THE MOTOR CARRIER SAFETY ASSISTANCE PROGRAM
2011 ANNUAL REPORT TO CONGRESS

A Report Pursuant to Section 31102(e) of Title 49 United States Code
November 2014

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 (U.S.C.) requires the Secretary of the U.S. Department of Transportation to submit an annual report on the 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) 2010 annual report and reflects activities and outcomes in FY 2011.

Overview of MCSAP Funding

In FY 2011, Congress appropriated $168.8 million for MCSAP funding. The FMCSA awarded these funds per Section 31102 of Title 49 U.S.C. 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, using four equally weighted factors: 1997 road miles, vehicle miles traveled (VMT), population, and special fuel consumption. The U.S. Territories of Guam, American Samoa, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands each receive $350,000 in annual MCSAP funds. In FY 2011, FMCSA distributed approximately $158.8 million in MCSAP Basic grants.

- The FMCSA provides **Incentive** funds to those States that demonstrate improvement in CMV safety programs by achieving reductions in CMV-involved fatal crashes, 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 distributed $10 million in MCSAP Incentive grants in FY 2011.

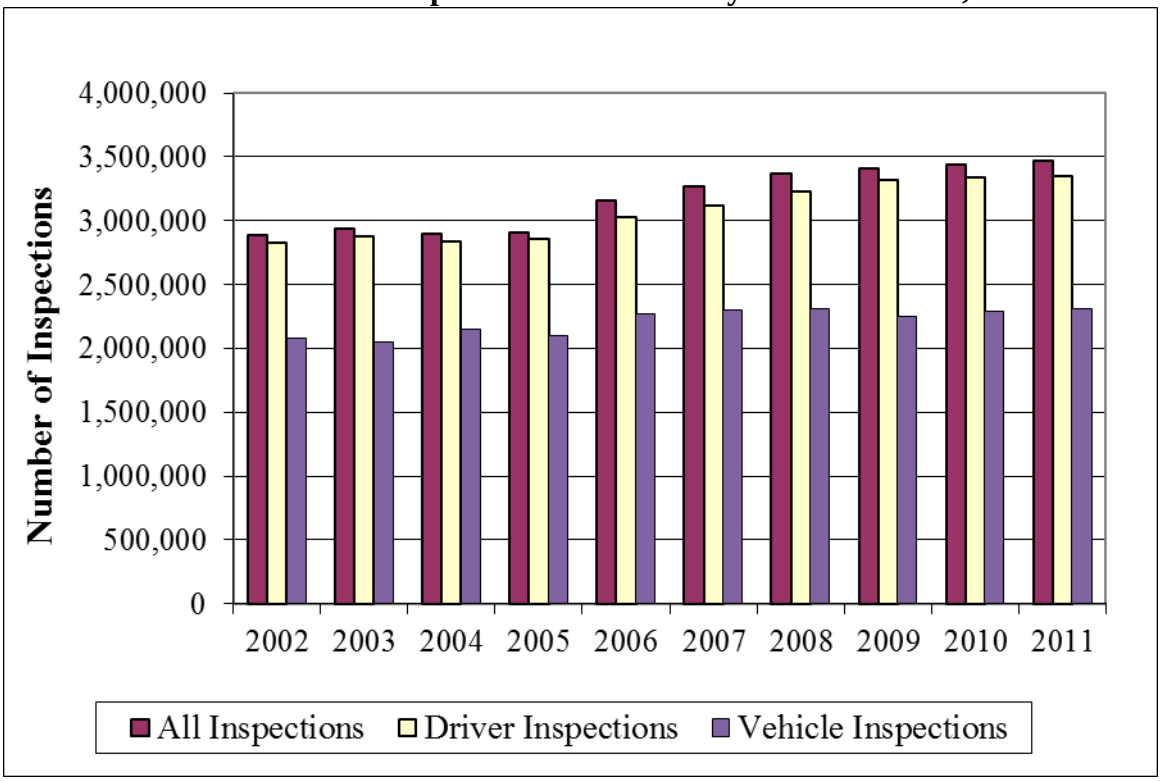
Congress also appropriated an additional $37 million in grant funds through the MCSAP High Priority and Border Enforcement grant programs. Both of these discretionary programs support CMV inspections, traffic enforcement targeted at CMVs, and motor carrier interventions. The data provided in this report is inclusive of the activities funded by all four grant programs.

MCSAP Activities and Outcomes

Roadside Inspections and Traffic Enforcement

Roadside inspections and traffic enforcements are two effective methods for determining carrier and driver compliance with Federal and compatible State regulations. As shown in Exhibit 1, from FY 2002 through FY 2011, the number of annual roadside inspections conducted by State personnel increased by almost 600,000. Driver inspections increased by approximately 19 percent during this period and vehicle inspections increased by 11 percent.[1] In FY 2011, approximately 5 percent of driver inspections and 20 percent of vehicle inspections resulted in Out-of-Service Orders, which is consistent with inspection results since FY 2002. Commercial passenger vehicle (e.g., motorcoaches and for-hire shuttles) inspections numbered 103,604, an increase of 136 percent from FY 2002.

Exhibit 1. Driver and Vehicle Inspections Conducted by State Personnel, FYs 2002-2011



Source: FMCSA Inspection Archive, June 2012.

In FY 1998, FMCSA developed an Intervention Model to measure the effectiveness of roadside inspections and traffic enforcement 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. 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

[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 full description of the Intervention Model is found at: http://ai.fmcsa.dot.gov/pe/home.aspx.

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 estimates of the programs' benefits are based on the assumption that vehicle and/or driver violations discovered are then corrected as the result of interventions (roadside inspections and traffic enforcements) and reduce the probability that these vehicles and/or drivers will be involved in subsequent crashes. The model converts observed deficiencies (i.e., violations) discovered at the time of the intervention into crash risk probabilities based on varying degrees of mechanical or judgmental faults and the extent to which these contribute to motor carrier crashes.

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. By summing up the crash risk probabilities for all violations corrected as a result of all inspections, the model estimates the number of crashes avoided.

Once FMCSA calculates the number of crashes avoided for each inspection, it can estimate the number of lives saved and injuries avoided as a result of those crashes avoided. By first utilizing historical data, FMCSA determines 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 non-fatal crashes are computed using Motor Carrier Management Information System (MCMIS) data. These averages are then multiplied by the number of fatal and injury crashes avoided, resulting in the estimated 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.

Exhibit 2 shows that MCSAP-supported enforcement actions contributed to preventing an estimated 14,760 crashes and 9,183 injuries, and saved an estimated 466 lives in FY 2011. Some of the safety benefits derived declined from previous years because of fewer traffic enforcement inspections. Traffic enforcement inspections are those initiated because of an observed traffic violation and resulting traffic violations are included on the inspection report. In recent years, FMCSA has required the State and local law enforcement agencies to increase their emphasis on conducting traffic enforcement, as a tool to deter driver-specific crash causation behaviors without necessarily conducting an accompanying inspection. Additionally, the two largest traffic enforcement violation categories, moving violations and miscellaneous violations, declined from

FY 2010 levels by 9 and 11 percent, respectively.[3] This decline may be due to increased driver safety awareness because of the greater emphasis placed on traffic enforcement and greater industry awareness of safety issues due to FMCSA's implementation of the Compliance, Safety, Accountability (CSA) program.

Exhibit 2. Effectiveness of Roadside Inspection and Traffic Enforcement Programs, FY 2011

Intervention Benefits	FY 2011
Roadside Inspections	3,015,066
Traffic Enforcement Inspections	580,273
Total Inspections	***3,595,339***
Crashes Avoided due to Roadside Inspections	8,295
Crashes Avoided due to Traffic Enforcement Inspections	6,465
Total Estimated Crashes Avoided	***14,760***
Injuries Avoided due to Roadside Inspections	5,161
Injuries Avoided due to Traffic Enforcement Inspections	4,022
Total Estimated Injuries Avoided	***9,183***
Lives Saved due to Roadside Inspections	262
Lives Saved due to Traffic Enforcement Inspections	204
Total Estimated Lives Saved	***466***

Source: FMCSA Intervention Model.

Compliance, Safety, Accountability Interventions

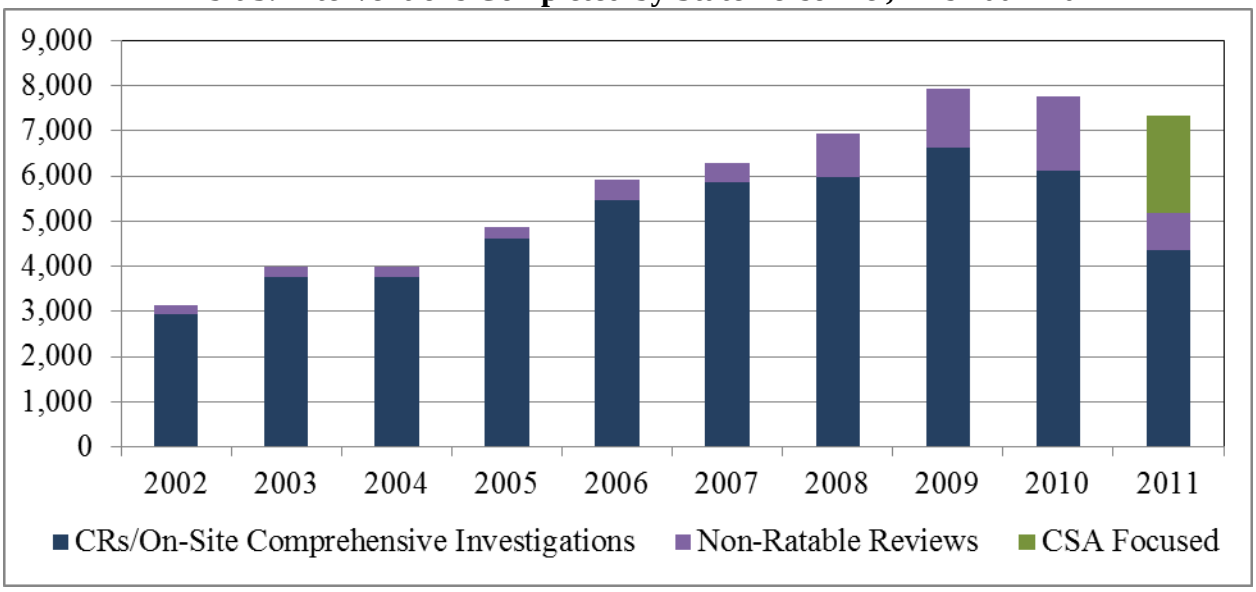
In FY 2011, States began operating under the CSA enforcement methodology, which FMCSA implemented in December 2010. States transitioned from conducting compliance reviews (CR) to using CSA's broader range of interventions such as warning letters and focused and comprehensive investigations. The CSA comprehensive investigation most resembles the legacy CR.

Exhibit 3 shows that the number of CRs, the primary enforcement tool in the FMCSA's compliance and enforcement program, steadily increased from FY 2002 until FY 2006 and then normalized through 2010. In 2011, States took advantage of the new suite of CSA tools available and conducted over 4,300 CRs/On-Site Comprehensive Investigations and 2,100 new focused reviews.[4] Non-ratable reviews are included in this table of activities because, while not directly impacting a carrier's safety rating, they may have an impact on the carrier's overall safety posture (see the indirect effects model explanation in the previous section).

[3] Data available on Analysis & Information Online, Safety Programs at: http://ai.fmcsa.dot.gov/SafetyProgram/. FMCSA MCMIS data snapshot as of 1/24/2014.

[4] CSA Focused Investigations include Offsite Investigations and Onsite Focused Investigations.

Exhibit 3. Interventions Completed by State Personnel, FYs 2002–2011



Sources: MCMIS Snapshot, March 23, 2012 (2002 – 2010 counts). FMCSA Safety Progress Report, September 2013 (2011 counts).

The FMCSA used its Compliance Review Effectiveness Model (CREM) to estimate the crashes and injuries avoided and lives saved as a result of the CR program through FY 2008. However, the CREM does not evaluate the new CSA interventions. As a result, FMCSA is replacing the CREM with the Motor Carrier Intervention Effectiveness Model (CIEM). This model estimates crash rate reductions resulting from the interventions and reports safety benefits in terms of crashes avoided, injuries prevented, and lives saved. The CIEM methodology is currently undergoing peer review.

State Safety Trends

Through the MCSAP and Border Enforcement funding distributed to State and local agencies, FMCSA seeks consistent, uniform, and effective safety programs nationwide.[5] This investment is working, as evidenced by Exhibit 4. The fatality rate, expressed as the number of fatalities per 100 million VMT is 26 percent lower in FY 2011 than FY 2002, despite a slight increase from 2009 through 2011.

[5] FY 2011 MCSAP funding allocations by State and grant type can be found at: http://www.fmcsa.dot.gov/about/grants/MCSAP-Basic-Incentive/funding.aspx.

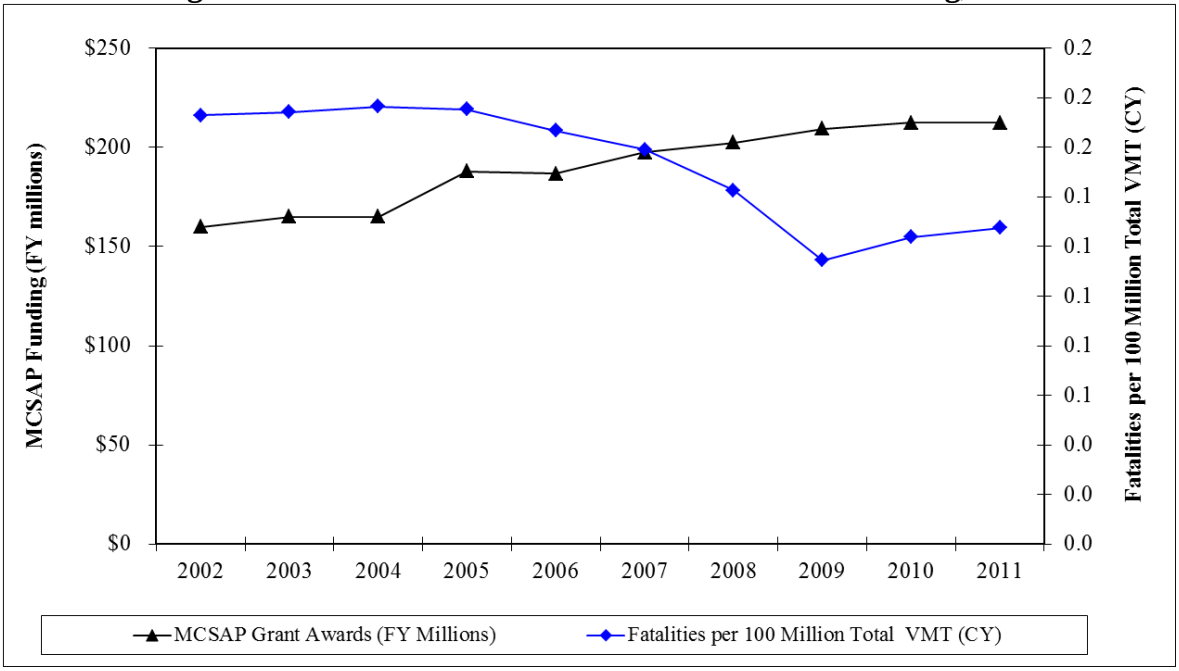
Exhibit 4. Large-Truck Fatal Crash Statistics, FYs 2002–2011[6]

Fiscal Year	Fatal Crashes	Fatalities	Total VMT (Millions)	Fatalities per 100 Million Total VMT
2002	4,224	4,939	2,855,508	0.17
2003	4,335	5,036	2,890,221	0.17
2004	4,478	5,235	2,964,788	0.18
2005	4,551	5,240	2,989,430	0.18
2006	4,350	5,027	3,014,371	0.17
2007	4,204	4,822	3,031,124	0.16
2008	3,754	4,245	2,976,528	0.14
2009	2,987	3,380	2,953,501	0.11
2010	3,261	3,675	2,967,266	0.12
2011	3,341	3,757	2,946,131	0.13

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

Exhibit 5 suggests that this overall reduction in large-truck fatal crash rates is associated with the increase in MCSAP funding since FY 2002, notably since FY 2005 with the implementation of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (P.L. 109-59).

Exhibit 5. Large-Truck Fatalities in Association with MCSAP Funding, FYs 2002–2011



Sources: Total *VMT*: FHWA; *Fatalities*: NHTSA; *MCSAP Funding:* FMCSA.

[6] 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, 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 6 shows the fatalities for each State resulting from crashes involving large trucks as a percent of total State VMT. The large truck fatality rate declined for all but six States from Calendar Year (CY) 2001 to CY 2011. Interval measurements over the past 10 years are shown.

Exhibit 6. State Level Large Truck Fatality Rate per 100 Million Total VMT (CYs 2001, 2006, 2011)[7]

	2001			2006			2011			Percent Change
State	Fatalities	Total VMT	Rate	Fatalities	Total VMT	Rate	Fatalities	Total VMT	Rate	2001 - 2011
Alabama	145	56,769	0.26	137	60,414	0.23	99	64,914	0.15	-40%
Alaska	10	4,721	0.21	4	4,967	0.08	0	4,593	0.00	-100%
Arizona	85	49,655	0.17	136	62,468	0.22	68	59,574	0.11	-33%
Arkansas	98	29,433	0.33	91	33,007	0.28	88	32,953	0.27	-20%
California	378	310,575	0.12	394	327,478	0.12	281	320,784	0.09	-28%
Colorado	95	42,955	0.22	67	48,641	0.14	51	46,606	0.11	-51%
Connecticut	29	30,844	0.09	29	31,743	0.09	14	31,197	0.04	-52%
Delaware	15	8,615	0.17	17	9,442	0.18	10	9,028	0.11	-36%
District of Columbia	1	3,750	0.03	2	3,623	0.06	2	3,568	0.06	110%
Florida	365	170,587	0.21	350	203,741	0.17	213	191,855	0.11	-48%
Georgia	255	107,897	0.24	232	113,532	0.20	173	108,454	0.16	-33%
Hawaii	8	8,694	0.09	12	10,182	0.12	3	10,066	0.03	-68%
Idaho	34	14,078	0.24	29	15,198	0.19	21	15,937	0.13	-45%
Illinois	200	103,038	0.19	159	106,869	0.15	122	103,234	0.12	-39%
Indiana	135	71,802	0.19	140	71,215	0.20	136	76,485	0.18	-5%
Iowa	83	30,016	0.28	75	31,355	0.24	60	31,274	0.19	-31%
Kansas	80	28,155	0.28	69	30,215	0.23	66	30,021	0.22	-23%
Kentucky	107	46,258	0.23	105	47,742	0.22	88	48,061	0.18	-21%
Louisiana	123	43,244	0.28	104	45,417	0.23	80	46,513	0.17	-40%
Maine	28	14,423	0.19	21	15,044	0.14	17	14,248	0.12	-39%
Maryland	78	51,996	0.15	61	56,302	0.11	39	56,221	0.07	-54%
Massachusetts	30	53,015	0.06	34	55,136	0.06	30	54,792	0.05	-3%
Michigan	122	98,987	0.12	116	104,184	0.11	61	94,754	0.06	-48%
Minnesota	64	53,341	0.12	62	56,518	0.11	52	56,685	0.09	-24%
Mississippi	98	35,988	0.27	90	41,498	0.22	73	38,851	0.19	-31%
Missouri	139	67,632	0.21	155	68,834	0.23	101	68,789	0.15	-29%
Montana	27	10,011	0.27	34	11,265	0.30	32	11,660	0.27	2%
Nebraska	68	18,102	0.38	34	19,415	0.18	31	19,093	0.16	-57%
Nevada	46	18,309	0.25	51	21,824	0.23	35	24,189	0.14	-42%
New Hampshire	14	12,315	0.11	7	13,614	0.05	8	12,720	0.06	-45%
New Jersey	77	68,725	0.11	74	75,371	0.10	51	73,094	0.07	-38%
New Mexico	59	23,232	0.25	80	25,787	0.31	49	25,533	0.19	-24%
New York	139	130,722	0.11	174	141,348	0.12	114	127,726	0.09	-16%
North Carolina	201	91,580	0.22	152	101,515	0.15	117	103,772	0.11	-49%
North Dakota	12	7,235	0.17	19	7,890	0.24	40	9,131	0.44	164%
Ohio	168	106,589	0.16	158	111,247	0.14	117	111,990	0.10	-34%
Oklahoma	94	43,527	0.22	140	48,689	0.29	112	47,464	0.24	9%
Oregon	64	34,398	0.19	62	35,483	0.17	50	33,373	0.15	-19%
Pennsylvania	185	103,004	0.18	193	108,278	0.18	160	99,204	0.16	-10%
Rhode Island	6	7,991	0.08	8	8,300	0.10	1	7,901	0.01	-83%
South Carolina	108	46,601	0.23	95	50,199	0.19	89	48,730	0.18	-21%
South Dakota	21	8,542	0.25	19	9,168	0.21	12	9,002	0.13	-46%
Tennessee	138	67,632	0.20	148	70,596	0.21	97	70,751	0.14	-33%
Texas	486	216,269	0.22	500	238,256	0.21	427	237,440	0.18	-20%
Utah	34	23,452	0.14	39	25,964	0.15	22	26,222	0.08	-42%
Vermont	7	9,617	0.07	11	7,832	0.14	6	7,141	0.08	15%
Virginia	110	73,745	0.15	107	81,095	0.13	76	80,974	0.09	-37%
Washington	63	53,665	0.12	65	56,517	0.12	32	56,955	0.06	-52%
West Virginia	48	19,714	0.24	48	20,885	0.23	34	18,963	0.18	-26%
Wisconsin	108	57,269	0.19	76	59,398	0.13	71	54,402	0.13	-31%
Wyoming	23	8,625	0.27	42	9,415	0.45	26	9,245	0.28	5%

Sources: *Total State VMT*: FHWA; *Fatalities: NHTSA.*

[7] The Percent Change calculation is based on exact numbers. Calculating the percent changed based on the rounded numbers shown in the table will produce slightly different results.

Conclusion

The activities supported by MCSAP grants are saving lives and reducing injuries by preventing and minimizing the severity of large truck and bus crashes. The FMCSA's State, local, and non-profit partners accomplish this through consistent, uniform, and effective safety programs. Roadside inspections and traffic enforcements conducted in FY 2011 prevented an estimated 14,760 crashes, 9,183 injuries, and 466 fatalities. When the new CIEM model results are complete, FMCSA anticipates that the data will reflect similar results for FY 2011. [8] Finally, the national reduction in large-truck fatal crash rates since the implementation of SAFETEA-LU suggests a relationship with the increase in MCSAP funding and crash reduction.

[8] FY 2011 results from the CIEM were not available at the time of print.