

GAO

Report to the Chairman, Subcommittee  
on Transportation and Related Agencies,  
Committee on Appropriations, House of  
Representatives

July 2000

# COMMERCIAL MOTOR VEHICLES

## Effectiveness of Actions Being Taken to Improve Motor Carrier Safety Is Unknown



G A O

Accountability \* Integrity \* Reliability





United States General Accounting Office  
Washington, D.C. 20548

Resources, Community, and  
Economic Development Division

B-284418

July 17, 2000

The Honorable Frank R. Wolf  
Chairman, Subcommittee on Transportation  
and Related Agencies  
Committee on Appropriations  
House of Representatives

Dear Mr. Chairman:

In 1998, 5,374 people died on our nation's roads from crashes involving large trucks (those with a gross weight of at least 10,001 pounds), a figure largely unchanged from a decade ago. Some fatal crashes are the result of truck drivers' operating their vehicles while fatigued. The number of fatigue-related fatalities is not known with any precision. However, there is widespread agreement that the federal rules governing the hours that commercial motor vehicle drivers must rest before driving needs to be revised.

Federal responsibilities for motor carrier safety reside in the Department of Transportation's (DOT) Federal Motor Carrier Safety Administration (the motor carrier administration), which was created to give motor carrier safety increased attention and stature within DOT.<sup>1</sup> In this regard, DOT has initiated a number of actions to reduce fatalities, including (1) establishing a goal to reduce the number of truck-related fatalities by 50 percent by 2009<sup>2</sup> and (2) proposing changes in the regulations that govern the amount of time in a day that drivers may work (called "hours of service"), aimed at allowing them to obtain more rest. However, the proposal has engendered much critical comment from safety advocates, enforcement organizations, and industry representatives.

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<sup>1</sup>The Motor Carrier Safety Improvement Act of 1999, P.L. 106-159, Dec. 9, 1999. Previously, these responsibilities rested with DOT's Federal Highway Administration.

<sup>2</sup>The goal of reducing truck-related fatalities has been incorporated into DOT's fiscal year 2001 performance plan. Such plans are required by the Government Performance and Results Act of 1993.

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We reported earlier to you on the issue of large truck safety.<sup>3</sup> Because of your continuing concern in this area, you asked us to review efforts being undertaken by the motor carrier administration to reduce the number of truck-related fatalities. Specifically, we examined (1) the motor carrier administration's overall strategy for reducing fatalities resulting from crashes involving large trucks; (2) specific actions the motor carrier administration is taking to meet this goal; (3) the extent to which the motor carrier administration has considered additional improvements suggested by the safety community, industry, and others; and (4) the bases for the motor carrier administration's estimates for the expected number of lives to be saved as a result of proposed revisions to its hours of service rules.

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## Results in Brief

The motor carrier administration has developed an overall strategy for improving the safety of commercial motor vehicles (trucks and buses). This strategy, called the Safety Action Plan, covers the years 2000 through 2003 and contains 47 initiatives that are intended to be an initial step in enabling the Department to reach its goal of reducing fatalities due to crashes involving large trucks by 50 percent by 2009. These initiatives fall within several broad categories, including increasing the enforcement of federal safety regulations; increasing safety awareness; improving safety information and technology; and improving performance standards for vehicles, drivers, and motor carriers. However, the Department has not articulated how the individual initiatives, or sets of initiatives, in the plan will contribute to reductions in truck-related fatalities. DOT does not expect to have information for several years that would allow it to estimate the degree to which its initiatives will reduce truck-related fatalities and still expects that making such estimates would be difficult. In addition, the Department has not determined whether it can reasonably expect to complete all 47 activities with expected budgetary and human resources. Department officials told us that publication of the motor carrier administration's Safety Action Plan signals its intent to carry it out and that the Department expects to examine these resource needs this year. Because the Department's goal of reducing truck-related fatalities is extremely ambitious, it is important for the Department to determine how the actions it is taking will lead to a reduction in the number of truck-

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<sup>3</sup>*Truck Safety: Motor Carriers Office Hampered by Limited Information on Causes of Crashes and Other Data Problems* (GAO/RCED-99-182, June 29, 1999). See also *Commercial Motor Vehicles: Significant Actions Remain to Improve Truck Safety* (GAO/T-RCED-00-102, Mar. 2, 2000).

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related fatalities and whether it can reasonably expect to carry out the initiatives in its Safety Action Plan.

In response to the Motor Carrier Safety Improvement Act of 1999, criticisms by this Subcommittee, and recommendations by DOT's Inspector General, us, and others, the Department has taken initial steps toward improving motor carrier safety. These steps include establishing a new organizational structure—the motor carrier administration—that has accountability for truck safety and that supports a greater emphasis on enforcement and compliance. Also, the Department appears to be making progress on some of the individual initiatives in its Safety Action Plan. For example, under its Large Truck Crash Causation Project, which is intended to result in a national database on the causes and contributing factors of large truck crashes, DOT has studied the feasibility of conducting the project and has selected four pilot sites to test the data-gathering methodology. Testing at the four pilot sites is expected to begin this July, and a full test (24 sites) is expected to begin in January 2001.

The motor carrier administration sought comments on a draft of its Safety Action Plan from 49 organizations representing industry and the safety community. Nine of these organizations provided written comments. We found that the Department made changes to the plan to address most of the comments. For example, in response to comments from an organization representing bus companies, the motor carrier administration added a task to the plan to gather more safety information on these types of vehicles.

The motor carrier administration recently published proposed revisions to its regulations that limit the number of hours that drivers of commercial motor vehicles are permitted to drive before resting. Under the proposed rule, the Department estimates that 115 fatigue-related fatalities would be avoided annually. DOT acknowledged that there was uncertainty surrounding this estimate. According to motor carrier administration officials, this estimate is based on two primary assumptions: (1) fatigue is either a primary or secondary factor in 15 percent of fatal large truck crashes and (2) long-haul and regional drivers' (generally, drivers who travel 75,000 miles or more per year) use of electronic devices that monitor the number of hours they drive under the proposed rule would result in a 20-percent decrease in the number of fatigue-related crashes. DOT officials told us that they did not have a firm analytic basis for either assumption because of the lack of well-defined data on crash causation. Department officials said they supplemented their review of available research with their professional judgment to arrive at these assumptions. DOT recognizes

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the uncertainty of its estimates but emphasized that providing drivers with more time for sleep will lessen fatigue and thereby reduce the number of fatigue-related crashes. The reasonableness of the Department's assumptions and the resulting estimate of the number of lives that could be saved if the proposed rule is adopted, however, are unknown. If DOT's assumptions are unreasonable, then its estimate of the number of lives that could be saved as a result of adopting the proposed rule could change markedly. For example, the Department estimated that if adopting electronic on-board recorders for long-haul and regional drivers resulted in 5 percent, rather than in 20 percent, fewer fatigue-related crashes, then 38—not 115—lives could be saved each year as a result of adopting the proposed rule.

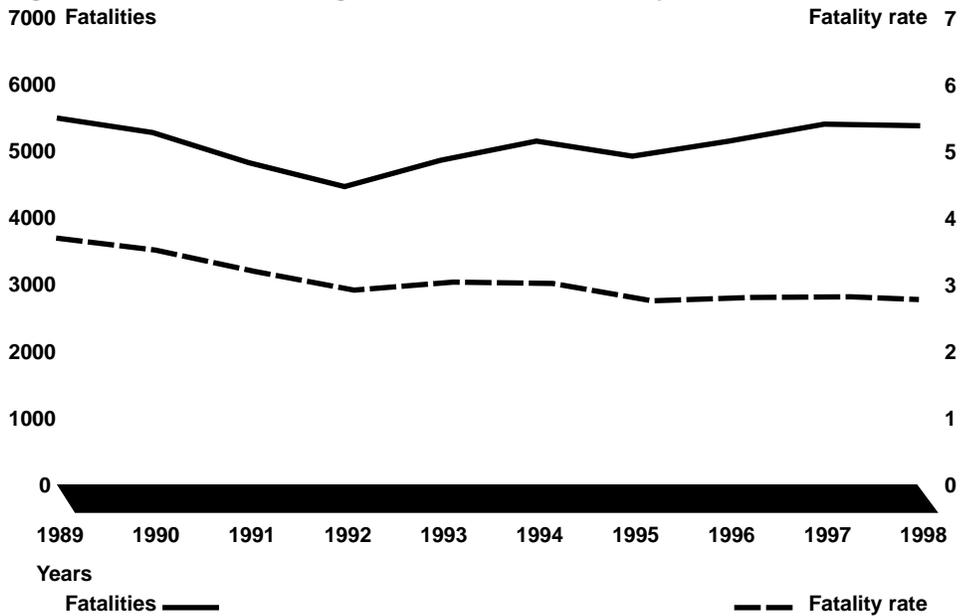
The Department of Transportation commented on a draft of this report and characterized it as fair and balanced. The Department suggested several changes to provide added context, such as discussing the difficulty of estimating lives saved through its safety initiatives and also made a number of technical and clarifying comments. We incorporated these changes where appropriate.

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## Background

According to DOT and industry sources, there are over 500,000 interstate motor carriers, which utilize about 7.2 million large trucks, and about 9.8 million drivers. In recent years, the numbers of carriers, trucks, and drivers have been increasing. While the number of truck-related fatalities has decreased slightly since 1997, it is largely unchanged from a decade ago (see fig. 1). In addition, the fatality rate—the number of fatalities per 100 million miles traveled by large trucks—has remained fairly constant over the past several years at about 2.8 deaths per 100 million miles traveled, after decreasing by over 20 percent between 1989 and 1992.

**Figure 1: Fatalities From Large Truck Crashes and Fatality Rates, 1989-1998**



Note: According to preliminary 1999 data, 5,203 people were killed in truck-related crashes in 1999. Information on fatality rates for 1999 will not be available until this fall.

Source: DOT.

The December 1999 Motor Carrier Safety Improvement Act established the Federal Motor Carrier Safety Administration within DOT. It also authorized additional funding for grants to state agencies to help ensure compliance with federal and state motor carrier safety rules (primarily through roadside inspections and compliance reviews<sup>4</sup>), provided additional enforcement tools and improvements to the commercial driver’s license program, and required a long-term strategic plan and periodic progress reports. Other responsibilities of the new administration include collecting and disseminating safety data concerning motor carriers and identifying, coordinating, and administering research and development to enhance motor carrier safety.

DOT’s existing hours of service regulations have been in effect in their current form since 1962. Under these regulations, commercial motor

<sup>4</sup>Compliance reviews are on-site reviews of motor carriers’ compliance with federal safety regulations.

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vehicle drivers in interstate commerce are generally permitted to drive up to 10 hours after 8 consecutive hours off duty. After being on duty for 15 hours (e.g., 10 hours driving and 5 hours performing nondriving tasks such as waiting for cargo or loading and unloading cargo), a driver may not drive without taking 8 consecutive hours off duty. The existing regulations also provide that if a motor carrier does not operate commercial vehicles every day of the week, its drivers may not drive more than 60 hours over 7 consecutive days; if the carrier operates commercial motor vehicles every day, its drivers may not drive more than 70 hours over 8 consecutive days. The regulations do not require that drivers take uninterrupted time off duty that would serve as a weekend.

In response to concerns that the current regulations do not provide drivers with adequate opportunities for sleep (e.g., the 8 hours off duty does not leave enough time for sleeping, housekeeping on the road, eating, and recreation) and a statutory mandate to revise the regulations,<sup>5</sup> the Department announced proposed revisions in April 2000 and asked for public comment.<sup>6</sup> The Department believes that the proposed rule is a major improvement because it is science-based (related to sleep cycles), allows for an adequate period of sleep, allows for more regular work and off-duty patterns to coincide with circadian rhythms,<sup>7</sup> and reduces the maximum number of hours a driver can be behind the wheel from 16 to 12 within a 24-hour cycle. As a result, the Department believes that adopting the proposed rule would result in better-rested, more alert drivers and would thus reduce fatigue-related fatalities and injuries.

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<sup>5</sup>The ICC Termination Act of 1995 required the Federal Highway Administration to modify its existing hours of service regulations to incorporate methods of reducing fatigue-related incidents such as crashes.

<sup>6</sup>The proposed rule was published in the *Federal Register* on May 2, 2000.

<sup>7</sup>A circadian rhythm is a self-sustained biological rhythm that normally has a period of approximately 24 hours.

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The proposed rule sets different requirements for different types of drivers. For example, long-haul drivers would have to have at least 10 consecutive hours off duty in each 24-hour cycle (allowing the opportunity to obtain a minimum of 8 consecutive hours of sleep daily).<sup>8</sup> Of the remaining 14 hours, they would be able to work 12 hours with 2 hours off during the work shift. Regional drivers would also have to have at least 10 consecutive hours off duty in each 24-hour period.<sup>9</sup> The distinction between driving time and on-duty time under the existing rules would be eliminated under DOT's proposal. Weekly on-duty time (both driving and performing other work activities, such as loading and unloading and waiting for pickup and delivery) would be limited to 60 hours during a 7-day period for long-haul and regional drivers, with a requirement that the drivers have between 32 and 56 consecutive hours off duty at the end of each work week.<sup>10</sup> Other requirements would be set for local drivers (drivers whose primary duties are other than driving).

There are many ways to meet the work and off-duty requirements under both the current rules and the proposed rule. Two examples of how the proposed rule ("new drivers" A and B) and the current rules ("current drivers" A and B) could be met over the course of 2 days are shown in figure 2. New driver B is presented with a work/rest pattern that is more in line with the body's circadian rhythm than is current driver B.

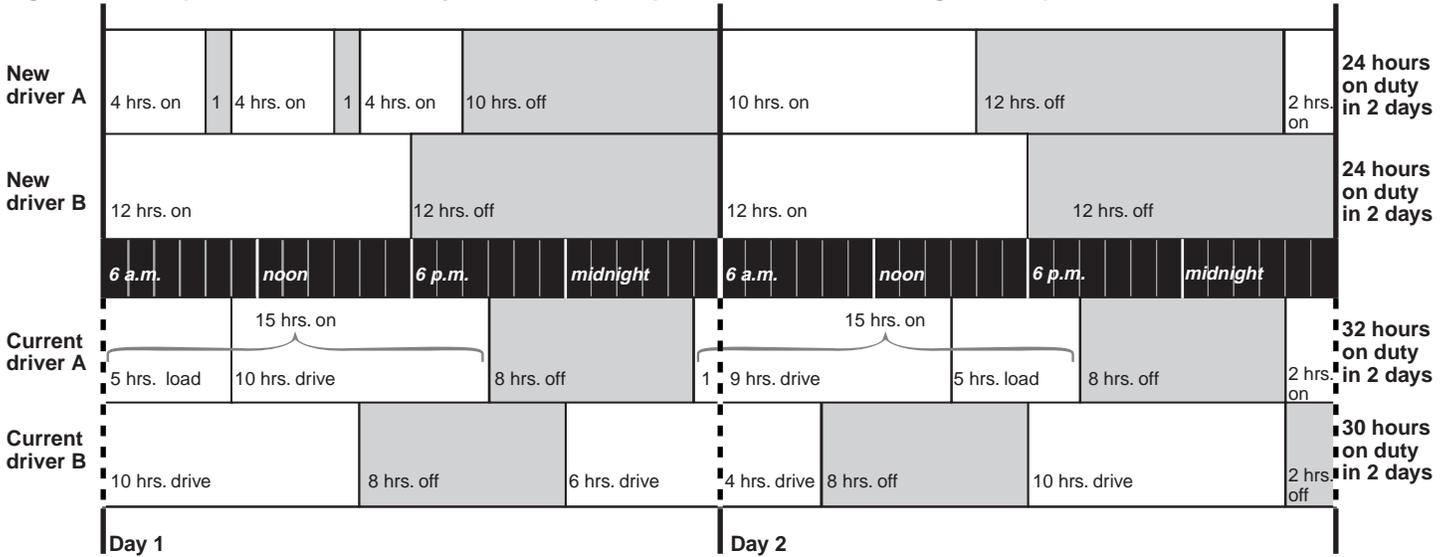
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<sup>8</sup>Long-haul drivers are away from their home base for more than 3 days at a time and generally travel over 100,000 miles a year.

<sup>9</sup>Regional drivers are away from their home base 3 or fewer days at a time and generally travel between 75,000 and 100,000 miles per year.

<sup>10</sup>The proposed regulations would allow for some variation for long-haul drivers on trips requiring 2 or more consecutive work weeks away from the normal work reporting location.

Figure 2: Examples of Drivers' On-Duty and Off-Duty Requirements Under Existing and Proposed Hours of Service Rules



Source: GAO's analysis of DOT's current and proposed rules.

## DOT's Strategy Does Not Articulate How Initiatives Will Contribute to Reducing Truck-Related Fatalities

DOT has developed an overall strategy for improving truck safety called the Safety Action Plan. However, the strategy does not articulate how the individual initiatives, or specific sets of initiatives, will contribute to reductions in truck-related fatalities. Nor has the motor carrier administration determined whether it has the resources to successfully carry out the initiatives in its plan.

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## DOT Has an Overall Strategy for Reducing Fatalities, but It Lacks Specificity on How Initiatives Will Contribute to Reaching DOT's Goal

The motor carrier administration's February 2000 Safety Action Plan, which contains 47 initiatives that are either planned or under way, is the Department's blueprint for reducing large-truck-related fatalities. These initiatives fall within broad categories, including increasing the enforcement of federal safety regulations; increasing safety awareness; improving safety information and technology; and improving performance standards for vehicles, drivers, and motor carriers. According to DOT, these 47 initiatives represent the most important of its many actions to reduce truck-related crashes. However, the motor carrier administration has not articulated how individual initiatives or sets of initiatives contained in the plan will contribute to reducing truck-related fatalities.<sup>11</sup>

In our June 1999 report to this Subcommittee, we recommended that DOT prioritize the initiatives in its draft Safety Action Plan according to the potential for the initiatives to reduce crashes and deaths.<sup>12</sup> During a March 2000 hearing before this Subcommittee, the motor carrier administration's acting deputy administrator stated that the plan is a statement of the agency's top priorities for the next 3 years and that the highest priority has been assigned to strengthening targeted enforcement, completing important rules, improving safety information and technology, and increasing safety awareness. The motor carrier administration also stated that it has limited ability to prioritize the initiatives in its Safety Action Plan according to their potential for reducing truck-related fatalities for two reasons. First, of the 47 initiatives in the plan, 35 are were mandated by the Congress, such as establishing consistent nationwide enforcement penalties (required by the Transportation Equity Act for the 21st Century). Four of the initiatives stem from recommendations made by the Department's Inspector General, our recommendations, and an independent assessment of DOT's efforts commissioned by the Secretary of Transportation (referred to as the Mineta review). The remaining eight initiatives were established by DOT. The Safety Action Plan gives priority to the 35 initiatives mandated by the Congress.

Second, the Department does not yet know the extent to which the initiatives in the plan will contribute to reducing large-truck-related

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<sup>11</sup>Subsequent to the plan's issuance, DOT published in the *Federal Register* a proposed change to its hours of service rule. DOT estimated that 115 lives could be saved each year if the proposed rule is adopted.

<sup>12</sup>See GAO/RCED-99-182 and GAO/TRCED-00-102.

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fatalities. For example, under one of the initiatives, the motor carrier administration plans to obtain data on the causes of large truck crashes, analyze them and, ultimately, identify interventions that will have the greatest impact on reducing these crashes. These efforts, when completed, would allow the Department to better establish priorities. However, useful nationwide data resulting from this initiative will not be available until at least 2003. Also, under the evaluation component of its Safety Action Plan, the motor carrier administration plans to evaluate the overall effectiveness of three of its programs for reducing truck-related crashes and fatalities—the roadside inspection program, the compliance review program, and the traffic enforcement program. However, according to a motor carrier administration official, for many of the initiatives in the Safety Action Plan, the Department does not have a plan for evaluating their effectiveness toward reducing truck-related fatalities.

DOT said that, because very little useful information exists on crash causation, it is difficult for the Department to quantify how many lives would be saved by a specific initiative. For example, the Department has no way of accurately predicting how many fatalities would be avoided by increasing the number of roadside inspections conducted annually from about 2 million (the current level) to, say, 2.5 million. We agree that the scarcity of information on crash causation will pose substantial impediments to determining the degree to which the initiatives will reduce fatalities. However, as this information becomes available over the next several years, the motor carrier administration will be in a better position to take action on our recommendation to prioritize its activities. We also recognize that estimates of lives saved carry with them some degree of uncertainty; however, we continue to maintain that the motor carrier administration is better served by focusing on those activities (or sets of interrelated activities) with the greatest potential to save lives even if the estimate of that potential is considered “rough.” Our view is consistent with the Department’s recent action to propose revisions to drivers’ hours of service rules, the safety impact of which the Department acknowledges is subject to uncertainty. (The uncertainty of the safety impact of the Department’s proposed hours of service rule is discussed later in this report.) Finally, we disagree with the Department that it has little flexibility in deciding which initiatives to carry out. If the Department can substantiate that one or more of its initiatives are likely to make marginal or no contribution to improved safety, it can seek legislative changes.

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## DOT Has Still Not Determined Whether It Has the Budgetary and Human Resources to Carry Out Its Safety Action Plan

We reported in June 1999 that DOT's Safety Action Plan did not address whether the Department had sufficient resources to carry out the plan successfully. For example, in promotional material, the motor carrier administration cited one of its initiatives—the Performance and Registration Information Systems Management (PRISM) program—as its premier enforcement program.<sup>13</sup> According to a motor carrier administration official, the administration had allocated about half of its information systems budget to this program. However, it had allocated few people to the program. Because the Safety Action Plan is a significant undertaking, we recommended that DOT only undertake those activities that it was reasonably sure that it could complete within available budgetary and human resources.

The motor carrier administration has not yet prepared multiyear estimates of the resources it is likely to need to carry out its Safety Action Plan but plans to do so. In response to requirements in the Motor Carrier Safety Improvement Act of 1999 and the Government Performance and Results Act of 1993,<sup>14</sup> the motor carrier administration has prepared an annual performance plan<sup>15</sup> that contains, among other things, estimates of the resources it needs for fiscal year 2001. According to the head of the motor carrier administration's strategic planning unit, the motor carrier administration will assess current and future resource requirements for fiscal years 2001 through 2010 as part of its strategic planning process.<sup>16</sup>

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<sup>13</sup>PRISM links state motor vehicle registration and licensing programs with DOT's commercial vehicle safety efforts and is intended to improve safety by providing states with information that would allow them to suspend or revoke registrations for motor carriers with poor safety performance.

<sup>14</sup>The Government Performance and Results Act of 1993 requires that executive agencies prepare multiyear strategic plans, annual performance plans, and annual performance reports. The strategic plans are to include a mission statement, general goals and objectives, and the strategies the agency will use to achieve those goals and objectives.

<sup>15</sup>Federal Motor Carrier Safety Administration, Fiscal Year 2001 Performance Plan (Feb. 2000).

<sup>16</sup>The strategic plan is expected to contain a plan and schedule for, among other things, reducing the number and rates of crashes, injuries, and fatalities involving commercial motor vehicles and numeric or measurable goals that would enable the motor carrier administration to assess its progress toward accomplishing its goals for large truck safety. Typically, a strategic plan would be prepared before an annual performance plan. However, because the Motor Carrier Safety Improvement Act was recently enacted, the agency prepared the fiscal year 2001 annual performance plan even though a strategic plan has not yet been developed.

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The motor carrier administration expects to complete a draft of this plan by this fall and to issue the final plan around the end of this calendar year.

DOT said that its budget request to the Congress for fiscal year 2001 contains adequate funds and staffing to carry out the Safety Action Plan in the coming year. In addition, DOT said that publication of the plan indicates that the motor carrier administration plans to complete all 47 initiatives. Despite the assurance that the Department has estimated its 1-year needs, we find it troubling that DOT did not determine whether it is likely to have the resources over the long term to successfully carry out its Safety Action Plan before adopting the plan. For example, an activity that is relatively inexpensive at its outset could have significantly greater costs when it is fully implemented in later years. In addition, DOT has set itself a very ambitious goal of reducing fatalities related to crashes involving trucks by 50 percent over 10 years. To achieve this goal, DOT must make over 20 times the annual progress it has made over the past decade. By not determining whether it can reasonably expect to have the resources to carry out its plan, DOT could be making a very difficult goal harder to achieve. We are encouraged that the motor carrier administration has indicated that it will ultimately carry out our recommendation.

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## The Motor Carrier Administration Has Acted to Improve Truck Safety

The motor carrier administration has taken some initial steps toward improving truck safety. These include improved accountability for motor carrier safety within DOT; increases in DOT's enforcement and compliance activities; and progress made on some individual initiatives in response to recommendations made by us and by the Department's Inspector General.

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## New Modal Administration Established With More Focused Accountability

To meet the requirements of the December 1999 act, in early January 2000, the Secretary of Transportation approved the organizational structure for a new administration within DOT. The Secretary installed the former Acting Director of the Office of Motor Carrier Safety as the Acting Chief Safety Officer and, in May 2000, the Secretary appointed an Acting Deputy Administrator for the motor carrier administration. Also, staff members are serving in all office director positions on a permanent or acting basis. The remaining staff of the motor carrier administration have been transferred from its predecessor organization. Currently, the agency is operating at previously established funding and staffing levels and receives administrative support from the Federal Highway Administration.<sup>17</sup>

The establishment of the motor carrier administration within DOT enhances accountability and visibility for motor carrier safety because its primary function is safety and it has been placed on a par with other modal administrations within the Department. Moreover, the agency's new organizational structure—which features an Associate Administrator for Enforcement and Program Delivery (currently, the position is vacant) and an Office Director for Enforcement and Compliance (currently, the position is filled on an “acting” basis)—supports a greater emphasis on enforcement and compliance. In contrast to its predecessor organization, which was within the Federal Highway Administration, field operations now receive instructions directly from the Associate Administrator for Enforcement and Program Delivery, increasing accountability and reducing the potential for conflicting instructions. In addition, beginning in fiscal year 2001, the agency will have attorneys and support staff in four regional service centers whose sole responsibility will be to enforce compliance with truck safety regulations. Previously, these attorneys performed legal work, including truck safety work, for the Federal Highway Administration as a whole.

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<sup>17</sup>The 1999 Motor Carrier Safety Improvement Act prohibits the motor carrier administration from increasing, before fiscal year 2001, the number of headquarters staff beyond the number transferred from the Federal Highway Administration in fiscal year 2000.

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However, we have stated that to achieve real and lasting progress, it will be important for DOT to demonstrate to the Congress and to the public that it can follow through on its efforts over the long term to achieve significant measurable improvements in motor carrier safety.<sup>18</sup> Currently, several key leadership positions, including the Administrator and four Associate Administrators, are unfilled.<sup>19</sup> The longer it takes DOT to fill these positions with able leaders, the more difficult it will be for the agency to accomplish the challenging goals it has before it.

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### The Motor Carrier Administration Is Increasing Its Enforcement Activity

The motor carrier administration is presently carrying out 10 initiatives under the Safety Action Plan to increase the level of compliance among high-risk motor carriers with federal safety regulations. Many of these initiatives stem from criticisms by this Subcommittee and DOT's Inspector General and from recent legislative changes. In addition, in response to these criticisms, the motor carrier administration has increased its compliance and enforcement activities. In April 1999, DOT issued guidance to its enforcement and compliance staff responsible for truck safety that called for increasing (1) the number of compliance reviews (from two to an average of four or five per month) that each staff member would be expected to conduct and (2) the civil penalties assessed for violations of the Federal Motor Carrier Safety Regulations, in accordance with the Transportation Equity Act for the 21st Century. For example, DOT increased the number of federal compliance reviews at motor carrier offices by about 30 percent—from 5,147 in fiscal year 1998 to 6,654 in fiscal year 1999. During the same period, the number of enforcement cases that generally stem from compliance reviews rose from 2,444 to 2,899—an increase of nearly 20 percent. Also, the amount of civil penalties assessed per case increased by about 40 percent from an average of \$3,750 in fiscal year 1998 to an average of \$5,241 for the second quarter of fiscal year 2000.

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<sup>18</sup>GAO/TRCED-00-102.

<sup>19</sup>The four Associate Administrators are for administration; research, technology, and information management; policy and program development; and enforcement and program delivery.

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## Efforts Are Being Undertaken to Improve Safety Information and Technology

DOT also appears to be making progress with its initiatives on improving safety information and technology. For example, under its Large Truck Crash Causation Project, which is intended to result in a national database on the causes and contributing factors of large truck crashes, DOT has studied the feasibility of conducting the project and has selected four pilot sites to test its data-gathering methodology. The pilot program is expected to begin this July, with the full test (24 sites) expected to begin in January 2001. The motor carrier administration views this project to be essential to reaching DOT's long-term goal because the database would allow it to develop and implement countermeasures to reduce the occurrence and severity of large truck crashes. As we reported to this Subcommittee last year, having timely, reliable, and sufficiently detailed information about the causes of these crashes is essential for developing and implementing truck safety strategies.<sup>20</sup> A separate effort is under way to increase the accuracy and timeliness of information reported by states on truck crashes. This information will enhance DOT's ability to target problem carriers based on crash occurrence.

The Commercial Vehicle Information Systems and Networks (CVISN) program, another initiative for improving safety information and technology, is intended to provide enforcement officials with greater access to current safety and interstate credentials information (e.g., liability insurance and vehicle titling), the ability to better target problem carriers and commercial motor vehicles, and the ability to check carriers' safety and credentials history at the time of registration. The motor carrier administration's overall goal is to have CVISN deployed in a majority of the states by September 2003. To date, three states are expected to complete initial deployment by the end of fiscal year 2000; two states are expected to achieve initial deployment by the end of fiscal year 2001; and another five states are in various stages of completing deployment. In addition, 20 states are participating in a series of workshops designed to provide them with information on how to implement and deploy the CVISN program in their states. The motor carrier administration plans to have at least 16 of these 20 states reach the initial deployment stage by 2003.

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<sup>20</sup>GAO/RCED-99-182.

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## The Motor Carrier Administration Has Considered Others' Views on Its Activities

In March 1999, the Department released its draft Safety Action Plan. The administration sought comments on the draft from 49 organizations representing a wide range of interests in the motor carrier industry, including associations representing truck drivers, carriers, insurance firms, law enforcement, the motorcoach industry, and safety advocates. Nine organizations provided a wide range of written comments on the draft plan.<sup>21</sup> We found that for most of the issues raised by organizations that commented on the draft plan, the Department made changes to the plan to address those comments.

Of the nine organizations that submitted written comments, four were safety advocacy organizations; the others represented the trucking industry, commercial truck drivers, the motorcoach industry, law enforcement, and engineering. These organizations' overall opinions of the draft plan ranged from praise to condemnation. To a greater or lesser extent, they all suggested changes.

The motor carrier administration released a revised Safety Action Plan in February 2000 that contained many changes as a result of the comments it received on the draft plan. For example, a commercial passenger carrier organization had commented that the draft plan did not reflect the differences between trucks and buses. In response, the motor carrier administration modified its plan by including several specific actions and references to the commercial passenger carrier industry. As part of an initiative to increase enforcement of high-risk motor carriers, for instance, the motor carrier administration included a task to develop a new methodology for gathering information on commercial passenger operations (e.g., buses). Also, in response to comments received from a law enforcement organization, the motor carrier administration added a section to the plan describing truck safety initiatives at the border with Canada. Officials from the law enforcement organization told us that they felt that all of their comments had been addressed in the plan.

Other organizations, however, did not believe that their comments were adequately addressed. For example, one safety advocacy organization stated that the revised plan inadequately addresses a variety of issues,

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<sup>21</sup>To find out why more organizations did not provide comments, we contacted five organizations that did not submit comments on the draft plan. These organizations told us that they either had no problems with the plan, did not recall seeing the draft plan, or could not take the time to submit comments.

including the rating of motor carriers on safety performance, the amount of time needed to acquire safety data, and the need for more new safety-related technology.

## The Impact of the Proposed Rule on Safety Depends Largely on the Validity of Key Assumptions

In May 2000, the motor carrier administration published proposed changes to the current regulations that limit the number of hours operators of large trucks are permitted to drive before resting. The motor carrier administration estimates that the proposed rule would result in 115 fewer fatigue-related fatalities each year.<sup>22</sup> DOT acknowledged that this estimate was subject to uncertainty. According to motor carrier administration officials, this estimate was based on two critical assumptions: (1) that 15 percent of truck-related fatal crashes are fatigue-related and (2) that the proposed rule would reduce fatigue-related deaths by 20 percent annually for those carriers that are required to install electronic on-board recorders. We found, from discussions with motor carrier administration officials, that DOT supplemented its review of the information on truck crashes with its judgment in quantifying these two assumptions.<sup>23</sup>

## The Estimate for the Percentage of Fatigue-Related Fatalities Was Based on Research and Professional Judgment

According to motor carrier administration officials, to establish the baseline estimate for the percentage of large-truck-related fatal crashes that involve a fatigued truck driver, the motor carrier administration, among other things, reviewed several studies on the number of such crashes and analyzed differences in the estimates. Overall, these estimates ranged from a low of 0.24 percent (from police accident reports) to a high of 40 percent (from a study of single vehicle crashes at night). DOT officials believed that neither figure represented a reasonable amount. We were told that DOT officials relied on a report that indicates that the amount of large

<sup>22</sup>As discussed in this section, DOT estimated that the number of fatigue-related fatalities annually were 298, 215, and 242, respectively, for long-haul, regional, and all other drivers. DOT estimated that its rule would result in a 20-percent reduction in fatalities for long-haul and regional drivers (because of the adoption of electronic on-board recorders) and a 5-percent reduction for all other drivers. Thus,  $(0.2)(298) + (0.2)(215) + (0.05)(242) = 115$ . The motor carrier administration also estimates that the proposed changes would avoid 2,995 injuries annually and would result in discounted benefits of \$6.8 billion, discounted costs of \$3.4 billion, and discounted net benefits of \$3.4 billion.

<sup>23</sup>We did not review the research on which DOT based its rulemaking or how DOT interpreted it and applied its findings. As a result, we did not assess the merits of its efforts or whether the judgments it applied were reasonable in estimating the expected safety impact of the proposed rule.

truck crashes that involve fatigue range from 2.8 to 6.1 percent and, based on their professional judgment, selected the midpoint—4.5 percent.

In addition, DOT officials believed that other crashes may have been the indirect result of fatigue. For example, we were told that research suggests that about 25 to 50 percent of fatal crashes involved “recognition failure” (e.g., inattention or “looked but did not see”). In these cases, DOT reasoned that fatigue may have indirectly contributed to the crashes. Using their professional judgment, DOT officials estimated that 10 percent of fatal crashes were indirectly related to fatigue. DOT then summed the percentages of crashes estimated to be directly (4.5 percent) and indirectly (10 percent) caused by fatigue and added 0.5 percent (to round up to a whole number) to arrive at its estimate of 15 percent as the proportion of fatal large truck crashes that are related to fatigue.

Using 5,035 as the number of people who die each year in large-truck-related crashes, the motor carrier administration estimated that about 755 of the deaths (15 percent of 5,035) involved fatigue.<sup>24</sup> Of these 755 large-truck-related fatalities, the motor carrier administration estimates that 298 involved long-haul truck drivers, 215 involved regional truck drivers, and 242 involved other types of truck drivers (e.g., local drivers).<sup>25</sup>

## The Effect of Proposed Electronic On-Board Recorder Requirement Was Based on DOT Officials’ Professional Judgment

The second key assumption underlying the estimated number of fatalities that would be avoided under the proposed rule is that long-haul and regional truck drivers would experience a 20-percent decrease in fatalities annually (compared with a 5-percent decrease for other types of truck drivers covered by the rule). DOT believes that long-haul and regional drivers will experience a greater decrease in the number of fatalities because the new rule would require them to have their trucks equipped with electronic on-board recorders that monitor the number of hours they drive.<sup>26</sup> The Department believes that the on-board recorders will allow

<sup>24</sup>The Department derived 5,035 by multiplying the number of trucks involved in fatal crashes, 4,577 (from the Trucks Involved in Fatal Accidents database, 1991-1996), times 1.1—the ratio of fatalities to fatal crashes between 1988 and 1997.

<sup>25</sup>The motor carrier administration allocated the 755 truck-related fatalities among these three groups based on information obtained from the Trucks Involved in Fatal Accidents database, which contains information on, among other things, truck trip distances.

<sup>26</sup>DOT estimated that the on-board recorder requirement would cost the industry about \$1 billion over 10 years.

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enforcement personnel, such as state police, to determine whether a driver has violated the hours of service rule. As a result, the motor carrier administration believes that long-haul and regional truck drivers are more likely to comply with the Department's hours of service regulations and, in turn, have fewer fatigue-related fatal crashes.

Motor carrier administration officials told us that there is little research and on-road testing on which to base an estimate of the safety impact of requiring on-board recorders. However, they cited surveys of drivers that found that 40 to 75 percent of drivers may have violated the hours of service rules, depending on the definition of violation used. Moreover, they stated that while the proposed rule will not eliminate hours of service violations, the use of electronic on-board recorders will make violations more difficult to mask. DOT did not have an analytic basis for its estimate but used its judgment to designate a 20-percent reduction in fatalities as resulting from the requirement that electronic on-board recorders be installed on certain large trucks. DOT officials told us that DOT believed the 20-percent amount to be "in the ballpark," given its findings about potentially widespread violations of the current hours of service rules.

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**The Expected Decrease in the Number of Fatigue-Related Fatalities Is Sensitive to the Assumptions Chosen**

DOT acknowledged that its estimate of the number of fatalities that would be avoided as a result of the proposed rule is difficult to predict because of the lack of definitive data on crash causation. DOT assessed how estimates of lives saved could change if different assumptions were used. For example, if the assumption for the percentage of fatal large truck crashes that involve fatigue was 7.5 percent rather than 15 percent, the estimated number of fatalities avoided annually would be reduced to 48 instead of 115. Similarly, if long-haul and regional truck drivers experience the same amount of decline in fatal fatigue-related crashes as that expected of other truck drivers (5 percent), the number of fatalities avoided annually would only be 38—a 67-percent decrease from the estimate of 115.

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**Industry and Safety Representatives Have Criticized DOT's Safety Impact Estimate**

Industry and safety representatives are critical of DOT's estimates of the expected safety impacts of the proposed rule. For example, representatives of a trucking industry association we spoke with believe that the estimate of 15 percent of fatal truck crashes being fatigue-related is too high. They assert that studies show that less than 15 percent of these crashes are related to fatigue. Moreover, these officials believe that, with the exception of drivers who drive more than 14 hours per day, the electronic on-board recorders will not lead to greater compliance with the hours of service

regulations and, therefore, will have little impact on safety. As a result, the officials believe that the motor carrier administration has overestimated the number of fatalities that will be avoided under the proposed rule. Furthermore, officials representing motorcoach operators (primarily bus companies) told us that the motor carrier administration included the motorcoach industry in the proposed rule, along with the trucking industry, without taking into account that the motorcoach industry has a small number of fatal accidents annually and even fewer that are related to fatigue. Moreover, these officials told us that the proposal is based on scant motorcoach research; however, it is likely to have significant costs for the industry.

A representative of a safety advocacy group also raised concerns about the limited justification the motor carrier administration provided to support its baseline estimate of the percentage of fatal truck crashes that involve a fatigued truck driver and its estimate of the safety benefit that would result from requiring trucks driven by long-haul and regional drivers to be equipped with electronic on-board recorders. Although DOT's proposed rule emphasizes rest, officials representing safety advocacy groups also expressed concern about the proposal to permit truck drivers to drive more hours consecutively (e.g., up to 12 within a 24-hour period) despite some research that indicates that driving performance decreases after 8 to 10 hours of driving.

DOT emphasized that providing drivers with more time for sleep will lessen fatigue and thereby reduce the number of fatigue-related crashes. Recognizing the uncertainty associated with its estimates of the expected safety impacts of its proposed rule, the agency is seeking comments on all of these estimates as part of the process of moving forward to a final hours of service rule.

Revisions to the Department's hours of service rules are clearly an important part of its goal for reducing truck-related fatalities. They are important because the expected number of lives to be saved if the proposed rule is adopted represents nearly half of the annual reduction in fatalities that must be achieved to reduce truck-related fatalities by 50 percent by 2009. The Department has recognized the uncertainty surrounding its estimates of the safety benefits of its proposed rule and has asked for comments on the reasonableness of these estimates.<sup>27</sup> Attaining

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<sup>27</sup>The comment period closes October 30, 2000.

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additional insights could be useful to the Department in understanding the expected benefits from revising the existing hours of service rules.

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## Agency Comments and Our Evaluation

We provided the Department of Transportation with a draft of this report for its review and comment. We met with the Director of the motor carrier administration's Office of Policy, Plans, and Regulations, who provided us with comments. Overall DOT stated that the draft report was fair and balanced. DOT had three overarching comments. First, it believed that the report should reflect the fact that estimating the prospective impact of its Safety Action Plan initiatives on reducing truck-related fatalities would be a very difficult task. Second, our report should recognize that the Department has requested adequate resources to carry out its Safety Action Plan initiatives in fiscal year 2001 and that, by publishing the plan, it has stated its intent to carry out the actions described in the plan. Third, DOT recognized the uncertainty of its estimates of fatality reductions contained in its proposed hours of service rule and that this uncertainty stems from a lack of well-defined data on crash causation. However, the Department believes that increasing the time available for truck drivers to sleep will lessen fatigue and therefore save lives. DOT also said one of the expressed purposes of its notice of proposed rulemaking was to seek comments on its fatality reduction estimates. We incorporated these comments into this final report. In addition, the Department offered a number of technical and clarifying comments, which we incorporated where appropriate.

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## Scope and Methodology

To obtain information on the Department's overall strategy for reducing fatalities related to crashes involving large trucks by 50 percent by 2009 and on the actions DOT is currently undertaking to reduce the number of these fatalities, we reviewed the motor carrier administration's February 2000 Safety Action Plan, which covers the period 2000-2003, the fiscal year 2001 Performance Plan, and other available documentation. We also interviewed motor carrier administration officials, including the Office Director, Policy, Plans, and Regulations and the Acting Office Director, Enforcement and Compliance. To obtain information on the views of the highway safety community and the motor carrier industry, we reviewed their written comments on the draft Safety Action Plan and interviewed officials of several of those organizations. Organizations that we contacted for this and other portions of our work were Common Cause, Advocates for Highway

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Safety, the American Trucking Associations, the National Private Truck Council, the Commercial Vehicle Safety Alliance, the United Motorcoach Association, and the American Bus Association.

To obtain information on the bases the motor carrier administration used for estimating the safety impact of its proposed revisions to the regulations governing the amount of time drivers of commercial motor vehicles are permitted to drive before resting, we reviewed the notice of proposed rulemaking for hours of service for commercial motor vehicle operators and the preliminary regulatory evaluation for the proposed rule. In addition, we interviewed motor carrier administration officials responsible for developing the rule and preparing the estimate of the number of fatalities that are expected to be avoided annually under the proposal. We also interviewed representatives of the industry and the safety community to obtain their views on the bases the motor carrier administration used to develop its estimate of the impact that its proposed rule will have on safety.

We performed our work from November 1999 through July 2000 in accordance with generally accepted government auditing standards.

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We are sending copies of this report to congressional committees and subcommittees responsible for transportation issues; the Honorable Rodney E. Slater, Secretary of Transportation; the Honorable Clyde Hart, acting Deputy Administrator, Federal Motor Carrier Safety Administration; the Honorable Jacob Lew, Director, Office of Management and Budget; and other interested parties. We will make copies available to others on request.

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If you or your staff have any questions about this report, please contact me at (202) 512-2834. Key contributors to this report were Leonard Ellis, James Ratzenberger, and Charles E. Wilson, Jr.

Sincerely yours,

A handwritten signature in black ink that reads "Phyllis F. Scheinberg". The signature is written in a cursive style with a long, sweeping underline that extends to the right.

Phyllis F. Scheinberg  
Associate Director,  
Transportation Issues

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