

This topic is “practice ready.”  Yes  No

## Evaluation of Intersection Collision Warning Systems in Minnesota

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### Abstract

Statistics show rural intersections account for 30% of crashes in rural areas and 6% of all fatal crashes. Intersection Conflict Warning System (ICWS) is a unique solution to address rural intersection safety. ICWS are typically installed at both the major and minor approaches of two way stop controlled intersections to reduce the number of fatalities. Studies indicate lower intersection approach speed, reduced conflicts and improved gap selection. However, some sites have experienced increased minor crashes. Though ICWS have shown positive effects, their overall effectiveness has not been well established.

The main objective of this study was to evaluate the driving behavior at stop controlled approaches before the installation of the system to immediately after and a year after the installation of system. A total of ten sites were selected for the study with 5 treatment and corresponding control sites. Video were collected from all the sites in three different time frames (before, one month and a year after the installation of system at the treatment sites). Driver characteristics were coded from the video. To evaluate the driving behavior at stop controlled approaches, stopping behavior, gap size, glances, and number of conflicts were selected as the measure of effectiveness which were compared across three different time frames. Results, in general, shows no negative behaviors for either treatment or control intersections. Stopping behavior appeared to improve marginally overall. The most significant impact was the improvement in stopping behavior when the system was active. Drivers were almost one and half times more likely to come to a complete stop when the system was active compared to when the system was not active. Selection of gap size increased after installation of the system suggesting drivers were more likely to select more appropriate gaps. Finally, drivers in general increased the number of times they scanned the intersection.

**Keywords:** Accepted gap; stopping behavior; conflicts; glances.