***(Abstract)***

Lane departures are a precipitating event in most fatal crashes in the United States. This problem is particularly pronounced on high-speed undivided highways, which are prone to cross-centerline crashes. A common countermeasure to reduce such crashes involves installing centerline rumble strips (CLRS), which provide an audible and tactile warning to alert drivers of an impending lane departure event.

This study assessed the safety effects of a statewide CLRS implementation program conducted by the Michigan Department of Transportation (DOT) between 2008 and 2010. This program included the installation of CLRS across the Michigan DOT–maintained network of rural, high-speed nonfreeway facilities. Shoulder rumble strips (SRS) were installed in combination with the CLRS at locations with paved shoulders at least 6 ft in width. The empirical Bayes method was used to assess the effectiveness of 4,077 mi of two-lane highways where CLRS were installed as part of this initiative. CLRS were found to reduce target cross-centerline crashes by 27.3% and by 32.8% when used in combination with SRS. Rumble strips were also effective in reducing crashes that occurred under adverse pavement conditions or involved passing maneuvers or driver impairment. This study also provides important insights as to the identification of target (i.e., cross-centerline) crashes. A comprehensive manual review of more than 70,000 crash report forms demonstrated that approximately 10% of target crashes were misclassified by crash type, which is the predominant field typically used to identify such crashes.