MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

RESEARCH SUMMARY

Analyzing the Impact of Median Treatments on Pedestrian/Bicyclist Safety

WHAT WAS THE NEED?

Between 2005 and 2013, pedestrian fatalities constituted 19% of total traffic fatalities in Maryland. Since 2012, the Maryland Department of Transportation State Highway Administration (MDOT SHA) has identified 24 high-frequency pedestrian/bicyclist crash sites through the Pedestrian Roadway Safety Audit (PRSA) Program. Various median treatments, including fencing, along with other safety-enhancing treatments (sidewalk fencing, median brick planters, and pedestrian islands) were implemented at selected locations. While these countermeasures are generally perceived as effective, MDOT SHA wanted to quantify their impact and compare their effectiveness.

WHAT WAS THE GOAL?

The goal of the study was to quantify the effectiveness of installed median treatments and investigate human and socio-demographic factors of the illegal mid-block crossing behavior.

WHAT DID THE RESEARCH TEAM DO?

The team started with data collection at both treatment and control sites. A pedestrian/bicyclist survey was then conducted at treatment sites to understand the factors influencing mid-block crossing and treatment effectiveness.

MAY 2017

REPORT NUMBER:
MD-17-SHA/UM/4-28

START DATE:
June 9, 2016

COMPLETION DATE:
April 1, 2017

PRINCIPAL INVESTIGATOR:
Dr. Lei Zhang
University of Maryland
lei@umd.edu

Before and after data were collected at 30 treatment and control sites. Data collected included: vehicle, pedestrian, and bicycle volumes; site geometry; before and after crash counts and severity; and business/community and pedestrian/bicyclist assessment of safety countermeasures.

A trend analysis was conducted to study the general crash trend. Statistical modeling methods were employed to link bicycle and pedestrian crashes to median treatments and other influencing variables, such as site geometry, traffic volume, truck percentages, pedestrian/bicyclist volumes, traffic control devices, street lighting, and sight distance. The Empirical Bayes methods separated the effect of median treatments from effects of other factors.

The pedestrian/bicyclist surveys at treatment sites were supplemented with business and community interest group interviews. The results shed light on the socio-demographic factors that may influence attitudes toward the installed median treatments.

WHAT WAS THE OUTCOME?

Results of the trend analysis showed that treatment sites (where median treatments have been installed) experienced lower or similar crash rates for all crash types after the treatment, while control sites (no median treatments) experience higher crash rates during the same time period.

The statistical analysis showed a significant reduction in total crash counts and fatalities because of the treatments. According to the statistical model, the reduction in fatalities is more significant (in terms of percentage of redution) than in total crash counts.

Survey results showed that more than 50% of pedestrians and bicyclists are likely to cross roads mid-block, but median treatments are effective in discouraging it.

HOW WILL THE RESULTS BE USED?

The MDOT SHA is currently evaluating its PRSA program. Median treatments are recommended on many of the 24 existing PRSA corridors and this research shows that they can be an effective measure. It will also be instrumental in how MDOT SHA prioritizes proposed median treatment projects for future PRSA corridors.

The MDOT SHA is also working on objective statements and developing ways to measure the purpose and need for all projects. The additional guidance from this research is very timely for evaluating different improvement alternatives.

LEARN MORE

To view the complete report, click here.

For more information on research at MDOT SHA, please visit our website.