MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 19-374 (project 515) | July 2019

Redefining the Child Pedestrian Safety Paradigm

the ISSUE

Child pedestrians deserve particular attention when we consider traffic safety. This means identifying locations where child pedestrians are at particular risk, but it also means taking a more proactive safety approach to find out where their trips are being suppressed specifically due to road safety concerns.

the RESEARCH

Part 1 of this report identifies locations in urban areas that child pedestrians are at particular risk for fatal collisions with vehicles. We do so by examining 30 years of crash data for six American cities to locate areas with high child pedestrian fatality concentrations.

Traditional pedestrian/bicycle safety analyses take a reactive approach by investigating crashes, injuries, or fatalities after they occur. Examining trips suppressed because of perceived road safety concerns facilitates a proactive approach, but we must first develop a methodology. Part 2 examines child pedestrian/bicycle trips to and from schools by combining suppression rates derived from a survey examining parental perceptions of safety and the upper limit of trip frequencies derived from a GIS network analysis. We explore how grade level, gender, and adult supervision are related to childhood travel in terms of street-level design characteristics such as speed limits, vehicle volumes, presence of sidewalks/bike lanes, and the number of vehicle lanes. We then investigate how widespread these suppressed trips are by quantifying the number of children impacted and how their routes are altered. We finally detect built environment characteristics—street-level designs, network configurations, barriers, destination siting, etc.—linked with high levels of suppressed trips.

MOUNTAIN-PLAINS CONSORTIUM REGION 8

A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

Colorado State University
North Dakota State University
South Dakota State University
University of Colorado Denver
University of Denver
University of Utah
Utah State University
University of Wyoming

Lead Investigator(s)

Wesley E. Marshall, Ph.D., PE

University of Colorado Denver
wesley.marshall@ucdenver.edu

Co-Investigator(s)

Bruce Janson, Ph.D.
University of Colorado Denver

Research Assistant(s)

Nick Ferenchak, GRA

Project Title

Redefining the Child Pedestrian Safety Paradigm

Sponsors | Partners

USDOT, Research and Innovative Technology Administration

the **FINDINGS**

Our results revealed higher concentrations of child pedestrian fatalities around parks as compared to other areas that children have been shown to frequent. We specifically examined fatality concentrations near parks as compared to schools, and once exposure is controlled for, child pedestrian fatalities concentrate around parks in densities 1.04 to 2.23 times higher than around schools.

By combining trip suppression rates derived from a perception survey with the upper limit of trip frequencies from a GIS network analysis, we identified areas where trips are suppressed because of road safety concerns. Examining the pervasiveness of these issues, we find that more than 61% of children encounter a road perceived as unsafe (defined as 50% or greater parent disallowance) for biking and more than 12% encounter a similar road for walking. This suggests that the problem of perceived safety is prevalent.

the **IMPACT**

Pedestrian and bicycle trips that have been suppressed because of traffic safety concerns can be an important indicator of road safety. The tool developed in this report allows for the identification of roadways with high levels of suppressed child pedestrian/bicycling trips in terms of street-level design characteristics. This approach allows for the methodology to be applied widely, enabling utilization by academics and practitioners alike. By integrating our tool with traditional traffic safety analyses, we hope to not only make the places where children are currently walking/bicycling safer, but to improve safety in places where children should walk and bike.

For more information on this project, download the entire report at http://www.ugpti.org/resources/reports/details.php?id=952

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.