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SAFETY AND ECONOMIC EVALUATION OF MEDIAN CABLE BARRIERS

ABSTRACT

This study assesses the efficiency and economic impact of median cable barriers (CMBs) in the state of Tennessee, focusing on their effectiveness in reducing fatal and serious injury crashes over a 6-year period before and after installation. An analysis of 596 cable segments across 47 counties revealed a substantial decrease in crash frequency, with fatal crashes reduced by 81% (from 133 to 25) and serious injury crashes reduced by 51% (from 248 to 121). Utilizing crash data, installation costs, maintenance expenditures, and societal crash costs, the study conducted a benefit-to-cost (B/C) analysis based on methodologies outlined in the Highway Safety Manual (2010 HSM). The calculated B/C ratio of 101.47 underscores the significant economic benefits of CMBs relative to their costs, demonstrating their value as a cost-efficient safety measure. These findings highlight the importance of expanding CMB deployment on high-risk roadway segments to enhance public safety, reduce societal costs, and support the Tennessee Department of Transportation's (TDOT) strategic goals.