How Effective are Roadside Inspections and Traffic Enforcements?

Analysis Division

September 2004

How Effective are Roadside Inspections and Traffic Enforcements?

Roadside inspection and traffic enforcement are two of the Federal Motor Carrier Safety Administration's (FMCSA) key safety programs. The roadside inspection program consists of roadside inspections performed by qualified safety inspectors following the guidelines of the North American Standard, which were developed by FMCSA and the Commercial Vehicle Safety Alliance (CVSA). Most roadside inspections are conducted by the States under a grant program (MCSAP) administered by FMCSA. There are five levels of inspections that include a vehicle component, a driver component, or both. The traffic enforcement program is based on the enforcement of 21 moving violations noted in conjunction with a roadside inspection. Violations are included in the driver violation portion of the roadside inspection checklist.

FMCSA, in cooperation with the Volpe National Transportation Systems Center, has developed an analytic model to measure the effectiveness of roadside inspections and traffic enforcements in terms of crashes avoided, injuries avoided, and lives saved. This tool will provide FMCSA management with information to address the requirements of the Government Performance and Results Act of 1993 (GPRA), which obligates Federal agencies to measure the effectiveness of their programs as part of the budget cycle process. It will also provide FMCSA and State safety program managers with a quantitative basis for optimizing the allocation of safety resources in the field. This analytic tool is known as the Intervention Model.

The Intervention Model is based on the premise that the two programs—roadside inspection and traffic enforcement—directly and indirectly contribute to the reduction of crashes. The model includes two submodels that are used for measuring these different effects:

- Direct effects are based on the assumption that vehicle and/or driver defects discovered and then corrected as the result of interventions reduce the probability that these vehicles/drivers will be involved in subsequent crashes. The model calculates direct-effect-prevented crashes according to the number and type of violations detected and corrected during an intervention.
- Indirect effects are the by-products of the carriers' increased awareness of FMCSA programs and the potential consequences that the programs could impose if steps are not taken to ensure and/or maintain higher levels of safety. In order to measure indirect effects, which are essentially changes in behavior involving driver preparation and practices and vehicle maintenance, the model calculates responses to exposure to the programs and the resulting reduction in potentially crash-causing violations.

How Can FMCSA Use the Model?

By using motor carrier categories, or classes, such as those developed in the Analysis Division's Motor Carrier Industry Profile research, the Analysis Division can assist FMCSA managers in using the model to study program effectiveness among carrier classes. Differences in fleet size, SafeStat score, etc., may contribute to differences in direct-effect and indirect-effect program impacts. A better understanding of carrier classes and how they react to interventions will aid in the application and development of the roadside inspection and traffic enforcement programs.

As a corollary to the investigation of carrier types, alternative forms of treatment to reduce crashes should be sought. If patterns were discovered in particular strata of carriers, then the proposed alternative treatments and implementation of effective means of addressing those groups would become critical in the effort to increase the number of lives saved and injuries avoided as a result of FMCSA intervention programs.

Program Exposure 2001 - 2003

	2001	2002	2003
Roadside Inspections with No Violations	758,297	849,422	828,195
Roadside Inspections with Violation(s)	1,292,489	1,406,499	1,387,567
Traffic Enforcements with Violation(s)	695,619	762,561	791,157
Total Interventions	**2,746,405**	**3,018,482**	**3,006,919**

Most recently, the model was implemented to measure program effectiveness from 2001 - 2003. The 2001 - 2002 results are based on the March 26, 2004 MCMIS data, while the 2003 results are based on the June 25, 2004 MCMIS data.

Program Effectiveness 2001 - 2003

	2001	2002	2003
Roadside Inspections			
Crashes Avoided	11,294	12,235	12,667
Lives Saved	550	568	534
Injuries Avoided	8,689	9,240	9,647
Traffic Enforcements			
Crashes Avoided	3,844	4,602	4,484
Lives Saved	187	214	189
Injuries Avoided	2,957	3,476	3,415
Roadside Inspections & Traffic Enforcements†			
Crashes Avoided	15,138	16,387	17,151
Lives Saved	738	781	722
Injuries Avoided	11,646	12,716	13,062

†. The totals in this section may not match sums from the previous two sections due to rounding

For questions or comments please contact:

Mr. Dale Sienicki
FMCSA Analysis Division
Phone: 202-366-1861
E-mail: dale.sienicki@fmcsa.dot.gov

A full description of the model methodology and results is available at: http://ai.fmcsa.dot.gov/ProgramMeasures/PM/PM.asp