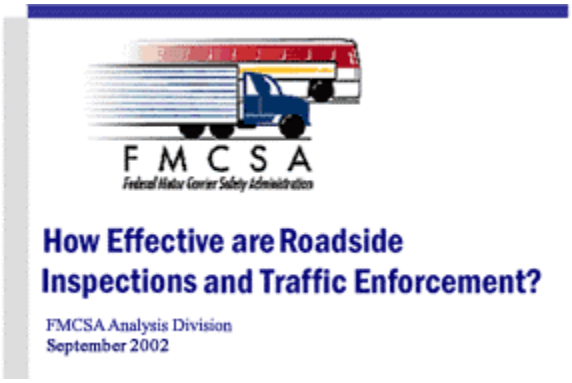

How Effective are Roadside Inspections and Traffic Enforcement?

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 was developed by FMCSA and the Commercial Vehicle Safety Alliance (CVSA). Most roadside inspections by the States are conducted 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 enforcement 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 byproducts 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.

FMCSA implemented the model late last year to calculate program benefits for 1998. Recently, the model was run to track program performance across 1999 and 2000 as well. The results for the three years are as follows:

Program Effectiveness: 1998 - 2000[†]

	1998[‡]	1999	2000
Crashes Avoided	**11,412**	**12,140**	**12,668**
Roadside Inspections	8,612	9,119	9,362
Traffic Enforcements	2,800	3,021	3,306
Injuries Avoided	**7,821**	**8,321**	**8,681**
Roadside Inspections	5,902	6,250	6,416
Traffic Enforcements	1,919	2,071	2,265
Lives Saved	**489**	**521**	**544**
Roadside Inspections	369	391	420
Traffic Enforcements	120	130	142

[†] Mean estimates. Higher and lower bound estimates were based on different risk assumptions, which may be found in *Intervention Model: Roadside Inspection and Traffic Enforcement Effectiveness Assessment*, Sept. 2002.

[‡] Revised from previous report.

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, driver age, length of haul, 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.

Please contact Mr. Dale Sienicki, FMCSA Analysis Division, at 202-366-1861 or dale.sienicki@fmcsa.dot.gov if you have questions or comments. A full description of the model methodology and results may be found at http://ai.volpe.dot.gov/ProgramMeasures/PM/PerfMeas.asp.