



RESEARCH PROJECT CAPSULE [22-1SA]

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TECHNOLOGY TRANSFER PROGRAM

Safety Effectiveness of Cable Median Barriers in Louisiana

JUST THE FACTS:

Start Date:
January 1, 2022

Duration:
18 months

End Date:
June 30, 2023

Funding:
SPR: TT-Fed/TT-Reg – 5

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POINTS OF INTEREST:

Problem Addressed / Objective of
Research / Methodology Used /
Implementation Potential

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PROBLEM

Cable median barriers are lane-departure safety countermeasures designed to prevent crossover crashes by deflecting a vehicle that enters the median and keeping it from potentially crossing over into oncoming traffic. Research indicates that cable median barriers are an effective way to prevent fatal and severe crashes, especially head-on collisions. Since 2008, Louisiana Department of Transportation and Development (DOTD) has been installing cable median barriers, reaching approximately 530 miles of cable barriers throughout the state as of 2021. By the end of 2022, DOTD plans to install cable barriers along nearly 721 miles of Louisiana's interstate roadways, as shown in Figure 1. Although cable barrier is a proven safety countermeasure, research is needed to evaluate and quantify the safety benefits of cable barriers in Louisiana and to assess how well these countermeasures have met their expected purpose.



Figure 1. Spatial distribution of cable median barriers in Louisiana (in operation and to be built)

OBJECTIVE

The goal of this project is to evaluate the effectiveness of cable median barriers installed on Louisiana highways. This project will also estimate the benefit-cost ratio of cable median barriers.

METHODOLOGY

To accomplish the objective of this project, the research team will begin with a review of the policies from other state transportation departments concerning cable median barrier installation and maintenance. The research team will also begin the process of gathering and verifying data regarding crashes associated with identified roadway segments. Targeted crashes for cable median barriers are head-on collision, angle-collision, and sideswipe in opposite direction. Crash distribution by time, location, and environmental conditions will also be evaluated. The impact of barrier location and MASH (Manual for Assessing Safety Hardware) testing level of cable barrier will be investigated as well.

Using verified data, a comprehensive crash analysis will be performed, including trend analysis and before/after analysis. The trend analysis will be used to detect any significant variations in total annual crashes, severe crashes, and crash rates. The before/after analysis will look at crashes occurring during the three years before and the three

years after the barrier installations. The before/after analysis will be conducted with Empirical Bayes method and improved safety analysis method.

Analysis of cable median barrier maintenance reports is also critical for evaluating safety effectiveness. Some vehicles that crash into cable median barriers are able to return to the travel lanes without police or towing assistance. These collisions would not be recorded in crash reports, but may be effectively quantified from analysis of cable median barrier maintenance records.

Finally, a benefit-cost ratio will be estimated. Benefits of cable median barriers may be quantified from the reduction of cross median crashes (fatal, injury, and property damage only). Costs may be quantified from records of installation and maintenance.

IMPLEMENTATION POTENTIAL

The results of this research will provide DOTD with information needed to evaluate whether cable median barriers are successful safety treatments in Louisiana and to guide future applications. Analysis of the benefits and costs of these crash countermeasures will help DOTD make better and more informed safety investment decisions essential for the Louisiana Highway Safety Improvement Program.