

Research Spotlight

Project Information

REPORT NAME: Evaluating the Impacts of Speed Limit Policy Alternatives

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Evaluating the impacts of proposed speed limit increases in Michigan

Recent proposed speed limit legislation led MDOT to evaluate the state's current speed limit policies and potential alternatives. Currently, Michigan freeways have a maximum speed limit of 70 mph for passenger vehicles and 60 mph for trucks and buses. Michigan's truck speed limits are 5 to 10 mph lower than those in surrounding states.

Problem

In March 2014, the Michigan Legislature introduced Senate Bill 896, which proposed a broad range of speed limit increases. For rural freeways, the bill proposed a differential speed limit of 80 mph for passenger vehicles and 70 mph for trucks and buses. For select urban freeways, including those that are currently posted at a uniform speed of 55 mph for all vehicles, the bill proposed a uniform 70 mph limit.

This project's objective was to evaluate the impacts the proposed speed limit increases would have on traffic safety and operations, as well as estimate their economic impacts.

Research

The researchers conducted an extensive analysis of traffic crash and vehicle speed data to estimate how speed limit increases might affect crashes and vehicle speeds. Cost-benefit analyses were conducted to further assess the impacts of changing Michigan's speed limits. For rural freeways,



Michigan's maximum truck speed limit of 60 mph on freeways is 5 to 10 mph lower than neighboring states' limits for trucks.

the current speed limit policy (70 mph for passenger cars/60 mph for trucks and buses) was compared to a uniform speed limit of 70 mph for all vehicles, as well as differential speed limits of 70 mph/65 mph, 75 mph/70 mph and 80 mph/70 mph for

“We want to be able to address questions related to the proposed speed limit legislation. Because of this research, we know the expected safety impacts and the costs of making geometric improvements.”

Jason Firman, P.E.

Project Manager

passenger vehicles and trucks, respectively.

The impacts of raising the speed limits on select urban freeways from 55 to 70 mph also were considered, as well as the scenario of raising non-freeway speed limits from 55 to 65 mph.

These analyses involved estimations of the impacts of speed limit changes on four primary factors:

- **Travel times**, based on observations of actual travel speeds during free-flow conditions on freeways with varying speed limits in Michigan, Ohio and Indiana.
- **Fuel consumption**, based on estimates of fuel economy at various operating speeds for passenger vehicles and trucks.
- **Infrastructure changes** needed to accommodate higher speed limits. Statewide estimates were extrapolated based on case studies of several Michigan highway segments.
- **Fatal crashes**, which researchers related to speed limit policies based on analyses of national and state fatality data.

Results

The benefit/cost analysis indicated that none of the proposed speed limit policy scenarios would be more economically favorable than the current policy. The

most favorable scenarios (which are still economically undesirable) include cases where only the freeway truck speed limit is increased, either from 60 to 65 mph or from 60 to 70 mph, while preserving the 70 mph maximum speed limit. These would not require expensive infrastructure upgrades aside from posting new speed limit signs, and the expected impacts on fatal crashes would be minimal. However, the benefit/cost ratio for these scenarios remains less than 1.0, largely because the increased fuel consumption costs associated with higher operating speeds would be expected to outweigh the resulting travel time savings.

The researchers concluded that any proposed speed limit policy scenario that would increase Michigan’s maximum speed limits would involve expensive roadway geometric modifications such as curve realignment. These geometric modifications would often be required during roadway reconstruction to comply with MDOT’s policy on roadway design speed, which requires that roads be designed for traffic traveling 5 mph above the posted speed limit. Consequently, systemwide increases in the posted speed limit beyond the current maximum levels would result in geometric upgrade costs that would greatly outweigh any net user benefits, resulting in benefit/cost ratios well below 1.0. This is especially true for urban freeways and non-freeways currently posted at 55 mph where geometric modification costs are expected to be especially high, resulting in costs that would outweigh benefits by approximately 4 to 1.

Value

The proposed speed limit bill is likely to initiate public debate and discussion. This research provides answers to the anticipated questions about the safety and economic impacts of the proposed changes.

In recent years, many states have implemented selective speed limits on

specific routes, rather than blanket speed limits statewide. The investigators suggested that this may be an appropriate approach with a better balance of benefits and costs for Michigan, particularly on road segments that would not require significant infrastructure improvements to accommodate higher travel speeds. As with statewide scenarios, the potential safety impacts of any route-specific speed limit increases would need to be carefully considered.

Research Administration

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