Commercial Motor Vehicle Enforcement: Identifying Appropriate Levels

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ABSTRACT

Commercial motor vehicle (CMV) enforcement efforts seek to make travel on public highways safer. CMV enforcement professionals secure compliance of CMV's with state laws regulating weight of commercial vehicles to protect state highways from unnecessary damage, and ensure payment of necessary registration fees as well as compliance with traffic laws and regulations to protect the safety of the general public using highways. Commensurate with their levels of training, road patrol officers enforce the laws relating to rules of the road, driver qualification and condition, hours of service, and significant equipment and loading violations. This study of approaches to CMV enforcement taken by four states shows a consistent increase in the willingness and ability use a wide array of mechanisms to minimize the number and seriousness of truck crashes on public roads. It concludes that North Dakota's enforcement efforts compare favorably with the efforts of peer states of South Dakota, Wyoming and Montana. Future studies may produce more robust results as to the specific impact of particular enforcement efforts.

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1. BACKGROUND

Commercial Motor Vehicle (CMV) enforcement refers to a multitude of techniques aimed promoting highway safety. Specifically, CMV enforcement professionals enforce state and federal laws regulating highway and commercial vehicle operations to reduce the number of crashes, injuries and fatalities involving large trucks and buses on the roads.

Techniques employed in enforcement efforts can vary from the routine patrolling of highways, conducting roadside inspections and weighing activities and engaging in special saturation enforcement efforts. There is no single, ideal combination of enforcement instruments for regulating the CMV activity on the road. Rather, given that each community has its distinct geographies, traffic flows and industries, the CMV enforcement strategies and levels that work for one may not necessarily work well in another. The challenge for states and the agencies tasked with maintaining safe roads is identifying the appropriate set of enforcement instruments and levels that, in an era of stretched budgets and limited resources, can maximize effectiveness.

CMV enforcement professionals secure compliance of CMV's with state laws regulating weight of commercial vehicles to protect state highways from unnecessary damage. They help ensure compliance with necessary registration fees, traffic laws and regulations to protect the safety of the general public using highways. Commensurate with their levels of training, road patrol officers enforce the laws relating to rules of the road, driver qualification and condition, hours of service, and significant equipment and loading violations.

Minimizing truck accidents on the highway has been a national priority and numerous efforts have been made toward that end in every state. States increasingly leverage technology to help maximize limited resources and manpower. For example, states such as Massachusetts have implemented programs to centralize CMV enforcement reporting on Vehicle Identification Number (VIN), Gross Vehicle Weight Rating (GVWR), Commercial Drivers Licensing (CDL) and hazardous materials so that information can be quickly and easily queried (Massachusetts 2012).

Other states, such as Montana, have adopted advanced online ticketing systems to implement a high-visibility traffic enforcement program. The Montana Department of Transportation Motor Carrier Services (MCS) Division began employing an enforcement program in specific, high-crash corridors in Montana in late 2007 that placed a Montana Highway Patrol (MHP) officer in the cab of a CMV driven by an MCS employee and the officer identified unsafe activities and maneuvers in the vicinity of the vehicle. Both commercial and non-commercial vehicles were monitored for aggressive driving in the vicinity of the CMV. Montana leveraged its enforcement success into expanded funding for both enforcement and education.

This report identifies the kinds of enforcement techniques that are currently employed in North Dakota, South Dakota, Montana and Wyoming. It will focus on identifying, where data is available, the level of various enforcement techniques, and seek to situate those techniques in the broader context of motor carrier safety rates in each state.

For each of the four states reviewed, the report will explore their respective Commercial Vehicle Safety Plans (CVSP), levels of audits and inspections, traffic violation totals, excess weight fines and funding levels. Using this information, the report will attempt to identify whether there are major differences in their approaches or methods.

The report finds that CMV enforcement is a locally-driven activity. It works best when it is responsive to the unique blend of challenges, including the types and level of CMV activity being faced by a particular state or locality. Enforcement approaches must be sensitive to spikes in crash rates and responsive to local circumstances by using a blend of enforcement techniques. Some techniques will invariably work better in some places than others. Therefore, this report suggests that it may be more beneficial to think of "appropriate" CMV enforcement levels in terms of how continuously updated, varied and responsive enforcement techniques are in a state than identifying a specific level of particular technique application.

1.1 CMV Enforcement and Techniques

As identified by the U.S. Department of Transportation's Federal Motor Carrier Safety Administration (FMCSA), a commercial vehicle is a type of motor vehicle that may be used for transporting goods or passengers. A CMV includes:

- A single vehicle with a gross vehicle weight rating (GVWR) of 26,001 pounds or more
- A combination of vehicles with a gross combination weight rating (GCWR) of 26,001 pounds or more if the vehicle(s) towed has a GVWR of more than 10,000 pounds
- Vehicles that carry 16 or more passengers, including the driver
- Any size vehicle that transports hazardous materials and that requires federal placarding

CMV enforcement efforts around the country are far from uniform. They include the employment of any number of techniques which can be used to varying degrees. Techniques include CMV enforcement patrols and stops statewide, highly visible special saturation or blitz enforcement projects in high-crash corridors during high-crash hours or in high-risk areas, motor carrier audits, driver and vehicle inspections and a host of others. Enforcement professionals are particularly encouraged by federal programs to identify and target factors contributing to crashes, most notably unsafe driving behaviors and distracted driving.

There are, however, a series of best practices and lessons learned about the ways and combinations in which these techniques can be used that have been adopted and adapted from state to state. The National Highway Traffic Safety Administration (NHTSA), for instance, observed that CMV enforcement efforts today tend to focus more on driver and equipment inspection, transportation of hazardous material, and detection of overweight/oversized vehicles. According to NHTSA, in order to be fully effective, CMV enforcement activities directed toward driver qualification and equipment inspection must be complemented with enforcement against serious moving violations as well.

Most research on CMV enforcement is produced by the state agencies tasked with the lead on enforcement efforts, primarily state highway patrol offices and state departments of transportation. Reporting on CMV crash statistic trends and efficacy of CMV enforcement efforts is published primarily by national government agencies such as the Federal Motor Carrier Safety Administration (FMCSA) or other state-level departments of transportation.

According to the president of the Commercial Vehicle Safety Alliance (CVSA), a recent survey of the enforcement community conducted by the American Transportation Research Institute (ATRI) and CVSA, indicates that 70 % of officers believe that the Inspection Selection System (ISS), which is used to guide enforcement in making decisions on which vehicles to inspect, is "increasingly effective" in targeting carriers as a result of the new approach. In other words, through enhanced technology and better communication, state agencies are making better use of their limited CMV enforcement resources (Palmer 2012).

1.2 CMV National Crash Figures

Accidents involving a commercial motor vehicle operating on a public road are commonly defined as resulting in one or more of the following:

- Bodily injury to a person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident
- Disabling damage to one or more motor vehicles, requiring the vehicle(s) to be towed or otherwise transported from the scene by a tow truck or other vehicle
- An occurrence involving only loading or alighting from a stationary vehicle, or only the loading or unloading of cargo is not included in the term "accident.

The number of large trucks involved in crashes from 2000 to 2009, according to the National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS) encyclopedia, shows a steady decline. In 2000, 4,995 large trucks at an involvement rate of 2.43 per 100 million vehicle miles travelled (VMT) were involved in crashes. By 2009, that number dropped to 3,211 large trucks involved in crashes at an involvement rate of 1.11 per 100 million VMT. That number would spike again, however, in 2010.

Drawing on FARS data, the *2010 Large Truck Crash Overview* produced by the Analysis Division of the U.S. Department of Transportation's Federal Motor Carrier Safety Administration (FMCSA), summarized that, in 2010, there were 3,494 large trucks involved in fatal crashes resulting in the death of 3,675 people killed (FMCSA 2010). Of those, 450 involved roll-overs. That is an increase from the year prior where 3,211 large trucks were involved in fatal crashes, 424 of which were roll-overs. In 2011, FARS data shows the number of large truck crashes increased again to 3,608 fatality-resulting crashes at a 1.35 involvement rate per 100 million VMT. Of those large truck crashes in 2011, 490 involved rollovers.

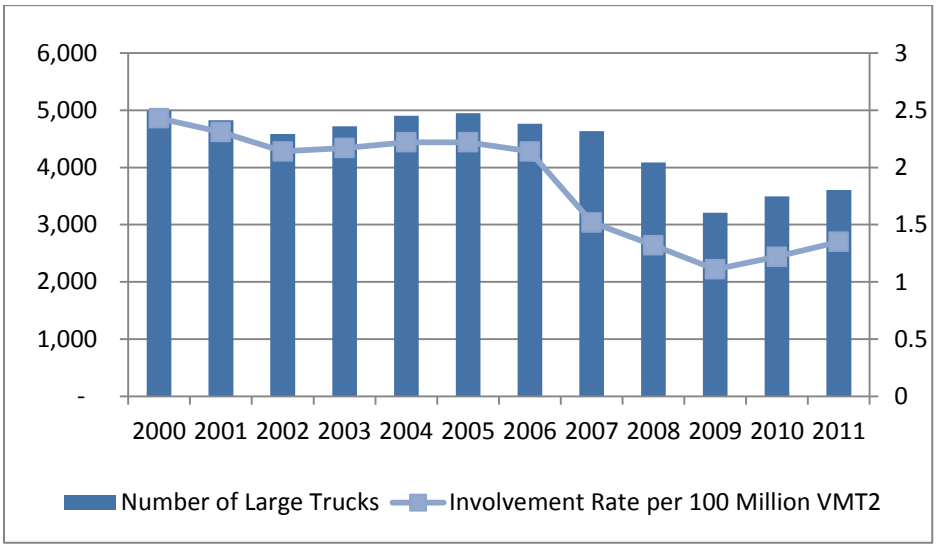

Figure 1.1 Large Truck Crash Involvement

Nationwide, FARS data shows large truck occupant fatalities holding relatively steady over the past decade until 2009 when they noticeably dipped.

Table 1.1 Large Truck Occupants by Crash Type – Nationally

Year	Single Vehicle	Multiple Vehicle	Large Truck Occupants Total	Other Vehicle Occupants	Non-motorists	Total
2000	484	270	754	4114	414	5282
2001	474	234	708	3962	441	5111
2002	449	240	689	3886	364	4939
2003	457	269	726	3919	391	5036
2004	469	297	766	4042	427	5235
2005	478	326	804	3971	465	5240
2006	500	305	805	3797	425	5027
2007	502	303	805	3608	409	4822
2008	430	252	682	3151	412	4245
2009	333	166	499	2558	323	3380
2010	337	192	529	2790	356	3675

The 2010 numbers were roughly in line with the year prior where, of the 33,808 people killed in motor vehicle crashes in 2009, 10 % (3,380) involved a large truck. Another 74,000 people were injured in crashes involving large trucks. The data shows that 15 % of those killed and 22 percent of those injured were occupants of large trucks (FMCSA 2010).

This declining overall rate fits the broader national motor vehicle traffic crash numbers in the United States. In 2010, for instance, 32,885 people died in motor vehicle crashes in the United States. This is the lowest rate of fatalities, according to the National Highway Traffic Safety Administration (NHTSA), since 1949. The 2010 rate was a 2.9% decline in the overall number of people killed on the road from the year prior and more than a 30% decline from 2000.

The FARS encyclopedia similarly shows that from 2007 to 2009, the number of large trucks involved in fatal crashes dropped from 4,633 to 3,215—down by 31%. During that same time period, the number of large trucks in fatal crashes per 100 million vehicle miles traveled by large trucks declined 26%, from 1.52 to 1.12. The corresponding rate for passenger vehicles fell from 1.66 to 1.38— down 17%.

During that same period, FMCSA found that large truck tractors pulling semi-trailers accounted for 61%of the large trucks involved in fatal crashes and 47% of the large trucks involved in nonfatal crashes. [1] Doubles (truck tractors pulling two trailers), however, only accounted for 3% of large trucks involved in fatal and nonfatal crashes. Their data shows that only 3% of large trucks involved in fatal crashes and only 2% of large trucks involved in nonfatal crashes were carrying hazardous materials. (FMCSA 2010).

FMCSA figures highlight that, in 2009, large truck and bus fatalities per 100 million VMT by all motor vehicles nationally declined by a rate of 20%, from 0.153 in 2008 to 0.123. In 2010, FMCSA found that the fatality rate per 100 million VMT dropped to 1.10 in 2010, a new historic low. FMCSA also found that the overall injury rate remained the same from 2009 to 2010.

Nationally, FMCSA found in 2010 that fatalities in large-truck crashes increased across all categories—large truck occupants, occupants of other vehicles and non-occupants. The greatest

[1] "Trends." Available at: http://www.fmcsa.dot.gov/facts-research/LTBCF2009/chap1.htm

percentage increase can be seen in the number of large-truck occupants killed in multivehicle crashes, 16%.

Table 1.2 National Truck Fatalities

Vehicle Type	2009	2010	Change	Percent Change
Truck Occupants	499	529	+30	+6.0%
Single-Vehicle	333	337	+4	+1.2%
Multi-Vehicle	166	192	+26	+16%
Other Vehicle Occupants	2,558	2,790	+232	+9.1%
Nonoccupants	323	356	+33	+10%
TOTAL	3,380	3,675	+295	+8.7%

Adapted from the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA). Traffic Safety Facts "2010 Motor Vehicle Crashes: Overview." DOT HS 811 552. February 2012. http://www-nrd.nhtsa.dot.gov/Pubs/811552.pdf

The number of total fatalities of traffic accidents for 2009 and 2010 is generally down across the country. On the state level, 31 states had reductions in the number of fatalities. Four states had reductions of over 100 fatalities, led by California with 375 fewer fatalities in 2010 than in 2009. Five states saw increases of more than 50 overall fatalities from 2009 to 2010. Connecticut had the greatest increase in the number of fatalities, going up 95 fatalities or 42%.

1.3 Regional Statistics

Large truck crash statistics among the four states under review are not necessarily consistent with the national figures. Over a 10-year period, North Dakota, Wyoming and Montana have all held relatively constant until 2009-2010 when all three noticeably began to spike. In contrast, the number of large trucks involved in fatal crashes in South Dakota dropped during that same time.

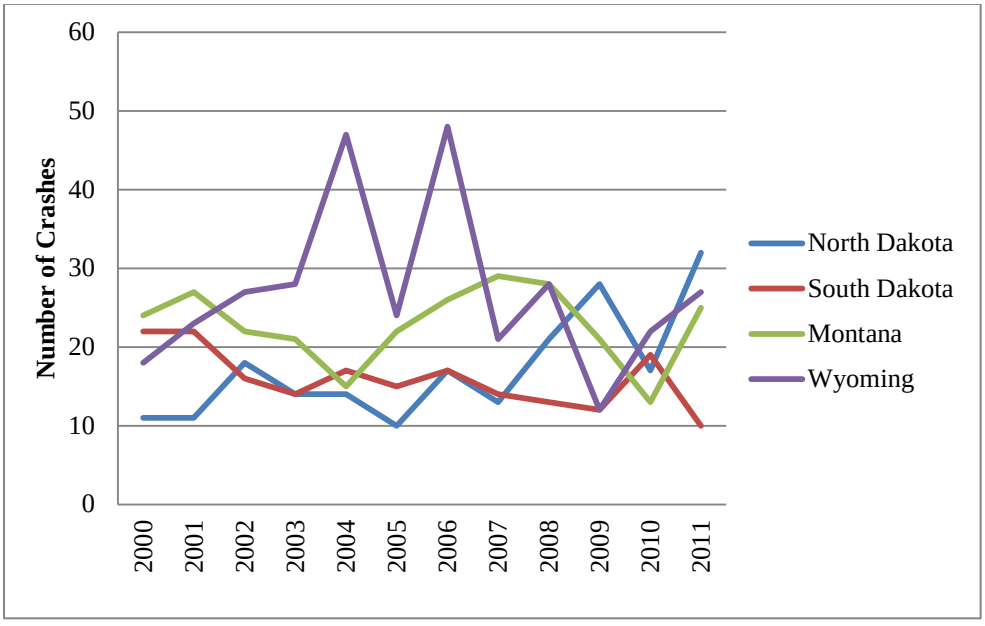

Figure 1.2 Large Trucks Involved in Fatal Crash Trends (2000–2011)

In terms of overall motor vehicle fatality trends among the four states under review, Wyoming and South Dakota saw a mild uptick in motor vehicle fatalities in 2010 whereas North Dakota and Montana both had a marked decline.

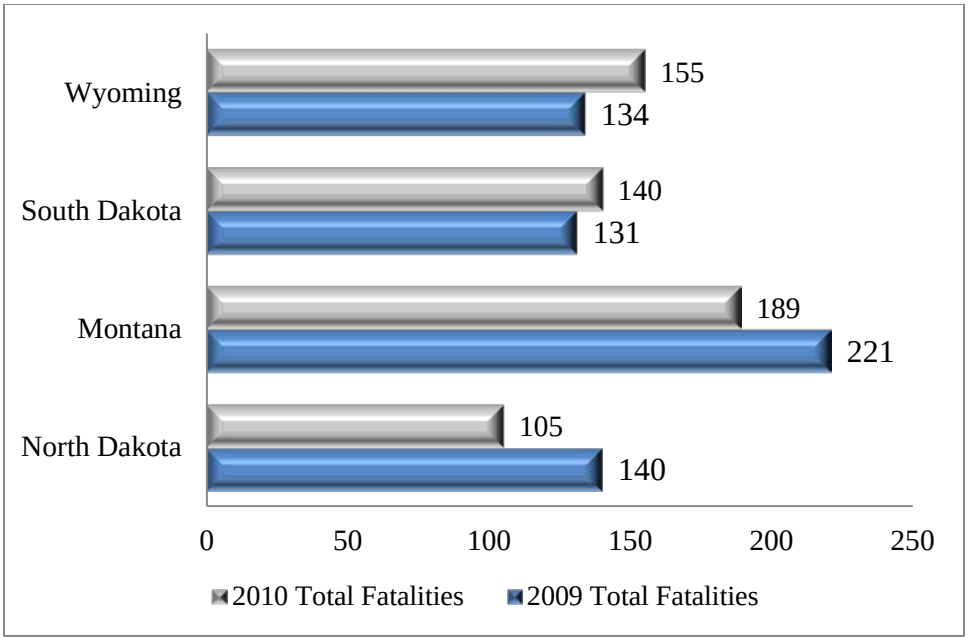

Figure 1.3 Total Motor Vehicle Fatalities, 2009 and 2010

According to the FARS Encyclopedia, in North Dakota, 17 of the 145 vehicles involved in fatal accidents (or 11.7%) in 2010 were large trucks. That figure is down from the year prior, where North Dakota, saw 169 vehicles involved in fatal crashes, 28 of which (16.6%) were large trucks. However, in 2011, that number jumped up to 32 large trucks involved in fatal crashes.

Table 1.3 North Dakota – Large Truck Occupant Fatalities

Year	Single Vehicle	Multiple Vehicle	Large Truck Occupants Total	Other Vehicle Occupants	Non-motorists	Total
2000	1	1	2	8	0	10
2001	1	0	1	10	1	12
2002	1	3	4	14	1	19
2003	0	1	1	14	1	16
2004	0	0	0	15	0	15
2005	2	1	3	13	1	17
2006	2	4	6	13	0	19
2007	2	1	3	9	0	12
2008	3	4	7	12	1	20
2009	5	1	6	23	2	31
2010	4	2	6	11	1	18
2011	4	1	5	35	0	40

The noticeable spike in 2009 in North Dakota of other fatalities involved in large truck accidents has been examined by the Upper Great Plains Transportation Institute elsewhere. For example, Vachal and Huseth (2012) found that in the central oil producing counties in North Dakota, the number of large trucks involved in crashes remained relatively stable from 2004 through 2009. After 2009, however, the researchers found that the number of large trucks involved in crashes in those four counties did increase.
UGPTI research has previously found that the sharp increase in travel volumes, shift in traffic mix and large increases in traffic crashes have transformed the travel environment in the oil region of western North Dakota. Vachal and Huseth (2012) show that,

> "When factored together, the change in large truck crashes for the central core resembles an exponential growth curve. These four counties increased from just 25 large truck crashes in 2004 to 331 in 2011, an increase of 1,224%."

In 2010, the number of large truck occupant fatalities declined but increased again in 2011 to its highest rate in more than 10 years.

By comparison, in 2010, South Dakota had 185 vehicles involved in fatal accidents of which 19 (or 10.3%) were large trucks. That 2010 figure was up from the 2009 rate of 147 total vehicles involved in fatal crashes of which 12 (8.2%) were large trucks.
In terms of large truck occupant fatalities occurring during crashes involving large trucks, South Dakota's numbers are relatively consistent with those of North Dakota.

Table 1.4 South Dakota – Large Truck Occupant Fatalities

Year	Single Vehicle	Multiple Vehicle	Large Truck Occupants Total	Other Vehicle Occupants	Non-motorists	Total
2000	2	3	5	15	2	22
2001	2	1	3	17	1	21
2002	5	1	6	13	0	19
2003	2	0	2	13	2	17
2004	3	0	3	14	1	18
2005	1	4	5	8	0	13
2006	5	1	6	13	0	19
2007	2	0	2	9	3	14
2008	0	1	1	12	1	14
2009	3	0	3	13	0	16
2010	4	2	6	17	2	25
2011	2	0	2	10	0	12

Adapted from the FARS Encyclopedia's *Persons Killed in Crashes Involving a Large Truck, by Person Type and Crash Type, 1994 - 2011 - State : South Dakota*

Montana had 221 vehicles involved in fatal crashes, of which 13 (or 5.9%) were large trucks in 2010. That rate was down from the 2009 total of 272 total vehicles involved in fatal crashes of which 21 (7.7%) were large trucks.

In terms of large truck occupant fatalities occurring during crashes involving large trucks, Montana's numbers fluctuate more than the previous two states, jumping into the double digits in both 2001 and 2007. However, recent numbers are more consistent with those of North Dakota and South Dakota.

Table 1.5 Montana – Large Truck Occupant Fatalities

Year	Single Vehicle	Multiple Vehicle	Large Truck Occupants Total	Other Vehicle Occupants	Non-motorists	Total
2000	5	0	5	19	2	26
2001	7	3	10	16	1	27
2002	4	1	5	21	0	26
2003	3	1	4	23	0	27
2004	5	0	5	8	3	16
2005	3	0	3	15	5	23
2006	8	0	8	26	0	34
2007	11	0	11	18	2	31
2008	3	3	6	15	4	25
2009	7	0	7	15	2	24
2010	1	1	2	11	1	14
2011	1	2	3	28	1	32

Wyoming had 185 vehicles involved in fatal accidents in 2010, of which 22 (or 11.9%) were large trucks. That rate was up from the 2009 rate of 12 (8.1%) large trucks involved in fatal vehicle accidents of the total 148 vehicles.

With regard to Wyoming's rates of large truck occupant fatalities that occurred during crashes involving large trucks, the rates are slightly elevated from those of the previous three states, particularly the spike in 2004.

Table 1.6 Wyoming – Large Truck Occupant Fatalities

Year	Single Vehicle	Multiple Vehicle	Large Truck Occupants Total	Other Vehicle Occupants	Non-motorists	Total
2000	3	0	3	16	2	21
2001	4	1	5	16	2	23
2002	2	4	6	19	7	32
2003	8	0	8	21	1	30
2004	6	10	16	24	1	41
2005	5	2	7	22	2	31
2006	7	5	12	27	3	42
2007	8	1	9	15	0	24
2008	6	2	8	19	3	30
2009	3	0	3	6	2	11
2010	3	4	7	20	0	27
2011	5	3	8	18	0	26

2. ANALYSIS

Identifying appropriate levels of commercial vehicle enforcement is complicated by the fact that each state can pursue combinations of enforcement mechanisms they deem best address the challenges particular to their local, county and state circumstances. States may identify the agency as best equipped to be primarily tasked with CMV enforcement and they may select the particular combination of enforcement instruments to use based on an array of factors, including prior effectiveness, cost, public pressure, and articulated goals.

To better clarify how different states in the region approach commercial vehicle enforcement, the following analysis provides an overview of recent enforcement activity in North Dakota, South Dakota, Montana and Wyoming. Using public data and documents, the analysis addresses commercial vehicle safety plans, enforcement levels, and funding levels in an attempt to draw some broad conclusions about an appropriate level of enforcement with general recommendations on an ideal combination of enforcement instruments.

2.1 Commercial Vehicle Safety Plan (CVSP)

The Motor Carrier Safety Assistance Program (MCSAP) is a federal grant program administered by the U.S. Department of Transportation's Federal Motor Carrier Safety Administration (FMCSA). It provides financial assistance to states to reduce the number and severity of accidents and hazardous materials incidents involving commercial motor vehicles. The goal of MCSAP is to reduce CMV-involved accidents, fatalities, and injuries through consistent, uniform, and effective CMV safety programs.

Each state must meet certain conditions to qualify for MCSAP funding, including preparing a document that outlines the state's commercial motor vehicle safety objectives, strategies, activities and performance measures. This document is known as the annual Commercial Vehicle Safety Plan (CVSP).

According to the program guidelines (MCSAP 2012), each state's CVSP must reflect a performance-based program and contain a number of elements, including a summary of the effectiveness of prior years' activities, performance objectives, strategies to be employed to achieve performance objectives, quantifiable performance measures, a monitoring methodology, and a budget supporting CVSP activities which describes expenditures for personnel, equipment purchases and other eligible costs. Failure to meet performance standards puts a state in jeopardy of losing federal assistance.

To qualify for Basic Program Funds, each state must meet a rigorous set of qualifiers, which serve to provide some uniformity across states in terms of their CMV enforcement approach. States must designate the lead state agency responsible for implementing the CVSP and ensure that only agencies having the legal authority, resources, and qualified personnel necessary to enforce the FMCSRs and HMRs or compatible state laws or regulations are assigned to perform functions in accordance with the approved CVSP.
States must allocate adequate funds for the administration of the CVSP including the enforcement of the FMCSRs, HMRs, or compatible state laws or regulations. They must also adopt and use the reporting standards and forms required by the FMCSA to record work activities performed under the CVSP as well as coordinate the CVSP, data collection and information systems, with state highway safety programs.

According to the policy, to ensure maximum operational effectiveness and efficiency, states must make resource decisions based on statistical analysis. To support FMCSA's mission a state may need to identify and focus on localized problem areas that complement its traditional statewide program activities.

States participating in the program are encouraged to specifically consider existing and emerging areas of crash causation within its jurisdiction. This includes identifying and targeting the contributing factors that lead to crashes such as unsafe driving behaviors and distracted driving. Methods addressing these factors may include enhanced enforcement in high crash corridors, during high crash hours, or in high risk areas such as on rural roads or in highway work zones.

2.2 Audits and Inspections

In FY2011, the FMCSA's Motor Carrier Management Information System (MCMIS) data on enforcement activities by state showed the following rates for the number of safety audits, the number of roadside inspections (including driver inspections, vehicle inspections and hazmat inspections) and traffic enforcement inspections (including driver inspections, vehicle inspections and hazmat inspections).

Table 2.1 FY 2011 Audits and Inspections

	Safety Audits	Roadside Inspections	Traffic Enforcement Inspections
North Dakota	319	22,838	2,069
South Dakota	70	42,009	3,458
Montana	175	53,328	3,177
Wyoming	106	27,461	5,017

The data reflects the various priorities that different states place on different enforcement activities. North Dakota, for example, had a higher level of safety audits, but the lowest number of roadside and traffic enforcement inspections. South Dakota, in contrast, had the lowest number of safety audits and the second highest number of roadside inspections. Montana had more roadside inspections in FY2011 than Wyoming and North Dakota combined.

Table 2.2 FY 2012 Audits and Inspections

	Safety Audits	Roadside Inspections	Traffic Enforcement Inspections
North Dakota	365	19,175	2,179
South Dakota	171	42,324	3,963
Montana	311	54,558	3,468
Wyoming	126	28,534	4,761

Data for both years has been adapted from the FMCSA's *Safety Programs and Program Effectiveness* website hosting data from the MCMIS database at http://ai.fmcsa.dot.gov/SafetyProgram/home.aspx

The FY2012 data shows several important shifts in the level of audit and inspection activity being conducted in the region. Most notably, North Dakota's roadside inspections decreased from 22,838 to 19,175. Each of the other states increased the number of roadside inspections they conducted in FY2012 from the previous year.
South Dakota's number of safety audits more than doubled from 70 in FY2011 to 171 in FY2012. Montana's number of safety audits similarly shot up in FY2012, moving from 175 the previous

year to 311.All four states increased the number of traffic enforcement inspections in FY2012 from the previous year.

2.3 State-by-State Traffic Enforcement Levels

North Dakota's Highway Patrol (NDHP) is the primary CMV enforcement agency in the state. According to the NDHP, their Motor Carrier Operations consists of two commanders, two sergeants, eight sworn troopers, an administrative assistant, and 11 civilian inspectors. All of these positions are assigned to the federally-funded Motor Carrier Safety Assistance Program (MCSAP) discussed above. Three civilian inspectors are assigned to the New Entrant Program and four to the Border Inspection Program. Motor Carrier Operations is also responsible for the Permit Section, which consists of a supervisor and four vehicle size and weight permit specialists.

North Dakota's Motor Carrier Operations seeks to reduce truck crashes by performing commercial vehicle inspections, safety audits, compliance reviews and coordinating the motor carrier permit system. Motor Carrier Operations also oversees six fixed weigh/inspection stations, 12 weigh-in-motion sites, and numerous turnout locations throughout the state, which are used for inspections and weight enforcement.
A review of statistics shows that North Dakota's CMV enforcement activity has increased over the past three years. A review of the activity in the state shows a steady increase in the number of overall inspections and overall violations.

Table 2.3 North Dakota CMV Enforcement

Activity	FY 2010	FY 2011	FY 2012
Number of Traffic Enf. Inspections	1,618	1,742	1,867
With Moving Violations	611	658	764
With Drug & Alcohol Violations	4	5	4
With Railroad Crossing Violations	0	0	1
With Miscellaneous Violations	1,079	1,163	1,174
Number of Traffic Enf. Violations	1,794	1,908	2,021
With Moving Violations	613	660	771
With Drug & Alcohol Violations	5	6	4
With Railroad Crossing Violations	0	0	1
With Miscellaneous Violations	1,176	1,242	1,245

South Dakota's CMV enforcement rate has remained relatively over the past three years at a rate somewhat higher than North Dakota, both in terms of the number of traffic enforcement inspections and violations. Similar to North Dakota, South Dakota has also noted a steady uptick of enforcement violations with moving violations. South Dakota has seen a higher incidence of drug and alcohol related violations than North Dakota.

Table 2.4 South Dakota CMV Enforcement

Activity	FY 2010	FY 2011	FY 2012
Number of Traffic Enf. Inspections	3,168	2,806	3,076
With Moving Violations	668	686	712
With Drug & Alcohol Violations	13	27	25
With Railroad Crossing Violations	1	0	1
With Miscellaneous Violations	2,552	2,184	2,463
Number of Traffic Enf. Violations	3,696	3,169	3,539
With Moving Violations	671	695	720
With Drug & Alcohol Violations	24	33	30
With Railroad Crossing Violations	1	0	1
With Miscellaneous Violations	3,000	2,441	2,788

A review of Montana's CMV enforcement efforts over the past three years reveals an inspection rate closer to South Dakota's. Like South Dakota, Montana also saw a slight dip in the number of inspections during FY2011 but elevated again in FY2012. However, in Montana, approximately half of the inspections were made in conjunction with a moving violation by the CMV. In South Dakota, only approximately one third of inspections were made in conjunction with a moving violation.

Table 2.5 Montana's CMV Enforcement

Activity	FY 2010	FY 2011	FY 2012
Number of Traffic Enf. Inspections	2,826	2,301	2,638
With Moving Violations	1,462	1,157	1,074
With Drug & Alcohol Violations	9	5	4
With Railroad Crossing Violations	0	0	1
With Misc. Violations	1,437	1,190	1,625
Number of Traffic Enf. Violation	2,976	2,408	2,770
With Moving Violations	1,472	1,168	1,079
With Drug & Alcohol Violations	10	5	4
With Railroad Crossing Violations	0	0	1
With Misc. Violations	1,494	1,235	1,686

A review of Wyoming's recent CMV enforcement statistics shows that, of the four states, that state had the highest number of traffic enforcement inspections from FY2010 to FY2012. A substantial percentage of those inspections were conducted in conjunction with moving violations. After increasing numbers of traffic inspections and violations in FY2010 and FY2011, the number of both did decrease in FY2012, a trend that stands in contrast to the trends in the other three states under review.

Table 2.6 Wyoming's CMV Enforcement

Activity	FY 2010	FY 2011	FY 2012
Number of Traffic Enf. Inspections	3,790	3,900	3,582
With Moving Violations	2,646	2,270	1,693
With Drug & Alcohol Violations	16	16	35
With Railroad Crossing Violations	0	3	0
With Misc. Violations	1,258	1,810	2,030
Number of Traffic Enf. Violations	4,155	4,448	4,189
Moving Violations	2,706	2,348	1,731
Drug & Alcohol Violations	17	19	40
Railroad Crossing Violations	0	3	0
Miscellaneous Violations	1,432	2,078	2,418

2.4 State-by-State Excess Weight Fines

Fines vary from state to state and there is no up-to-date, centralized location for identifying current fine amounts. North Dakota, South Dakota, Montana and Wyoming have nearly identical fines and penalty schedules, with only minor differences among them.

The four states reviewed share similar excess weight fine schedules. North Dakota's is both the most explicitly graduated among them and the steepest at the high end in terms of penalty amounts. In fact, North Dakota's fine at the 20,001 pound excess mark is $4,200 whereas that same violation in Montana would only be $1,000 and in Wyoming it would only be $750.

The North Dakota Century Code §39-12-17 sets fine levels in North Dakota (North Dakota 2013).

Table 2.7 ND Excess Weight Fines

Excess Weight	Fine
1 – 1,000	$20.00
1,001 – 2,000	$40.00
2,001 – 3,000	$60.00
3,001 – 4,000	$140.00
4,001 – 5,000	$220.00
5,001 – 6,000	$305.00
6,001 – 7,000	$380.00
7,001 – 8,000	$495.00
8,001 – 9,000	$575.00
9,001 – 10,000	$655.00
10,001 – 11,000	$1,100.00
11,001 – 12,000	$1,200.00
12,001 – 13,000	$1,300.00
13,001 – 14,000	$1,680.00
14,001 – 15,000	$1,800.00
15,001 – 16,000	$1,920.00
16,001 – 17,000	$2,550.00
17,001 – 18,000	$2,700.00
18,001 – 19,000	$2,850.00
19,001 – 20,000	$3,000.00
20,001 – 21,000	$4,200.00
21,001 – 22,000	$4,400.00
22,001 – 23,000	$4,600.00
23,001 – 24,000	$4,800.00
24,001 – 25,000	$5,000.00
25,001 – 26,000	$5,200.00
26,001 – 27,000	$5,400.00
27,001 – 28,000	$5,600.00
28,001 – 29,000	$5,800.00
29,001 – 30,000	$6,000.00

In North Dakota, there is an additional charge of $200.00 for every 1,000 lb. increase over 30,000 lbs. consistent with the above formula. The number of North Dakota's excess weight violations has been steadily increasing in recent years.

Table 2.8 ND Excess Weight Violations

GCWR	FY 2010		FY 2011		FY 2012	
	State	Total	State	Total	State	Total
Under 20,001 lbs.	42	42	57	57	46	46
20,001 - 26,000 lbs.	34	34	19	19	27	27
Over 26,000 lbs.	658	658	629	630	730	730
Missing or '0'	884	884	1,036	1,036	1,064	1,064
Total	1,618	1,618	1,741	1,742	1,867	1,867

South Dakota's excess weight fine structure is slightly more streamlined (South Dakota, 2012). Despite the fewer categories, the rates work out to be quite similar with that of North Dakota.

Table 2.9 SD Excess Weight Fines

Excess Weight	Fine
1,000 – 3,000	$0.05/lb
3,001 – 4,000	$0.15/lb
4,001 – 5,000	$0.225/lb
5,001 – 10,000	$0.375/lb
10,000 <	$0.75/lb

A review of South Dakota's excess weight violations during recent years shows a relatively constant level of violations as compared to North Dakota's.

Table 2.10 SD Excess Weight Violations

GCWR	FY 2010		FY 2011		FY 2012	
	State	Total	State	Total	State	Total
Under 20,001 lbs.	105	105	104	104	83	85
20,001 – 26,000 lbs.	70	71	69	70	59	59
Over 26,000 lbs.	792	794	694	695	751	753
Missing or '0'	2,198	2,198	1,937	1,937	2,179	2,179
Total	3,165	3,168	2,804	2,806	3,072	3,076

Montana's excess weight fine schedule is similarly in line with that of North Dakota and South Dakota: Its fine schedule is slightly more graduated than South Dakota's (Montana 2011).

Table 2.11 Montana Excess Weight Fines

Excess Weight	Fine
1 – 2,000	$30.00
2,001 – 4,000	$75.00
4,001 – 6,000	$125.00
6,001 – 8,000	$175.00
8,001 – 10,000	$250.00
10,001 – 12,000	$275.00
12,001 – 14,000	$300.00
14,001 – 16,000	$400.00
16,001 – 18,000	$500.00
18,001 – 20,000	$600.00
20,001 – 25,000	$1,000.00
25,000 <	$2,000.00

Montana's excess weight enforcement over recent years reflects the FY2011 dip in number of violations seen in other Montana statistics followed by a subsequent uptick in FY2012. Although the numbers remain lower than South Dakota's excess weight violations, they are still quite a bit higher than North Dakota's during the same period of time.

Table 2.12 Montana Excess Weight Violations

GCWR	**FY 2010**		**FY 2011**		**FY 2012**	
	State	Total	State	Total	State	Total
Under 20,001 lbs.	43	43	35	35	40	40
20,001 – 26,000 lbs.	60	60	32	32	23	23
Over 26,000 lbs.	1,955	1,955	1,871	1,871	2,189	2,189
Missing or '0'	768	768	363	363	386	386
Total	2,826	2,826	2,301	2,301	2,638	2,638

Wyoming's excess weight fine schedule shows a schedule that falls generally in line with that of Montana but is far more lenient than North Dakota on the upper end (Wyoming 2012).

Table 2.13 Wyoming Excess Weight Fines

Excess Weight	Fine
1 – 2,000	$ 25.00
2,001 – 4,000	$ 50.00
4,001 – 6,000	$ 75.00
6,001 – 8,000	$100.00
8,001 – 10,000	$150.00
10,001 – 12,000	$200.00
12,001 – 14,000	$250.00
14,001 – 16,000	$300.00
16,001 – 18,000	$400.00
18,001 – 20,000	$500.00
20,000 <	$750.00

Although there is an additional $100.00 for each 1,000 lbs. or fraction thereof exceeding 20,000 lbs. over the legal limits in Wyoming, the schedule remains only a percentage of what the same violation would be in North Dakota.

Table 2.14 Wyoming Excess Weight Violations

GCWR	FY 2010		FY 2011		FY 2012	
	State	Total	State	Total	State	Total
Under 20,001 lbs.	69	69	100	102	84	84
20,001 - 26,000 lbs.	69	69	106	107	95	95
Over 26,000 lbs.	3,652	3,652	3,673	3,674	3,400	3,400
Missing or '0'	0	0	17	17	3	3
Total	3,790	3,790	3,896	3,900	3,582	3,582

The results from Wyoming show a rate of violations almost double the rate from North Dakota. This could suggest that North Dakota's steep penalty structure for highly overweight trucks acts as more of a deterrent to potential violators than the more lenient fee structures of other states.

On the other hand, in September 2012, the North Dakota Highway Patrol announced that they had handed down to truck owners and operators more excess weight citations so far in 2012 than they had in the entire year of 2011 (Luessen 2012). By September 2012, North Dakota troopers had cited 1,295 overload violations, which amounted to $2.1 million overload fees alone compared to $1.9 million in all of 2011.

Locally, the bulk of overloaded trucks cited were moving construction materials or agriculture-related loads. Traffic in the oil fields in western North Dakota is credited with the majority of the rise in citations. In that part of the state, the NDHP's weight limit enforcement has been beefed up with more personnel and resources. Of the NDHP's 22 motor carrier troopers, 14 are stationed in western North Dakota, a result of targeting high-traffic and high-problem areas.

2.5 Alcohol Infractions

North Dakota, South Dakota, Montana and Wyoming have virtually identical policies on driver disqualification, including alcohol consumption, leaving the scene of an accident, commission of a felony, serious traffic violations, violation of out-of-service orders, railroad-highway grade crossing violations, hazardous materials disqualifications; and traffic violations in personal vehicles.

It is illegal to operate a CMV if a driver's blood alcohol concentration (BAC) is .04 percent or more. Drivers will be put out-of-service for 24 hours if he or she has any detectable amount of alcohol under .04 percent. An operator will lose his or her CDL for at least one year for a first offense for:

- Driving a CMV with a blood alcohol concentration is .04 percent or higher
- Driving a CMV under the influence of alcohol
- Refusing to undergo blood alcohol testing
- Driving a CMV while under the influence of a controlled substance
- Leaving the scene of an accident involving a CMV
- Committing a felony involving the use of a CMV
- Driving a CMV when the CDL is suspended
- Causing a fatality through negligent operation of a CMV

A driver will lose his or her CDL for at least three years if the offense occurs while operating a CMV that is placarded for hazardous materials. The driver will lose a CDL for life for a second offense or subsequent major offense, although in South Dakota this can be reduced to 10 years. A driver can also lose the CDL for life if he or she uses a CMV to commit a felony involving controlled substances.

2.6 Serious Traffic Violations

North Dakota defines "serious traffic violations" as including any of the following:

- Excessive speeding (15 mph or more above the posted limit)
- Reckless driving
- Improper or erratic lane changes
- Following a vehicle too closely,
- Traffic offenses committed in a CMV in connection with fatal traffic accidents
- Driving a CMV without obtaining a CDL or having a CDL in the driver's possession
- Driving a CMV without the proper class of CDL and/or endorsements, and texting while driving.

Montana and Wyoming use a similar definition. South Dakota extends their definition in the state's CDL Manual to explicitly include:

- Careless driving
- Failure to stop
- Failure to yield right of way
- Failure to stop for school bus
- Failure to stop at signal of law enforcement
- Improper passing
- A violation of any state or local traffic law resulting in a fatal accident

All four states share the following penalties for serious Traffic Violations. A driver will lose his or her CDL for at least 60 days if he or she has committed two serious traffic violations within a three-year period involving a CMV. A driver will lose his or her CDL for at least 120 days for three or more serious traffic violations within a three-year period involving a CMV.

2.7 Railroad-Highway Grade Highway Crossing Violations

The four states all share common penalties for loss of a CDL resulting from violations of a federal, state or local law or regulation pertaining to one of the following six offenses at a railroad-highway grade crossing:

- For drivers who are not required to always stop, failing to stop before reaching the crossing, if the tracks are not clear
- For drivers who are not required to always stop, failing to slow down and check that the tracks are clear of an approaching train
- For drivers who are always required to stop, failing to stop before driving onto the crossing
- For all drivers, failing to have sufficient space to drive completely through the crossing without stopping
- For all drivers failing to obey a traffic control device or the directions of an enforcement official at the crossing
- For all drivers failing to negotiate a crossing because of insufficient undercarriage clearance

Again, each of the states have policies that cause drivers to lose their CDL for at least 60 days for a first violation, 120 days for a second violation in a three-year period and one year for a third violation.

2.8 Hazardous Materials Endorsement Background Check and Disqualifications

All four states have regulations in common on obtaining and maintaining a hazardous materials endorsement. If a driver requires a hazardous materials endorsement he or she will be required to submit fingerprints and be subject to a background check. A driver will be denied or lose a hazardous materials endorsement if he or she:

- Is not a lawful permanent resident of the United States
- Renounces his or her United States citizenship
- Is wanted or under indictment for certain felonies
- Has a conviction in military or civilian court for certain felonies
- Has been adjudicated as a mental defective or committed to a mental institution
- Is considered to pose a security threat as determined by the Transportation Security Administration

The background check procedures do vary slightly from jurisdiction to jurisdiction but generally fall within the above framework.

2.9 CMV Enforcement Funding

It is a constant struggle for state agencies to secure and maintain funding for CMV efforts. In each state, enforcement efforts aimed at reducing large truck crashes draw on federal, state and local guidelines and funding.
There are multiple national-level sources for states to draw upon for assistance implementing CMV enforcement efforts. MCSAP Basic and Incentive Grants are one of the most important sources of funding for states in developing or implementing national programs for the uniform enforcement of federal and state rules and regulations concerning motor safety. MCSAP seeks to reduce the number and severity of CMV-involved accidents. States that can demonstrate that they have developed programs to enforce the federal motor carrier safety and hazardous materials regulations and the Commercial Motor Vehicle Safety Act of 1986 may qualify for Incentive Funds. Specifically, they must demonstrate that their CMV safety programs have shown improvement in any or all of the following five categories:

- Reduction in the number of large truck-involved fatal accidents
- Reduction in the rate of large-truck-involved fatal accidents or maintenance of a large-truck-involved fatal accident rate that is among the lowest 10 percent of such rates for MCSAP recipients and is not higher than the rate most recently achieved
- Upload of CMV accident reports in accordance with current FMCSA policy guidelines
- Verification of Commercial Driver's Licenses during all roadside inspections
- Upload of CMV inspection data in accordance with current FMCSA policy guidelines

Continuing into FY 2013, the FMCSA will provide MCSAP Basic and Incentive funds to states as 80% Federal funding, requiring a 20% grantee match. For FY 2013, CVSPs from states that conduct interstate carrier reviews must reflect utilization of the CSA interventions to the maximum extent possible. States that do not conduct carrier reviews or that cannot implement CSA must include in the CVSP an explanation of the obstacles to both and how they can be overcome. While state-specific objectives established in previous years' CVSPs may continue in FY 2013, specific strategies and monitoring plans must be updated to reflect the full range of CSA intervention strategies within the state. The Compliance Reviews National Program Element section of the FY 2013 CVSP has been updated to allow states to address, where applicable, the implementation of the new CSA program interventions (MCSAP 2012).

2.9.1 North Dakota CMV Enforcement Funding

In North Dakota, the Highway Patrol has recently pushed for additional funding to increase enforcement levels of non-compliant large trucks. In 2011, the North Dakota legislature approved a $46 million, two-year budget for the NDHP (Associated Press 2011). The budget added two new troopers to the force to enforce truck weight regulations in western North Dakota, an area that NDHP officials are targeting for enforcement efforts because of the increased truck traffic from oil and energy development.

NDHP superintendent, Col. James Prochniak, has been vocal about the need to enhance enforcement efforts against overweight trucks to both reduce potentially fatal crashes as well as to reduce damage to roads in North Dakota's oil country. According to the *Bismarck Tribune*, the North Dakota Legislature recently approved spending almost $371 million to repair state and local roads in the region.

In August 2011, the U.S. Department of Transportation's Federal Motor Carrier Safety Administration (FMCSA) announced over $2 million in federal grants to improve commercial

truck and bus safety across North Dakota. According to FMCSA Administrator Anne Ferro and North Dakota highway safety leaders who unveiled the grant award, $349,131 of the award will go to the North Dakota Department of Transportation to implement an electronic commercial driver's license testing system across the state. FMCSA additionally awarded the North Dakota Highway Patrol $1,963,108 to conduct compliance reviews, safety audits, and thousands of inspections throughout North Dakota, including inspections at ports of entry and remote border locations.

As FMCSA announced its grant award in Bismarck, law enforcement officials throughout North Dakota, South Dakota and Wyoming conducted full bus driver and vehicle safety inspections. The three-state inspection sweep is part of FMCSA's year-round partnership with the states to bolster commercial bus and driver safety. "We are committed to working side-by-side with our state partners to create a tight net of safety enforcement," noted FMCSA Administrator Ferro (U.S. Department of Transportation 2011). According to Ferro, "these grants will enable North Dakota to achieve this goal by providing the resources needed to boost police presence along critical traffic corridors and border crossings across the state."

2.9.2 South Dakota CMV Enforcement Funding

For FY2012, South Dakota's governor recommended a decrease in the budget for the Division of Highway Patrol, which includes the South Dakota Highway Patrol, Accident Records, Highway Safety, and State Radio, of $148,596 in general funds, $6,172 in federal fund expenditure authority, $45,154 in other fund expenditure authority, and 3.0 FTE (South Dakota 2012).

The recommended decreases are largely due to the elimination of 3.0 FTEs and reduced general fund expenditures within State Radio. The total FY2012 recommendation includes $1,175,046 in general funds, $5,477,061 in federal fund expenditure authority, and $18,954,860 in other fund expenditure authority, for a total of $25,606,967 and 274.0 FTE. According to the Acting Superintendent Major Randy Hartley, "We did take a reduction in budget for contractual services primarily due to the cost of technology. That cost is being reduced for departments in state government" (Winters 2012). The budget cuts are forcing South Dakota to "consolidate [State Radio] operations overnight, during the nighttime hours, primarily early morning hours, when the radio traffic and activity is lower,"

South Dakota's Highway Patrol contended that, despite the budget cuts, the state will not see a decline in public safety. "Through the entire budget cuts we have been allowed by the administration to continue to hire on the enforcement side." According to Hartley, "we've always been able to maintain our existing manpower."

3. CONCLUSION

Significant research has been done on the contributing causes of truck crashes. Vachal and Huseth (2012) found that, in North Dakota, the percentage of truck crashes on rural roads has increased in all but one of the last five years. With the exception of 2007, the percentage of trucks involved in rural road crashes in North Dakota's oil counties has outpaced the statewide average.

The question, therefore, is how to maximize North Dakota's CMV enforcement efforts in a way that is both targeted and cost effective. A two-pronged strategy of effective law enforcement and safety education seems to be the best way to improve commercial motor vehicle safety. North Dakota has been actively implementing both programs and seems to be keen to increase efforts on both sides of that coin to minimize the number and lethality of truck crashes on North Dakota roads.

From this review, it seems clear that North Dakota's CMV enforcement levels are at an all-time high, which is appropriate given the level of traffic on North Dakota's roads. High-visibility, targeted enforcement efforts, such as short-term saturation events, offer one way to make use of limited resources. For instance, troopers and civilian safety inspectors from the North Dakota Highway Patrol (NDHP) Motor Carrier Division routinely participate in the Commercial Vehicle Safety Alliance (CVSA) enforcement events. In a 72-hour saturation event in June 2012, for example, North Dakota completed a total of 221 inspections. During the course of those inspections, officers detected 319 violations and 35 out-of-service violations were enforced, which included 14 trucks, 16 trailers, and five drivers.

These kinds of targeted saturation efforts, combined with an increased use of technology for communication and maximizing visibility statewide, a rigorous fine schedule for overweight and out of compliance trucks seems to suggest that North Dakota's CMV enforcement levels are at a level generally consistent with the peer states reviewed.

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