the state Department of Transportation; school bus costs are paid by local school districts and the state Department of Education. Regardless, our results suggest that the cost of school transportation could be greatly reduced if more attention were paid to improving the built environment for pedestrians and bicyclists between schools and nearby residential neighborhoods.


This research was conducted by Noreen McDonald, associate professor in the Deparment of City and Regional Planning, and is part of the work of the Carolina Transportation Program (CTP), an interdisciplinary research and education program. The CTP focuses on the study of transportation planning and policy emphasizing the connections between transport and land use, health, environment, energy and economic development at local, regional, national, and global scales. Find out more at http://ctp.unc.edu.