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Drivers' Operational Use of the Travel Lane with Rumble Strips

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Author Note: Margaret J. Rys has over 20 years of experience conducting research and teaching course in human factors engineering, engineering economy, statistics and safety. During the past 20 years she has been principal or co-principal investigator on more than 40 project and authored and co-authored more than 50 journal papers. Daniel E. Karkle is a Ph.D. student in the IMSE department at KSU. He received his B.S. degree in civil production engineering in Brazil. The funding of this project was provided by the Kansas Department of Transportation through the K-TRAN program. All statements and opinions presented in this paper are sole responsibility of the writers, and may not necessarily reflect those of the KDOT.

Abstract: Reducing overall and injury cross-over crashes on rural two-lane, undivided roadways is always an urgent priority with very high payoff. However, the current shoulder width policy may eliminate hundreds of kilometers of rural highways from potential life savings treatments, i.e., centerline line rumble strips (CLRS). The objective of this research was to determine how rumble strip configurations affect drivers' behavior (measured in terms of lateral position and speed) at several different shoulder width configurations. Vehicular lateral position and operating speed data were collected using pneumatic road tubes in a "Z" configuration. One location per rumble strip / shoulder width combination was selected. Data was statistically analyzed as one-way treatment structure in CRD. The results showed that rumble strips and shoulder width levels have statistically significant effects on vehicular lateral position and speed levels.

Keywords: Cross-over Crashes, Centerline Rumble Strips, Drivers' Behavior