THE MOTOR CARRIER SAFETY ASSISTANCE PROGRAM
2010 ANNUAL REPORT TO CONGRESS

A Report Pursuant to Section 31102(e) of Title 49 United States Code
September 2013

The Federal Motor Carrier Safety Administration's (FMCSA) Motor Carrier Safety Assistance Program (MCSAP) provides financial assistance to State and local government agencies to reduce the number and severity of crashes and hazardous material (HM) incidents involving commercial motor vehicles (CMV). Section 31102(e) of Title 49 United States Code (USC) requires the Secretary of the U.S. Department of Transportation (DOT) to submit an annual report on MCSAP that (1) analyzes CMV safety trends among States, (2) documents the most effective CMV safety programs implemented with MCSAP grants, and (3) describes the effects on CMV safety activities carried out with these grants. In addressing these requirements, this report provides an update to the Fiscal Year (FY) 2009 annual report and reflects activities and outcomes in FY 2010.

Overview of MCSAP

In FY 2010, Congress appropriated $212 million for MCSAP. The FMCSA awards grants under Section 31102 of Title 49 USC through two grant programs:

- The **Basic** funding program is the core MCSAP grant program. It distributes funds proportionally to the States and the District of Columbia (States), Puerto Rico, and the U.S. Territories of Guam, American Samoa, the U.S. Virgin Islands, and the Commonwealth of Northern Mariana Islands), using four equally weighted factors: 1997 road miles, vehicle miles traveled (VMT), population, and special fuel consumption. In FY 2010, FMCSA distributed approximately $155.1 million in Basic MCSAP grants.

- The FMCSA provides **Incentive** funds to those States and Puerto Rico that demonstrate improvement in CMV safety programs by achieving reductions in CMV-involved fatal crashes or the CMV fatal crash rate, or that meet other specified CMV safety performance criteria, such as the timely uploading of CMV inspection data to FMCSA data systems. States may use these funds for any MCSAP-eligible safety purpose. The FMCSA provided $10 million in MCSAP Incentive grants in FY 2010.

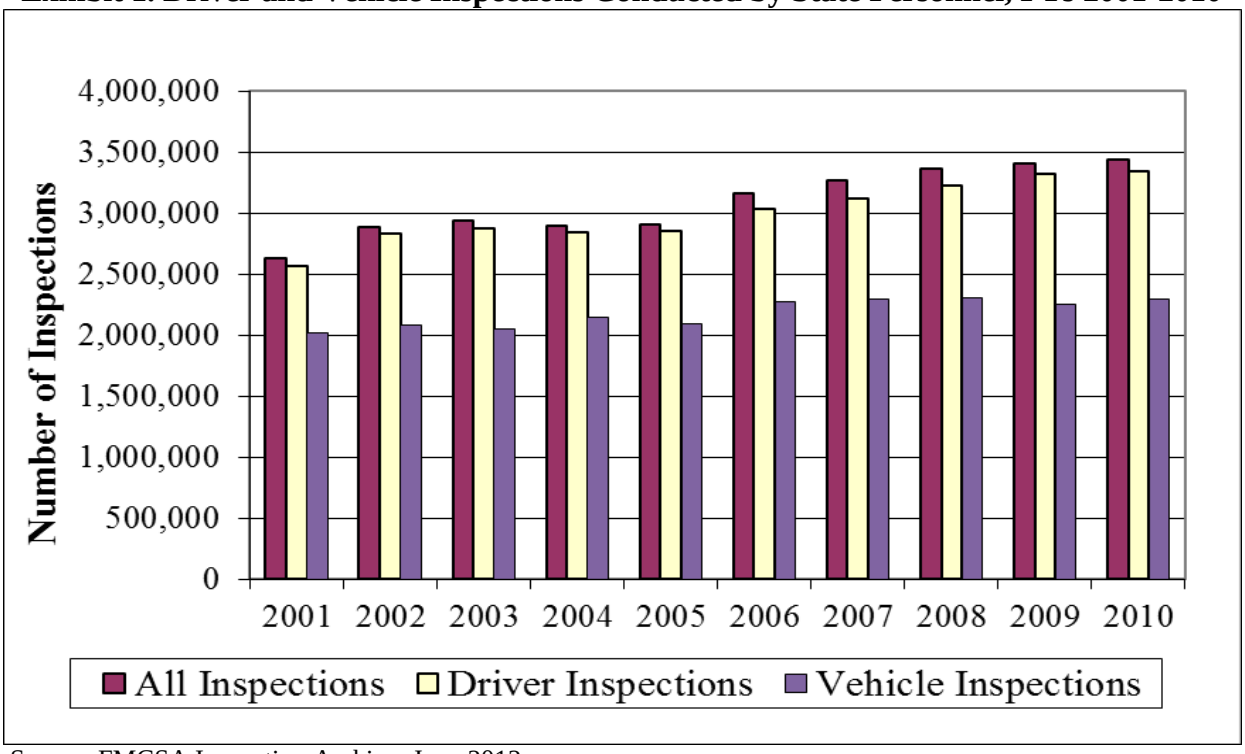
MCSAP Activities and Outcomes

Roadside Inspections

Roadside inspections are one method for determining carrier and driver compliance with Federal and compatible State regulations. As shown in Exhibit 1, from FY 2001 through FY 2010, the number of annual roadside inspections conducted by State personnel increased by 810,985, or 31 percent. Driver inspections increased by approximately 30 percent during this period, while

vehicle inspections increased by 14 percent.[1] In FY 2010, approximately 8 percent of driver inspections and 24 percent of vehicle inspections resulted in out-of-service (OOS) orders, which is consistent with inspection results from FYs 2001-2009. Bus inspections numbered 84,983, an increase of over 100 percent since 2001.

Exhibit 1. Driver and Vehicle Inspections Conducted by State Personnel, FYs 2001-2010



Source: FMCSA Inspection Archive, June 2012.

In FY 1998, FMCSA developed an Intervention Model to measure the effectiveness of roadside inspections and traffic enforcements, in terms of crashes and injuries avoided and lives saved.[2] The Intervention Model is based on the premise that the Roadside Inspection and Traffic Enforcement programs directly and indirectly contribute to the reduction of truck and bus crashes. As a result, the model includes two submodels to measure these different effects. Direct effects are based on the assumption that vehicle and/or driver violations discovered and then corrected as the result of interventions (roadside inspections and traffic enforcements) reduce the probability that these vehicles/drivers will be involved in subsequent crashes. Indirect effects are considered to be the by-products of the carriers' increased awareness of FMCSA programs and the potential consequences that these programs impose, if steps are not taken to ensure and/or maintain high levels of safety. The model assumes that observed deficiencies (i.e., violations) discovered at the time of the intervention can be converted into crash risk probabilities. This assumption is based on the premise that detected violations represent varying degrees of mechanical or judgmental faults, and, further, that some are more likely than others to

[1] The sum of driver and vehicle inspections is greater than that shown for all inspections because Level I and II inspections contain both a driver and a vehicle component.

[2] A description of the Intervention Model is found at http://ai.fmcsa.dot.gov/pe/home.aspx. The methodology was revised in 2008.

play a contributory role in motor carrier crashes. The assumption is that these deficiencies can be noted and ranked into discrete risk categories, each with a probability that quantifies the potential for a crash for all deficiencies in that category.

The Direct Effects submodel evaluates the likelihood of an inspection preventing a crash by using the crash reduction probabilities of each violation cited during the inspection. An inspection with multiple violations will have a greater likelihood of an avoided crash than will an inspection with a single violation, assuming all the violations are in the same risk category. This result reflects the belief that multiple violations compound the safety hazard posed from driver and/or vehicle deficiencies.

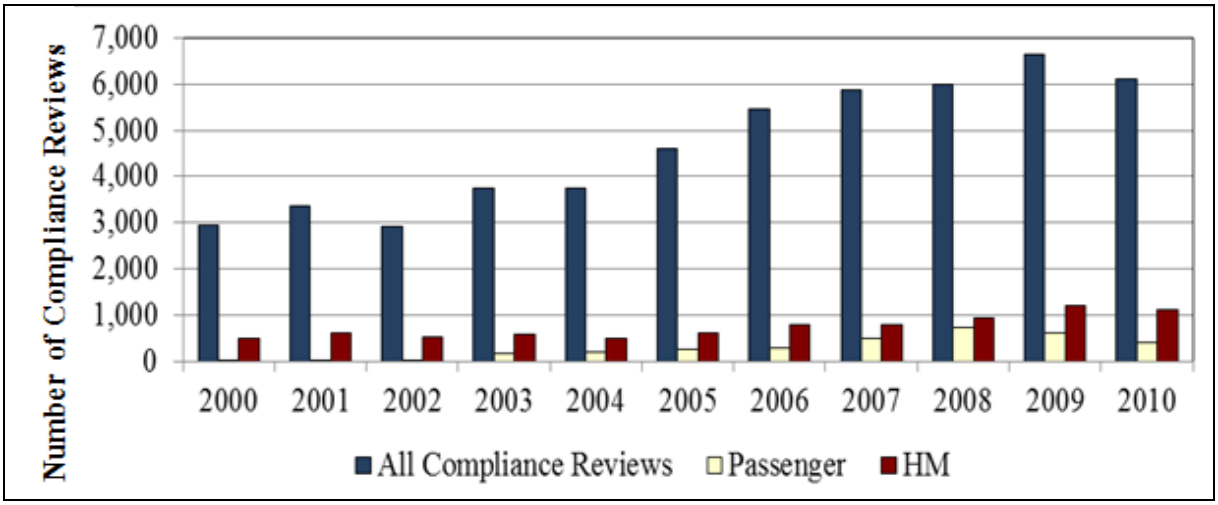
Once the number of crashes avoided for each inspection has been calculated, the next step is to compute the number of lives saved and injuries avoided as a result of those crashes avoided. This is done by first utilizing national historical data to determine the percentage of crashes that result in fatalities and injuries. The average number of fatalities per fatal crash, injuries per fatal crash, and injuries per injury crash are computed using MCMIS data. These averages are then multiplied by the number of fatal crashes avoided and injury crashes avoided, resulting in the number of lives saved and injuries avoided. The Indirect Effects Submodel compares carrier performance in a base year to the year after in order to measure the effects of exposure to interventions in the base year on compliance. The estimate of crashes avoided is based on the number of interventions that record violations, so fewer violations recorded indicate reduced likelihood of a crash. The model uses changes in the number of violations recorded during inspections to identify and evaluate the indirect effects. Estimates of indirect effect crashes avoided are allocated to the program initiating the intervention, either the Roadside Inspection or Traffic Enforcement program.

FMCSA has not yet completed its Intervention Model for FY 2010 data.

Compliance Reviews

State enforcement personnel conduct compliance reviews (CRs) to assess a carrier's level of compliance with the Federal Motor Carrier Safety Regulations and Hazardous Materials Regulations. Through education, heightened safety-regulation awareness, and enforcement, the CR is intended to improve a motor carrier's compliance with Federal and comparable State regulations and ultimately improve its safety performance. The CRs may result in enforcement action against a carrier. As shown in Exhibit 2, the total number of CRs performed by State personnel more than doubled from 2,943 in FY 2000 to 6,118 in FY 2010. The number of CRs conducted for HM carriers increased from 507 in FY 2000 to 1,108 in FY 2010, and for passenger carriers increased from 5 to 419.

Exhibit 2. Compliance Reviews Completed by State Personnel, FYs 2000–2010



Source: MCMIS Snapshot, March 23, 2012.

The CR is the most resource-intensive enforcement tool in FMCSA's compliance and enforcement program. In FY 2002, FMCSA developed the CR Effectiveness Model to measure the crashes and injuries avoided and lives saved. The model is based on the individual and cumulative "before and after" changes in the safety performance of carriers that received CRs in a given year. The model compares a motor carrier's crash rate in the 12 months following an onsite compliance review to its crash rate in the 12 months prior to that review. The model uses crash data reported by the States and power unit data reported by carriers or obtained during CRs to calculate both the before-CR and after-CR crash rates. To eliminate the effects of changes in the average crash rate of the general carrier population and changes in crash reporting and possibly other unknown factors, a control group of carriers was used. Any change in the average crash rate of the control group must be due to factors other than the effects of the CRs. Thus, the change in the average crash rate of the control group is calculated and then subtracted from the change in the average crash rate of the carriers that received CRs in the year in question (i.e., the CR group). The difference resulting from this calculation represents the change in the average crash rate of the carriers that received CRs in the year in question that could be attributed to the CRs. The model estimates the benefits derived from performing CRs on motor carriers in terms of crashes avoided, as well as lives saved and injuries prevented. Minor modifications to the control group were made in FY 2008. FMCSA is currently updating the CR Effectiveness Model to include changes based on the Compliance, Safety, accountability enforcement methodology the Agency implemented in 2010.

State Safety Trends

The MCSAP provides financial assistance to State and local agencies with the goal of reducing the number and severity of CMV-related crashes, fatalities, injuries, and HM incidents through consistent, uniform, and effective safety programs. This investment is working, as evidenced by Exhibit 3. Despite a relatively static period from 2002 to 2006, and an increase in 2010, the overall trend shows a decline in fatalities rate with the total in 2010 30 percent lower than in 2000. The fatality rate, expressed as the number of fatalities per 100 million VMT, has consistently declined since FY 2005. Between FYs 2000 and 2010, the rate decreased from 2.57 to 1.28.

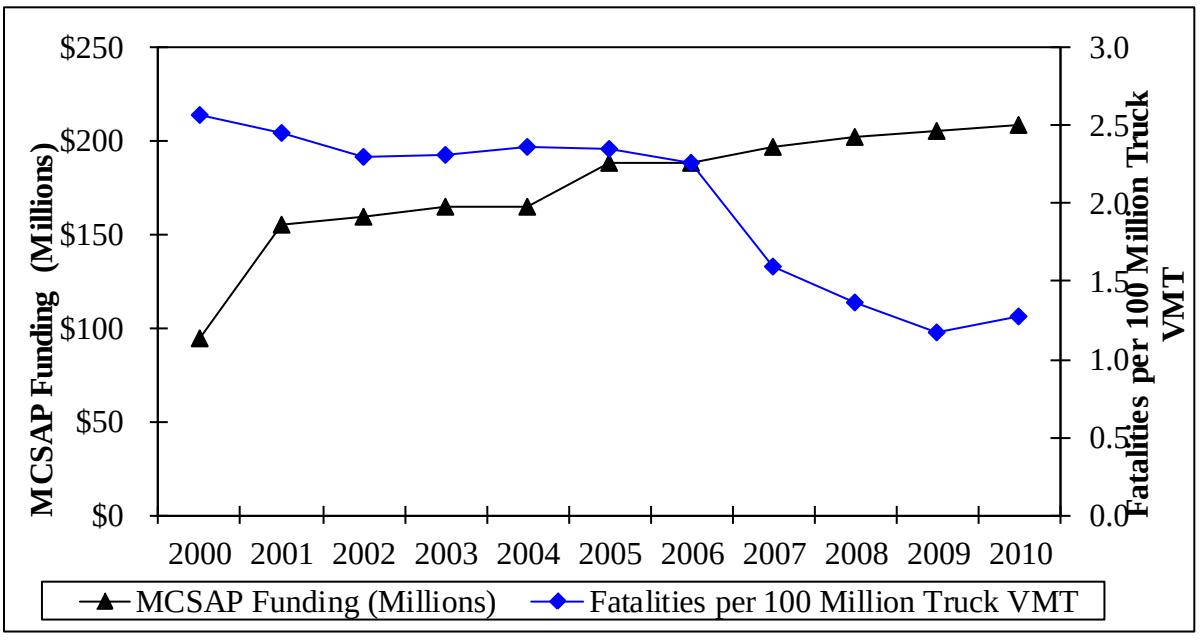
Exhibit 3. Large-Truck Fatal Crash Statistics, FY 2000–2010[3]

Year	Fatal Crashes	Fatalities	Total VMT(Millions)	Fatalities per 100 Million Truck VMT
2000	4,573	5,282	205,520	2.57
2001	4,451	5,111	209,032	2.45
2002	4,224	4,939	214,603	2.30
2003	4,335	5,036	217,917	2.31
2004	4,478	5,235	220,811	2.37
2005	4,551	5,240	222,523	2.35
2006	4,350	5,027	222,513	2.26
2007	4,204	4,822	304,178	1.59
2008	3,754	4,245	310,680	1.37
2009	2,987	3,380	288,005	1.17
2010	3,261	3,675	286,585	1.28

Sources: *VMT and Registered Vehicles*: Federal Highway Administration (FHWA). *Fatal Crashes, Vehicles Involved, and Fatalities*: National Highway Traffic Safety Administration (NHTSA), Fatality Analysis Reporting System (FARS).

Exhibit 4 suggests that this overall reduction in large-truck fatal crash rates is associated with the increase in MCSAP funding since FY 2000, notably since FY 2005.

Exhibit 4. Large-Truck Fatalities in Association with MCSAP Funding, FYs 2000–2010



Sources: *VMT*: FHWA. *Fatal Crashes, Vehicles Involved, and Fatalities*: NHTSA, FARS. *MCSAP Funding:* FMCSA.

[3] The FHWA implemented an enhanced methodology for estimating registered vehicles and VMT by vehicle type for the years 2007-2009. As a result, involvement rates may differ, and in some cases significantly, from previously published rates. For more information, see http://www.fhwa.dot.gov/policyinformation/statistics/2009/vm1.cfm and http://www.fhwa.dot.gov/pressroom/fhwa1155.htm

Safety Trends for Individual States

Exhibit 5 shows the trends in fatalities resulting from large-truck-related crashes in each State. Forty-one States had fewer large-truck-related fatalities between CY 2000 and CY 2010; 39 had fewer fatalities between CY 2005 and CY 2010.

Exhibit 5. Fatalities in Crashes Involving Large Trucks, by State (CYs 2000, 2005, 2010)

State	Fatalities			Percent Change From	
	2000	2005	2010	2000-2010	2005-2010
Alabama	159	122	114	-28%	-7%
Alaska	4	5	7	75%	40%
Arizona	105	118	64	-39%	-46%
Arkansas	118	115	83	-30%	-28%
California	374	429	235	-37%	-45%
Colorado	68	68	49	-28%	-28%
Connecticut	34	21	23	-32%	10%
Delaware	20	7	9	-55%	29%
District of Columbia	2	3	3	50%	0%
Florida	310	400	181	-42%	-55%
Georgia	219	229	152	-31%	-34%
Hawaii	2	9	4	100%	-56%
Idaho	26	34	15	-42%	-56%
Illinois	173	191	112	-35%	-41%
Indiana	163	138	112	-31%	-19%
Iowa	90	73	88	-2%	21%
Kansas	81	80	86	6%	8%
Kentucky	101	124	100	-1%	-19%
Louisiana	126	122	107	-15%	-12%
Maine	30	19	14	-53%	-26%
Maryland	63	60	43	-32%	-28%
Massachusetts	51	24	16	-69%	-33%
Michigan	156	111	85	-46%	-23%
Minnesota	89	70	90	1%	29%
Mississippi	123	91	56	-54%	-38%
Missouri	183	166	84	-54%	-49%
Montana	26	23	14	-46%	-39%
Nebraska	56	48	55	-2%	15%
Nevada	37	53	15	-59%	-72%
New Hampshire	10	11	5	-50%	-55%

State	Fatalities			Percent Change From	
	2000	2005	2010	2000-2010	2005-2010
Nebraska	56	48	55	-2%	15%
Nevada	37	53	15	-59%	-72%
New Hampshire	10	11	5	-50%	-55%
New Jersey	94	98	51	-46%	-48%
New Mexico	52	63	46	-12%	-27%
New York	157	145	120	-24%	-17%
North Carolina	191	204	117	-39%	-43%
North Dakota	10	17	18	80%	6%
Ohio	189	177	132	-30%	-25%
Oklahoma	112	121	91	-19%	-25%
Oregon	52	66	46	-12%	-30%
Pennsylvania	184	183	164	-11%	-10%
Rhode Island	1	1	2	100%	100%
South Carolina	133	124	65	-51%	-48%
South Dakota	22	13	25	14%	92%
Tennessee	163	163	92	-44%	-44%
Texas	513	506	400	-22%	-21%
Utah	39	32	35	-10%	9%
Vermont	9	9	10	11%	11%
Virginia	115	112	77	-33%	-31%
Washington	72	69	30	-58%	-57%
West Virginia	57	55	50	-12%	-9%
Wisconsin	97	87	56	-42%	-36%
Wyoming	21	31	27	29%	-13%
U.S. Total	5282	5240	3675	-30%	-30%

Source: NHTSA, FARS. FMCSA, Analysis Division.

Conclusion

The activities supported by MCSAP grant funds are saving lives and reducing injuries by preventing and minimizing the severity of large truck and bus crashes through consistent, uniform, and effective safety programs among FMCSA's State, local, and non-profit partners. Roadside inspections and traffic enforcements conducted in FY 2009 avoided an estimated 16,938 crashes, 10,821 injuries, and 573 fatalities. Moreover, CRs conducted in FY 2008

resulted in an estimated 2,886 fewer crashes, 1,853 fewer injuries, and 101 saved lives.[4] Finally, the continuing reduction in large-truck fatal crash rates, particularly since 2004, suggests a relationship with the increase in MCSAP funding in recent years. The FMCSA anticipates that the data, when the analysis is complete, will reflect similar results for FY 2010.

[4] FY 2010 results from the Compliance Review Effectiveness Model not available at time of print.