Intelligent warning systems may make 'dilemma zone' safer

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Most drivers have experienced a traffic signal that turns yellow just as they approach an intersection, which makes it difficult for them to decide whether to stop or proceed through it. The wrong choice in this critical situation, known as the "dilemma zone," may lead to crashes, especially at high-speed intersections. A new study published in *Human Factors* examines how intelligent warning systems help drivers negotiate the dilemma zone and encourage safer driving behavior.

"Intelligent systems could improve driver safety by potentially reducing crashes at signalized intersections," said Leo Gugerty, a coauthor of "Effects of Intelligent Advanced Warnings on Drivers Negotiating the Dilemma Zone" and professor of psychology at Clemson University. "Statistics from the Federal Highway Administration show that signalized intersections are dangerous places, and our study provides some evidence that intelligent dilemma zone warnings help drivers behave more safely when approaching them."

Researchers Leo Gugerty, Scott McIntyre, Drew Link, Karl Zimmerman, Devendra Tolani, Peter Huang, and Robert Pokorny designed two driving simulator studies to compare the effectiveness of six types of roadway or in-vehicle warning systems. Participants were asked to navigate through dilemma zone traffic lights while their driving responses were measured based on the presence or absence of warning signals.

"Sometimes drivers respond to safety measures in ways that undo safety

benefits, such as driving faster when using antilock brakes," said Gugerty. "However, the drivers in our simulator studies responded to the dilemma zone warning signals by driving more safely."

Results indicated that both roadway and in-vehicle warnings led to more stopping and milder decelerations at dilemma zone intersections. When given advanced warning, the participants rarely exhibited unsafe driving behavior, such as accelerating to beat the light. In time, implementation of such systems could lead to fewer traffic-related injuries and fatalities.

More information: "Human Factors and Ergonomics: People-Friendly Design Through Science and Engineering" Plan to attend the HFES 2014 International Annual Meeting, October 27-31, Hyatt Regency Chicago.

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