MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 18-357 (project 480) | July 2018

A Comprehensive Safety Assessment Methodology for Innovative Geometric Designs

the ISSUE

Despite the theoretical safety benefits, little research has been undertaken to quantify the safety impact of the diverging diamond interchange (DDI) using real-world crash data, primarily because of the limited accident history available. This study is one of the first independent studies to investigate the overall safety impact of DDIs.

the RESEARCH

Innovative geometric designs are often considered as a solution to the challenge of meeting the increasing travel demands with limited resources. This study focuses on one such design, the diverging diamond interchange (DDI), which aims to improve traffic flow and reduce congestion at highway junctions. The methodology proposed is transferable to other geometric designs.

MOUNTAIN-PLAINS CONSORTIUM REGION 8

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University of Denver
University of Utah
Utah State University
University of Wyoming

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Project Title

A Comprehensive Safety Assessment Methodology for Innovative Geometric Designs

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the FINDINGS

Results demonstrate statistically significant decreases in crashes at most of the locations studied. Other locations resulted in insignificant negative percent safety effectiveness, which could be cause for concern but do not condemn the performance of the DDI at the given location. Injury and fatality crashes observed the greatest decreases after DDI implementation.

the IMPACT

This study is one of the first independent studies in the nation to investigate the overall safety impact of DDIs. The results will be useful in evaluating DDI construction and retrofit projects in Utah as well as other states. The research is expected to have a broad and significant impact on the implementation of innovative interchange and intersection designs.

For more information on this project, download the entire report at http://www.ugpti.org/resources/reports/details.php?id=917

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.