



**The Ohio Department of Transportation
Office of Research & Development
Executive Summary Report**

Crash Reduction Factors for Education and Enforcement

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Problem

ODOT has a goal of reducing total crashes by 10% by 2015. According to Ohio Department of Public Safety about 80% of the 358,127 crashes in Ohio during 2005 were caused by driver error, it is logical to put the emphasis in the crash reduction on the driver. Teenagers are involved in three times as many fatal crashes as are all drivers while drivers older than 60 years have the highest rate of car crash deaths per mile driven. Inexperience, risk taking behavior, immaturity, and more exposure to risk are the main reasons for the higher involvement of teenagers in crashes. Age-related health conditions such as decreasing vision and increasing reaction time are the main causes of the higher involvement of older drivers in crashes. Road rage and aggressive driving are other important causes of crashes. Driver education and training programs need to be tailored towards the needs of drivers from all age groups. This means applying new techniques in driver education, both initial and continuing, and better enforcement of traffic laws. In order to determine which strategies are likely to provide the best results, ODOT needs to have some quantitative estimate of the effectiveness of each strategy in terms of the amount of reduction it provides, in other words a crash reduction factor.

Objectives

- Perform a comprehensive literature search using the information obtained from the web, government agencies and library.
- Research education and enforcement strategies used by authorities in other states and countries through literature searches and surveys.
- Determine the effect these measures have on reducing crashes and from the data determine crash reduction factors for each education, licensing, testing and enforcement strategy.

- Conduct interviews and meetings with traffic safety experts to get the latest information on driver education, driver licensing and law enforcement.
- Conduct an electronic e-mail survey of all the states to get information on the state of the art practices used in traffic safety in the respective states.
- Analyze all the information obtained to obtain crash reduction factors for driver education, driver licensing and enforcement activities.
- Determine crash reduction factors for different crash reduction measures to enable comparison of their effectiveness.

Description

A comprehensive literature and web search was conducted to determine driver education, licensing, testing, and enforcement practices and their associated crash reduction factors used by other states and countries. An electronic survey of officials in all states and Canadian provinces was conducted to get additional information.

Conclusions

Based on the analysis of all the information obtained, a limited number of quantitative crash reduction factors for any driver education, licensing, testing, and enforcement measures were found in the US. Published studies where the effects on reducing crashes for new measures based on statistical evaluations using proper control groups appear to be almost non-existent in the US, though some less rigorous estimates of CRFs exist in some cases. Crash reduction factors for driver education, licensing, and enforcement based on the estimates by traffic safety experts of the Swiss Council for Accident Prevention (BFU) were found in the Swiss VESIPO report; benefit/cost ratios for some of these measures were also obtained. It has to be noted that even the Swiss crash reduction factors are partial estimates and are not truly validated with before and after studies except for one measure, the reduction of maximum allowable blood alcohol concentration (BAC) from 0.08% to 0.05% accompanied with extensive advertising and strict enforcement.

Recommendations

Based on the analysis of the literature and estimated CRFs for selected driver education, licensing, testing, and enforcement measures recommendations are proposed. Adoption of any of these measures should include a carefully

planned evaluation based on the crash data with properly selected control groups. Resources should be shifted to the most effective measures listed in FFY 2006 Ohio traffic safety plan. The range for the best estimates for CRFs reported in the literature for selected driver education, driver licensing, testing, and enforcement measures are summarized in the conclusion section of the report. The ranges for CRFs for driver education, licensing, and enforcement measures are less than 1%-32%, 0%-17% and 2%-51% respectively.

Implementation Potential

Based on the literature reviewed and the CRFs found for some of the measures an implementation plan is provided. To help ODOT attain its goal to reduce crashes by 10% by 2015, the following implementation plan can be adopted:

1. To improve the driver education and licensing system for the state of Ohio, the recommendations proposed can be implemented within the next two to three years to achieve the optimal ratings according to the Insurance Institute of Highway Safety which are based on a national review of the state practices.
2. The measures which had high CRFs based on the literature review: motorcycle helmet laws, integrated enforcement, automatic speed enforcement, sobriety and drug testing checkpoints, responsible beverage service programs and enforcement of administrative license suspension and revocation laws can be implemented in the next two to five years in conjunction with other measures investigated in other countries after they are evaluated in terms of cost-benefits and legislative changes.
3. All the driver education, licensing and traffic enforcement considerations and measures from the National Highway Traffic Safety Administration report and from the other countries which had somewhat lower CRFs can be implemented within two to seven years after they are evaluated in terms of cost-benefits and legislative changes to achieve crash reductions.

It should be noted that many of the measures recommended may need legislative changes before they can be implemented which will take some time. All measures proposed for education, licensing and enforcement can be implemented together to achieve maximum crash reductions.