Michigan Department of Transportation
RESEARCH Administration

RESEARCH SPOTLIGHT

Project Information

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Michigan draws from effective safety strategies nationwide to reduce road deaths and injuries

Despite efforts by roadway agencies, traffic fatalities and injuries remain a concern in Michigan, and funding for safety countermeasures is limited. MDOT undertook an evaluation of safety countermeasures at top-performing state and local agencies, with a focus on cost-effective approaches that would likely have a high impact in Michigan. Researchers recommended promising countermeasures and procedural changes that MDOT can implement to enhance its efforts to reduce deaths and injuries on Michigan's roads.

PROBLEM

MDOT was an early adopter of the "Toward Zero Deaths" (TZD) highway safety strategy that aims to eliminate all fatalities and serious injuries on the nation's roads. The approach, championed by the Federal Highway Administration (FHWA), acknowledges that even one death on our transportation system is unacceptable. TZD has informed safety policies and processes at MDOT, underpinning Michigan's Strategic Highway Safety Plan (SHSP), a part of the state's federally legislated Highway Safety Improvement Program.

Despite this goal, between 2014 and 2018, annual roadway fatalities in Michigan ranged from 876 to 1,064, with an average of 5,400 serious injury crashes per year. While the totals have varied from year to year, overall these values remain high.

Adding high-visibility stop signs is a low-cost solution that can save lives. These treatments typically reduce injury and fatal crashes by 10 percent.

Moreover, highway safety funding is limited in Michigan. Over the same period of years, the state ranked 47th in annual safety funding based on vehicle miles traveled. Any new safety solution under consideration in Michigan must be cost-effective.

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"The research identified best practices from our peers in transportation safety and targeted areas where additional countermeasures can be implemented to keep moving Michigan toward zero deaths."

Stephen Shaughnessy, P.E.
Project Manager

RESEARCH

Michigan's SHSP spells out a comprehensive approach to the "four E's" of highway safety: engineering, enforcement, education and emergency medical services. For this research project, MDOT focused on engineering countermeasures. The effort centered on a review of engineering best practices of top-performing state and local agencies, with an eye for ways to advance MDOT's TZD goal to reduce fatalities and serious injuries.

Researchers examined FHWA's TZD National Strategy document and its Roadway Safety Noteworthy Practices database, as well as other states' safety plans and programs, for noteworthy engineering features and countermeasures. They identified 13 agencies for follow-up phone interviews: seven state DOTs, four cities and two counties. These included several Midwestern state agencies and others from across the country. Selection criteria for the interviews included agencies with recent declines in fatal crashes, notable trends in funding for highway safety, and prior establishment of TZD plans.

RESULTS

Through the interviews, researchers learned details about successful approaches and identified opportunities for MDOT to improve its safety programs and strategies. In particular, this study evaluated strategies and measures that can be implemented in Michigan for both trunkline highways and local roadways. The analysis afforded special attention to budgetary constraints and anticipated benefits associated with different safety funding levels. The analysis also laid out a projected time frame in which goals could be achieved.

Researchers put forward a range of recommendations related to MDOT's program and process management, along with several engineering countermeasures. The recommendations addressed funding considerations, local training and outreach, analytical tools to support data-driven decision-making, and a host of trunkline, local and systemwide countermeasures. Researchers also found that a decrease in funding for some existing countermeasures would have minimal adverse impact and would free up dollars to implement other high-impact approaches.

IMPLEMENTATION

Among these recommendations, MDOT is focusing on two for immediate consideration.

First, the researchers encouraged increased funding for the state's recently initiated Streamlined Systemic Safety Program, which supports safety improvement projects for local agencies. The program dedicates funds for a few specific lower-cost, high-value safety countermeasures, including enhanced horizontal curve signing, centerline and shoulder rumble strips and stripes, edgeline pavement marking, and stop sign upgrades. A simplified application process encourages participation, giving MDOT an opportunity to partner with more local agencies to enhance safety in areas with limited resources.

Second, MDOT plans to continue to develop and use analytical support tools that support data-driven decision-making for safety applications. Examples include MDOT's Highway Safety Manual worksheet, which MDOT uses to predict crash frequencies using factors from national and Michigan data sources, and geographic information systems and statistical algorithms that predict crashes along specific roadway segments. Such tools help MDOT spend finite dollars more wisely and to greater effect.

Implementing these research findings will serve to expand MDOT's transportation safety toolbox and help prioritize those safety projects that advance the agency's goal of reducing deaths and serious injuries on all state roads.

Research Administration

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