

THE RENTAL TRUCK SAFETY STUDY REPORT TO CONGRESS

Pursuant to Section 32206 of the
Moving Ahead for Progress in the 21st Century Act (P.L. 112-141)
July 2014

BACKGROUND

Section 32206 of the Moving Ahead for Progress in the 21st Century Act (MAP-21) directs the Secretary of the U.S. Department of Transportation (DOT) to conduct a study focused on trucks with gross vehicle weight ratings (GVWR) between 10,000 and 26,000 pounds that are available for rent by rental truck companies to the public or for private use. The Secretary is required to submit a report to the Senate Committee on Commerce, Science, and Transportation and the House Committee on Transportation and Infrastructure. The study and report were delegated to the Federal Motor Carrier Safety Administration (FMCSA). According to section 32206, the study must:

- Assess the safety of rental trucks during the 7-year period ending on December 31, 2011.
- Evaluate available data on the number of crashes, fatalities, and injuries involving rental trucks and the cause of such crashes, utilizing police accident reports (PAR) and other sources.
- Estimate the property damage and costs resulting from a subset of crashes involving rental truck operations, which the Secretary believes adequately reflect all crashes involving rental trucks.
- Analyze State and local laws regulating rental truck companies, including safety and inspection requirements.
- Assess the rental truck maintenance programs of a selection of small, medium, and large rental truck companies, as selected by the Secretary, including the frequency of rental truck maintenance inspections, and compare such programs with inspection requirements for passenger vehicles and commercial motor vehicles.
- Include any other information available regarding the safety of rental trucks and review any other information that the Secretary determines to be appropriate.

To address the MAP-21 requirements listed above, FMCSA identified fatal crashes involving rental trucks that occurred between 2005 and 2010, using the University of Michigan Transportation Research Institute's (UMTRI) Trucks Involved in Fatal Accidents (TIFA) database, as well as the original PARs associated with these crashes. These sources were the only and most recent data sources available for identifying rental truck crashes. Using the information contained in both the TIFA database and the PARs, FMCSA examined the critical reason for these crashes and the extent to which the rental truck or its driver was likely to have caused the crash. FMCSA evaluated roadside inspection data on 10,000 to 26,000 pounds GVWR rental trucks from 2005 to 2011 for Avis, Budget, Enterprise, Hertz, Penske, and

U-Haul. The FMCSA searched for State and local laws concerning rental truck companies. Finally, FMCSA collected information on vehicle maintenance programs for U-Haul International and received additional information from the Truck Rental and Leasing Association (TRALA) on two other large truck rental companies. The TRALA did not indicate the names of these companies.

CRASH CAUSATION ANALYSIS

Although FMCSA maintains a database of truck crashes, the crashes in its Motor Carrier Management Information System (MCMIS) database associated with daily rental trucks are not always identifiable. The crash record often does not include information identifying the rental company (e.g., USDOT number or company name), but rather only includes information identifying the driver. Moreover, even when such information is available, it does not indicate whether the company is in the business of renting trucks to the public or for private use. The TIFA database is the only database that identifies daily rental trucks as a category of large trucks; however, data are available only through 2010. Thus, for the period mandated in MAP-21, the only national data on rental truck crashes are the fatal crashes in TIFA for the years 2005 to 2010. During this period, there were 145 fatal crashes involving daily rental trucks.

The TIFA uses data from the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS) but also supplements each crash record with additional information from PARs. To collect additional data, TIFA data coders sometimes attempt to contact truck drivers and police officers who were at the crash scene and/or involved motor carriers. Like other national crash databases, TIFA does not include an assessment of fault. However, by combining the TIFA data with other information available from the PARs, a reasonable assignment of crash causation can be made for each crash by the data analyst. Because rental truck crashes are easily identifiable in TIFA, and because UMTRI maintains copies of the PARs for each of these crashes, this database was the most logical one to use to assess causation in rental truck crashes.

At FMCSA's request, UMTRI provided the PARs associated with all fatal crashes in TIFA that involved daily rental trucks from 2008 to 2010. The Agency then made a determination of causation for each crash, following the criteria used in both FMCSA's Large Truck Crash Causation Study (LTCCS) and NHTSA's National Motor Vehicle Crash Causation Study (NMVCCS). This analysis used two key variables to determine causation:

- **Critical Event:** The critical event variable documents movement or non-movement by one vehicle, which made the crash inevitable. Only one vehicle in each crash was assigned the crash critical event.
- **Critical Reason:** The critical reason variable gives the reason why the critical event occurred. The reason could be coded to the driver (e.g., asleep, distracted, speeding, or failure to obey a traffic signal), the vehicle (e.g., defective brakes, inoperable lights, or flat tire), a weather condition (e.g., snow, ice, or rain), or a roadway failure (e.g., broken pavement or inoperable traffic signal).

The FMCSA was able to assign critical events and critical reasons to 134 of the 145 fatal rental truck crashes in TIFA. For the remaining crashes, not enough information was available to assign critical events and critical reasons to one particular driver or vehicle. In these 134 crashes where causation could be inferred, there were 59 crashes (44 percent) where the truck was coded with the critical event. All of these 59 crashes involved driver error, as the vehicle itself was never coded as the critical reason for the crash. In the remaining 75 crashes (56 percent), the critical reason was assigned to the weather, the roadway, or to a factor associated with another non-rental vehicle or its driver.

To compare these results for crashes involving rental trucks to all truck crashes, FMCSA examined crash causation data from the following additional sources: FMCSA's LTCCS, conducted between June 2001 and December 2003; NHTSA's NMVCCS, conducted from 2005 to 2007; and truck crash data from FARS for years 2008 to 2010, years for which the Volpe National Transportation Systems Center (Volpe Center) had already assigned critical events and critical reasons to all FARS truck crashes (using PARs). Whereas FARS is an annual census of all fatal crashes, both the LTCCS and the NMVCCS were one-time studies based on a sample of crashes involving serious injuries or fatalities for which crash investigations were conducted.

In the case of the LTCCS, which examined serious crashes, the truck or truck driver was assigned the critical reason for the crash 55 percent of the time. In the case of all fatal truck crashes coded in FARS, the Volpe Center assigned the critical reason to the truck or its driver 37 percent of the time (for crashes occurring between 2008 and 2010). Finally, in the case of the NMVCCS, which evaluated crash causation in all motor vehicle crashes, the critical reason for the crash was assigned to the truck or truck driver in 42 percent of the database's truck crashes, although it should be noted that the database contains only a limited number of crashes involving trucks. The crash causation statistics for daily rental truck fatal crashes and the three comparison group crash populations are summarized in Table 1.

Table 1. Percent of fatal truck crashes involving rental trucks from 2005 to 2010 where the critical reason for the crash was assigned to the truck driver or the truck.

Crash Categories	Number of Truck Crashes Evaluated	Critical Reason Assigned to Truck or Truck Driver	Critical Reason Assigned to Truck	Critical Reason Assigned to Another Vehicle, Driver, or Environment
Daily Rental Trucks in Fatal Crashes (TIFA, 2005 to 2010)	134	44%	0%	56%
All Trucks in Serious Crashes (LTCCS, 2001 to 2003)	963	55%	6%	45%
Trucks in Fatal Crashes (FARS, 2008 to 2010)	10,127	37%	2%	63%
Trucks in all Crashes (NMVCCS, 2005 to 2007)	318	42%	4%	42%

Data: Sources listed in parenthesis for each row category.

In TIFA, the percentage of fatal rental truck crashes where the truck or driver were found to be the critical reason for the crash was 44 percent, compared to 37 percent of truck crashes in FARS having this same designation, and 42 percent of trucks crashes in NMVCCS with this designation (42 percent). However, the percentage of truck crashes in the LTCCS database where the truck or its driver were assigned the critical reason for the crash (55 percent) is higher than what was found with the daily rental trucks in TIFA. Because of the in-depth crash investigations that occurred for each crash recorded in the LTCCS, this particular database is considered to contain the most reliable crash causation information.

COST OF CRASHES INVOLVING RENTAL TRUCKS

As indicated in the crash causation analysis above, TIFA is the only crash database that identifies daily rental trucks as a category of large trucks. As TIFA only captures data on fatal crashes, cost estimates for crashes involving daily rental trucks can only be estimated for fatal crashes in that subset. During the period from 2005 to 2010, the 145 fatal crashes involving rental trucks resulted in 177 fatalities and 163 injuries. Fifty-five of these fatalities (31 percent) were occupants of the rental truck. The DOT currently uses a figure of \$9,140,000 for the Value of a Statistical Life (VSL), based on 2012 dollars. FMCSA has estimated the average cost of a fatal crash involving a single-unit truck to be \$10,404,000. This takes into account the VSL for those killed as a result of the crash, plus the costs associated with others involved in the crash who were injured, as well as the cost of emergency services, property damage, and delay resulting from the crash. Based on this value, the average annual cost of rental truck fatal crashes, based on the 145 fatal crashes from 2005 through 2010, is \$251,430,000 or $(\$10,404,000 * 145)/6$.

ROADSIDE INSPECTION DATA FOR RENTAL TRUCKS

All trucks and buses that fall under FMCSA's regulatory jurisdiction are subject to roadside inspections to ensure that they meet the Agency's maintenance standards. These inspections are primarily performed by trained State inspectors and funded by FMCSA's Motor Carrier Safety Assistance Program. States conduct more than 3 million vehicle inspections a year on trucks. These inspection data are housed in FMCSA's MCMIS database. As is the case with crashes, identifying information for the rental company is often absent from an inspection record associated with a daily rental vehicle. FMCSA policy instructs roadside inspectors to identify the individual or entity responsible for hauling the load, which is the driver in this instance, not the company that rented the vehicle to the driver. The MCMIS contains millions of inspection records for each calendar year. As a result, there are a sufficient number of inspection records that can be linked to daily rental companies in MCMIS, allowing the Agency to perform an analysis.

When a truck fails to meet critical safety standards, the roadside inspector places the vehicle out of service (OOS), meaning it may not be driven until repairs are made to bring the vehicle up to an acceptable level of safety. Table 2 compares the OOS numbers and rates for consumer rental trucks that belonged to Avis/Budget, Enterprise, Hertz, Penske, or U-Haul and fell in the 10,000 to 26,000 pounds GVWR category with that of all other trucks in the 10,000 to 26,000 pounds GVWR category for the period from 2005 to 2012.

Table 2. Comparison of rental- and non-rental-truck vehicle OOS rates for vehicles in the 10,000 to 26,000 pounds GVWR category, based on vehicle inspections from 2005 to 2012.

Truck Categories	Number of 2005 to 2012 Inspections	Number of Vehicles Placed OOS	Percent Placed OOS (Vehicle OOS Rate)
All Rental Truck Companies, Excluding Penske	4,734	248	5.2%
All Rental Truck Companies	22,456	632	2.8%
Other Trucks	1,769,032	401,265	22.7%

Data: FMCSA MCMIS, April 2013.

Table 2 indicates that, based on the inspections that can be identified in MCMIS as involving daily rental trucks (from 2005 to 2012), these vehicles have an OOS rate that is 88 percent lower than that of other trucks in the 10,000 to 26,000 pounds GVWR category (2.8 percent versus 22.7 percent), indicating a higher standard of maintenance. Of the 22,456 inspections performed on rental trucks from 2005 to 2012, 79 percent of them were performed on vehicles from Penske Truck Leasing, a company that frequently leases its vehicles to motor carriers in addition to private individuals. When this company is excluded from the calculations, the vehicle OOS rate is 5.2 percent, 77 percent lower than the vehicle OOS rate for non-rental trucks of similar weight.

Table 3 presents OOS rates broken out by rental truck company. Penske's vehicle OOS rate was the lowest among the rental companies investigated (2.2 percent), and Hertz's was the highest (14.1 percent). Hertz's vehicle OOS rate, however, is still approximately 9 percentage points lower than the vehicle OOS rate for non-rental commercial trucks of similar weight (less than 26,000 pounds) during this same period (see Table 2).

Table 3. Rental truck vehicle OOS rates by company name for vehicles less than 26,000 pounds, based on vehicle inspections from 2005 to 2012.

Company Name	Number of 2005 to 2012 Inspections	Number of Vehicles Placed OOS	Percent Placed OOS (Vehicle OOS Rate)
Avis/Budget	2,637	114	4.3%
Enterprise	1,168	32	2.7%
Hertz	390	55	14.1%
U-Haul	539	47	8.7%
Penske	17,722	384	2.2%

Data: FMCSA MCMIS, April 2013.

RENTAL COMPANY VEHICLE MAINTENANCE PROGRAMS

Motor carriers regulated by FMCSA are required to perform both daily trip and periodic inspections of their vehicles. This requirement does not apply to the use of commercial motor vehicles by private individuals engaged in nonbusiness activity, as outlined under Title 49 Code of Federal Regulations 390.3:

390.3 (f) Exceptions. Unless otherwise specifically provided, the rules in this subchapter do not apply to—

(3) The occasional transportation of personal property by individuals not for compensation nor in the furtherance of a commercial enterprise;

As a result of this exemption, rental truck companies are not required under Federal law to perform daily trip or periodic inspections on their vehicles leased to private individuals. Furthermore, truck rental companies do not have control of these vehicles until they are returned, and thus could not perform a daily inspection. MAP-21 requires that FMCSA assess the maintenance programs of small, medium, and large rental truck companies. The Agency is not able to identify rental truck companies falling into each of these size categories because there is no comprehensive list of such companies. However, information provided by several large daily rental truck companies (or associations representing them) indicates extensive fleet maintenance programs. This information is provided below.

U-Haul International

U-Haul International provided FMCSA with a document describing the maintenance procedures performed on its vehicles. U-Haul categorizes the inspections it performs on their vehicles into four broad categories:

- **Level 1 Inspection:** This is an inspection that a dealer will perform each time a rental vehicle is returned. It includes checking all lights, visually checking for physical damage, and asking the customer whether he or she found specific problems with the vehicle.
- **Level 2 Inspection:** This inspection is more detailed than a Level 1 inspection and is completed either by a repair shop or field team managers.
- **Level 3 Inspection:** These inspections are performed at repair shops, based on a checklist that is customized to the year and make of the vehicle. U-Haul stated in its documentation that Level 3 inspections are used as a diagnostic tool when the vehicle is at a repair shop and not ready for a preventative maintenance inspection.
- **Preventative Maintenance (PM) Inspection:** These inspections are broken down into minor PM inspections (performed every 5,000 miles) and major PM inspections (performed every 15,000 miles). U-Haul indicated that the company also performs a PM inspection on a vehicle if it has not received such an inspection in the last 11 months.

Other Large Truck Rental Company Vehicle Maintenance Programs

FMCSA reached out to TRALA in an effort to obtain information on vehicle maintenance programs for truck rental companies other than U-Haul. The Agency received vehicle maintenance program information on two additional large companies that chose to remain anonymous. The TRALA informed FMCSA that these two companies are very large rental truck companies and that neither of them is U-Haul. The information concerning vehicle maintenance that these two companies provided to TRALA is outlined below.

Company #1 Commercial Truck Maintenance:

Preventive Maintenance Inspections

The company's consumer rental trucks have a PM inspection schedule as follows:

- **Gas Engines:** every 120 days or 8,000 miles.
- **Diesel Engines:** every 120 days or 20,000 miles.
- **Towing Equipment:** every 90 days.

A PM inspection is performed at the designated time or mileage interval. Information was not provided on what the PM inspection entails.

Rental Check-in Inspections

The company performs a "rental check-in" inspection each time a truck is returned by a customer. It has a standard "ready line" inspection form that is completed and placed in the driver side window showing all items checked. This form is signed by the associate who performed the inspection. The company also performs a "rental check-out" inspection with the customer present to confirm the vehicle's condition and explain its features. If there is an unusual event that occurs or the customer brings a concern to the company's attention, the company will inspect the unit for that specific item. A rental truck is taken OOS when a customer reports a concern, when an item is found during a routine rental check-in inspection, or when a vehicle is due for PM.

Company #2 Commercial Truck Maintenance:

Inspections

Employees perform pre-rental inspections prior to every rental. These inspections include components and content required in a USDOT driver vehicle inspection report. In addition, inspections are performed annually by vendors or more frequently in certain circumstances. Customers are responsible for performing daily vehicle inspections while they are in possession of the rented vehicle.

Preventive Maintenance

PM services are performed by vendors at manufacturer-recommended intervals. The company did not provide information on what these intervals typically are or what the services entail. System-driven alerts and maintenance reports are provided through an automated system. Trucks may be taken OOS for PM, repairs, campaigns, and recalls.

STATE LAWS AND LOCAL REGULATIONS

FMCSA performed an extensive legal database and literature search on State laws and local regulations that affect rental truck companies. This review did not identify any State laws or regulations that specifically address rental truck safety requirements.

CONCLUSION

To examine the causes of fatal and injury crashes involving rental trucks, FMCSA analyzed rental truck crashes listed in the TIFA database, supplementing this information with data included in PARs. Based on an examination of information in this database related to fatal crashes involving rental trucks that occurred from 2005 to 2010, the study found no instances in which the critical reason was assigned to the rental truck itself. In 44 percent of the crashes, the critical reason for the crash was assigned to the rental truck driver, and in 56 percent of the crashes, the critical reason was assigned to another vehicle, driver, or to the environment. These results are reasonably consistent with past analyses performed on crashes involving other types of trucks and truck drivers in both fatal and injury crashes.

To further assess the safety performance of vehicles owned by rental truck companies, this study also examined vehicle OOS rates for vehicles inspected at the roadside from 2005 to 2012 that belonged to Avis/Budget, Enterprise, Hertz, Penske, or U-Haul. These particular rental truck companies were selected because their USDOT numbers were known to FMCSA, and therefore, their roadside inspection data could be readily extracted from FMCSA's roadside inspection database. The OOS rates for vehicles belonging to these companies were then compared to OOS rates for all other trucks in the 10,000 to 26,000 pounds GVWR category during this same time period. The analysis revealed that vehicle OOS rates for these rental vehicles were considerably lower than OOS rates for other 10,000 to 26,000 pounds GVWR vehicles.

Documentation on vehicle maintenance programs was collected from U-Haul and two other anonymous companies. Although rental truck companies are exempt from FMCSA regulations pertaining to daily trip and periodic inspections of vehicles, the information collected from these three companies suggests that, at least in the case of large rental truck leasing operations, vehicle maintenance programs are in place for these companies and in some instances are similar to what would exist if mandated by Federal law. FMCSA performed an extensive database and literature search on State laws and local regulations that affect rental truck companies and found no instances of such laws currently in existence.