

NEWS RELEASE

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Note to Journalists: The research paper is available from Emil Venere, (765) 494-4709, venere@purdue.edu

Study: Higher interstate speed limit proves safe for Indiana

WEST LAFAYETTE, Ind. - Researchers at Purdue University have determined that raising the speed limit from 65 to 70 on Interstate 65 in Indiana has not increased the probability of fatalities or severe injuries.

"These findings are important because the influence of speed limits on roadway safety has been a subject of continuous debate in the state of Indiana and nationwide," said Fred Mannering, a professor of civil engineering. "Indiana highway-related accidents result in about 900 fatalities and 40,000 injuries annually and place an incredible social and economic burden on the state."

The findings add new fuel to an ongoing debate, with some studies indicating that the benefits of raising the speed limit outweigh potential safety hazards while others suggest just the opposite.

"The safety of raising the speed limit has been a matter of considerable concern in Indiana since the state raised its speed limits on rural interstates and selected multilane highways on July 1, 2005," Mannering said. "Everybody expects that when you increase the speed limit, injuries and the severity of injuries are going to increase, but that hasn't happened on the interstate highway system in Indiana."

Findings are detailed in a research paper presented earlier this year at a meeting of the Transportation Research Board of the National Academies of science and engineering. The paper, appearing in an upcoming issue of the Transportation Research Record, was written by Mannering and research assistant Nataliya V. Malyshkina.

The researchers used a series of mathematical equations in "multinomial logit models" to calculate accident probabilities based on motor vehicle accident data from 2004 and 2006, before and after the speed limit increased. The models showed that the increased speed limit did not affect the probability of suffering a severe injury in an accident.

Understanding the magnitude of the safety impact of increasing speed limits, or whether safety is improved or compromised, remains a contentious subject, Mannering said.

That's because research has not been able to convincingly unravel the effects of speed limit changes from factors such as speed enforcement; vehicle miles traveled; vehicle occupancy; seat belt

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usage; alcohol use; proportions of passenger cars, minivans, pickup trucks and sport utility vehicles; and vehicle safety features, including air bags and antilock brakes.

The models used in the research calculate "estimated probabilities" based on accident data. Of the 204,382 accidents on state highways in 2004, 21 percent resulted in injuries and about 0.4 percent were fatal. The same percentages were seen in the 182,922 accidents in 2006. Comparing only highways where the speed limit rose to 70 showed virtually no change from 2004 to 2006.

The speed-limit increase made Indiana the 30th state to raise interstate speed limits up to 70 mph on rural interstates.

Findings by other researchers suggest even higher speed limits on interstate highways might also result in no rise in the probability of severe injuries.

"If going from 65 to 70 doesn't have a significant effect on the severity of accidents, you have to ask yourself, what about 70 to 75?" Mannering said. "At what point does it begin to impact safety?"

The change has highlighted the tradeoff between speed and safety, a debate that began more than three decades ago since passage of the Emergency Highway Energy Conservation Act in 1974, which mandated a 55 mph national maximum speed limit on interstate highways in the United States, Mannering said.

State and federal speed-limit policy changes have been driven by various research findings and subsequent legislation, including the National Highway System Designation Act of 1995, which gave states freedom to set interstate speed limits.

Most research efforts have concluded that the 1974-mandated 55 mph interstate speed limit saved lives, a conclusion that has been confirmed by some studies looking at recent speed limit increases on interstates.

"For example, one study found that a speed limit increase from 55 to 65 resulted in roughly a 3 percent increase in the accident rate and a 24 percent increase in the probability of a fatality once an accident occurred," Mannering said. "But then other studies have contended that legislation-enabled speed-limit increases have actually saved lives. One study argued that increasing from 55 to 65 saved lives because of shifts in law enforcement resources, the ability of higher speed limit interstates to attract riskier drivers away from inherently more dangerous non-interstate highways and reducing how often drivers speed up and slow down."

The state also increased the speed limit from 55 to 60 on non-interstate multilane roads, but findings were inconclusive regarding the impact on those roadways, Mannering said.

However, the researchers cautioned that future speed limit increases should be carefully assessed for those roads on a case-by-case basis. The potential for accidents is higher on such roadways because of factors including stop-and-go traffic and vehicles entering the road from various businesses and residential areas.

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Related Web sites:

Fred Mannering: https://engineering.purdue.edu/CE/People/view_person?group_id=1920&resource_id=2089

ABSTRACT

Analysis of the Effect of Speed Limit Increases on Accident-Injury Severities

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The influence of speed limits on roadway safety has been a subject of continuous debate in the State of Indiana and nationwide. In Indiana, highway-related accidents result in about 900 fatalities and 40,000 injuries annually and place an incredible social and economic burden on the state. Still, speed limits posted on highways and other roads are routinely exceeded as individual drivers try to balance safety, mobility (speed), and the risks and penalties associated with law enforcement efforts. The speed-limit/safety issue has been a matter of considerable concern in Indiana since the state raised its speed limits on rural interstates and selected multilane highways on July 1, 2005. In this paper, the influence of the posted speed limit on the severity of vehicle accidents is studied using Indiana accident data from 2004 (the year before speed limits were raised) and 2006 (the year after speed limits were raised on rural interstates and some multilane non-interstate routes). Statistical models of the injury severity of different types of accidents on various roadway classes were estimated. The results of the model estimations showed that, for the speed limit ranges currently used, speed limits did not have a statistically significant effect on the severity of accidents on interstate highways. However, for some non-interstate highways, higher speed limits were found to be associated with higher accident severities - suggesting that future speed limit changes, on non-interstate highways in particular, need to be carefully assessed on a case-by-case basis.