

The goal of the Federal Motor Carrier Safety Administration (FMCSA) is to reduce the large truck fatality rate by 41% from 1996 to 2008. This reduction translates into a rate of 1.65 fatalities in truck crashes per 100 million miles of truck travel.

FMCSA's Research and Technology programs encompass a range of issues and disciplines, all related to motor carrier and bus safety and security. FMCSA defines a "research program" as any systematic study directed toward fuller scientific discovery, knowledge, or understanding that will improve safety and reduce the number and severity of commercial motor vehicle crashes. Similarly, a "technology program" defines those programs that adopt, develop, test, and/or deploy innovative driver and/or vehicle best practices, and technologies that will improve safety and reduce the number and severity of commercial motor vehicle crashes.

Currently, FMCSA's Office of Research and Technology is conducting programs in the areas of *driver safety performance, commercial vehicle safety performance, carrier compliance and safety, safety systems and technology, cross-cutting safety initiatives, and security*. The study described in this Tech Brief was designed and developed as part of FMCSA's Research & Technology *driver safety performance* program. The primary goals of this program are to improve the safety behavior of non-commercial drivers in the vicinity of trucks and buses, and ensure that commercial drivers are physically qualified, trained to perform safely, and mentally alert.



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Commercial Motor Vehicle Driver Retention and Safety

Background and Purpose

It has been documented that the trucking industry has experienced a shortage of qualified drivers. In the past, this has been attributed to growth in business, drivers who retire or leave the profession, and fewer young people choosing commercial driving as a career. However, in recent years, the most significant factor contributing to the shortage of qualified drivers is the result of job-hopping. Also known as "churning," high rates of turnover in the industry account for as much as 80 percent of the demand for commercial operators experienced by some carriers at any given time.

In addition to the substantial costs in the areas of recruitment and training that are borne by the industry that result from high job change rates among commercial drivers, the greatest impact of job-hopping may be in the area of safety. The purpose of this study, therefore, was to gain a better understanding of the extent to which truck crashes during long-haul, over-the-road operations can be linked to churning among commercial drivers, and to identify strategies with the greatest potential to improve driver retention and safety.

Study Design

Three activities were undertaken to meet the goals of the study. The first activity was to plan and carry out analyses of data found in the Motor Carrier Management Information System (MCMIS) that could quantify the relationship between job change rates and crash experience among for-hire drivers engaged in interstate commerce.

Next, a comprehensive review of the technical literature was conducted to update the state-of-the-knowledge about why drivers change jobs, and how job-hopping might be reduced through strategies other than simply an increase in driver compensation. Finally, case studies with major stakeholders in the industry were performed to ensure that diverse points of view and as many sources of potential solutions as possible would receive consideration in this work.

MCMIS Analysis

By comparing the Commercial Driver's License program database with the MCMIS database, the analyses succeeded in quantifying a relationship between a driver's annual job change rate, monitored over a period of at least two years, and his level of crash experience. It was found that a Commercial Motor Vehicle (CMV) driver with two or more different jobs had a higher risk of being crash-involved than a CMV driver with less than two different jobs or a more stable employment history. This increased risk is gradual at first, then accelerates as the job change rate increases. For example, if a driver has averaged three or more jobs with different carriers each year, during an employment history that is two years or longer, the calculated odds of being crash-involved reached a level that is more than twice as high as they are for drivers with lower job change rates.

Literature Review

The literature review identified six areas where specific changes hold the potential to improve driver retention and safety: selection and hiring, training procedures, dispatch operations, working conditions for long-haul operators, safety-related rewards and incentives, and improving perceptions of the truck driving profession. The next section of this Tech Brief explains the findings in each area.

Selection and Hiring

The tremendous demand for qualified truck drivers has placed a burden on companies' recruiters. It has been reported that there is such a demand for truck drivers that some recruiters will hire unqualified drivers, if the alternative is having trucks sit idle in their lots. The literature review also suggests that drivers attain satisfaction from a sense of achievement and recognition, and that key factors influencing how long a driver remains with an employer are steadiness of work, level of pay and benefits, company support while on the road, genuine respect from management, and amount of home time. While all these efforts are time-consuming and expensive, in the long run they are more cost-effective than having to recruit and hire again.

Driver Training Procedures

Companies have provided training programs for many years. However, the practice is evolving and becoming more far-reaching as the needs of the drivers change and standard-setting organizations become more involved. The most progressive training programs offer drivers the potential for advancement to other positions in the company, whether it be in management or sales. If drivers receive training that allows them to advance in a company, they are less likely to change jobs. Although driving may remain a driver's primary task, other jobs such as training or crash investigation could be a part of a career path.

A comprehensive training program that not only addresses technical and safety requirements, but also devotes attention to lifestyle issues and to the personal challenges truckers face in their profession conveys a message that the company cares about them and wants them to succeed. The payoff carriers can anticipate from providing this level of training not only includes gains in safety and productivity, but also results in drivers who feel more committed to the company.

Dispatcher Operations

Dispatchers, often called fleet managers, are responsible for finding and assigning loads to drivers and providing the logistics to coordinate loads from origin to destination for their assigned fleets. Dispatchers are measured by their performance, and the only way to achieve successful performance is for each dispatcher to work as closely as he can with his assigned team of truckers.

There is, however, a high turnover rate among dispatchers that creates a situation in which dispatchers often do not know the drivers personally. Furthermore, available research indicates that the behaviors of dispatchers are a key influence on a driver's satisfaction and likelihood of remaining with a particular carrier.

A recent study tried to identify the variables associated with dispatchers who have lower turnover among their drivers. They used drivers' exit interviews to identify dispatchers' attitudes, behaviors, personal demographics, and job characteristics. Results of the study suggested that dispatcher responsiveness, that is, the degree of action taken by a dispatcher to follow through and resolve driver issues, is important for reducing driver turnover.

Carriers should be encouraged to reevaluate the number of drivers that can effectively be managed by a single dispatcher. Finally, training for dispatchers should incorporate human relations issues to better understand both the truckers' concerns and their job demands.

Working Conditions for Long-Haul Operators

Driving a truck, especially long-haul, is a difficult lifestyle. There are long and irregular hours, poor living conditions on the road, and large amounts of time away from home. Often these conditions are exacerbated by poor treatment from shippers, receivers, and even their own company personnel.

There is strong evidence of a link between the economic and scheduling pressures on drivers and crashes and violations of hours-of-service regulations. Analyses of how working conditions affect safety revealed that truckers who drive in excess of hours-of-service regulations, young drivers, and interstate drivers are the most likely to have an increased relative risk of crash involvement.

Addressing the poor working conditions that contribute to driver turnover and safety problems is an urgent need in the industry. To a degree, larger and more comfortable sleeper berths, which are found in newer model tractors, may help as will more and better rest areas with greater capacity for safely parking tractor-trailers. Also, modest reductions in transit times may be achieved through company-provided conveniences such as electronic toll passes. Finally, an essential component in reducing the exposure of long-haul truckers to those working conditions that pose the most serious risks to health and safety is more effective monitoring and more stringent enforcement of carrier compliance with hours-of-service regulations.

Safety-Related Rewards and Incentives

Research indicates that a commitment to safety from management carries over to drivers. Companies surveyed said that since their safety incentive programs were initiated, the incidence of insurance claims, workers' compensation claims, and crashes have been reduced by 65 percent.

The features carriers include in their safety programs vary widely, and can include incentives in the form of monetary rewards (e.g., savings bonds), bonuses, gifts, discounts at truck stops, and recognition programs (e.g., patches, pins, plaques, etc.). Table 1 lists a series of elements that research has shown are necessary for truck driver incentive programs to be effective.

Table 1: Elements Needed for Truck Driver Incentive Programs to be Effective	
<ul style="list-style-type: none"> • Managerial vigor • Rewarding the "bottom line" • Attractiveness of the reward • Progressive safety credits • Simple rules • Perceived equity and attainability • Short incubation period 	<ul style="list-style-type: none"> • Stimulating peer pressure towards safe conduct • Involving the family • Employee participation in program design • Prevention of accident under-reporting • Rewarding multiple levels of the organization • Supplementing rewards with safety training • Maximizing net savings versus maximizing benefit-cost

Many safety-related incentive programs include recognition for passing certain milestones for "accident-free" miles driven. Safety bonuses also are very popular. For some carriers, bonuses are earned through a point system, which transfers to bonus money that gets included in their paychecks. Other carriers reward drivers who are crash free for a full year with a savings bond. It would be expected that incentive programs that offer progressively increasing safety bonuses for longer periods of crash-free operation would give drivers a material reason for staying with their employers rather than moving to another place of work, where they would have to start again to accumulate safety credits.

Improving Perceptions of the Profession

Evidence indicates that public perceptions of the truck driving profession today are ambivalent. In a recent survey, the overall view of drivers of large trucks was positive for 80 percent of the public. At the same time, 64 percent of the public felt that truck drivers exceed the speed limit frequently. In addition, a majority believed that a substantial number of drivers engage in drug use, drinking, violence, and recklessness, and that truck drivers are more concerned with deadlines than safety. However, the public also feels that truck drivers are highly independent; this is a prized and respected characteristic in our society and one that the industry can capitalize on in improving public perceptions and in recruiting and retaining drivers.

Improved perceptions of the profession depend not only on the public, but also on the attitudes of the drivers themselves. It has been reported that a good driver attitude about his employer can be expected to result from limiting office turnover (i.e., retaining good dispatchers), pursuing driver-friendly freight practices that reduce loading and unloading requirements for drivers, having management staff accessible to address driver grievances, developing non-pay incentives, and providing training and orientation programs that focus on "30 days at a time" for each new hire.

Supplemental Contacts

An additional and essential perspective on the relationship between driver satisfaction, driver retention, and fleet and driver safety is provided by key stakeholders in the trucking industry. To that end, a series of case studies was undertaken by the American Trucking Associations (ATA) Foundation to collect data by stakeholder groupings and develop analyses and recommendations based on the best information currently available.

The four stakeholder groups were truck drivers, motor carrier management, commercial motor vehicle insurers, and trade and professional groups and associations.

The Truck Driver's Perspective

It was recognized that there are many interacting factors that may determine a driver's level of satisfaction with his job, including direct financial benefits and compensation plans, management attitudes toward business practices, employee relations and morale, safety, training and support programs, vehicle maintenance, and safety programs.

When asked to identify hallmarks of "good" trucking companies, drivers showed a surprisingly high level of consistency in their responses. Specifically, when drivers were asked what makes a trucking company "safe," the following indicators were mentioned:

- The quality and quantity of safety and training programs;
- The level of respect for and compliance with regulations and policies governing CMV operations;
- Maintenance of clean facilities and equipment in good working order; and,
- Recognition of drivers with good safety attitudes and driving records.

The Motor Carrier Management Perspective

The role of motor carrier management in both driver retention and overall safety can be described as one of facilitation. While highway safety ultimately comes down to situations and actions on the road, trucking companies play essential roles in providing drivers with the physical and psychological tools needed to deal with the many safety situations that arise while driving.

Motor carrier management personnel (i.e., executives, senior managers, and safety directors) were asked a series of questions about driver retention and safety, including the processes used to calculate safety rates and turnover, and the design and effect of formal and informal safety programs. The responses received were summarized to present a management perspective on the trucking company's role in promoting driver retention and safety, with the following broad categories of responses ultimately defined:

- Preemptive programs, which focus on safety training and education, with the objective being to provide preventative measures. In most cases, these are designed as group-based programs. They also encompass remedial training for drivers involved in crashes. Vehicle maintenance programs may also be classified in this category as they are often viewed by drivers as safety and satisfaction programs.
- Outcome-based programs, which are typically described as proactive incentive and/or reward programs. Anecdotal evidence indicates that the larger the company, the more organized and sophisticated these programs become. Formal programs include safety recognition dinners and exclusive "million mile" clubs. More informal programs include driver meetings that highlight new company safety data or recognize an individual driver's efforts.
- Personal support programs, where trucking companies recognize that employee satisfaction is closely tied to initiatives that focus on the driver as an individual. Examples include trucking companies with targeted driver outreach programs that pair drivers with trainers, managers, ombudsmen, and even counselors. The goal is to provide immediate support and response to driver issues and concerns.

The Motor Carrier Insurers Perspective

Skyrocketing financial liability associated with commercial motor vehicle crashes has driven up insurance premiums for carriers, regardless of their safety record. As such, almost all companies insuring motor carriers take a proactive role in supporting trucking safety programs.

Insurance industry contacts were asked to provide input into this discussion of driver retention and its role in safety. The responses revealed a shared emphasis on the following key points:

- Employment screening and internal safety auditing should be based on all crashes, not just DOT-reportable incidents.
- The most financially stable trucking companies are the safest companies.

In addition, there was strong agreement, though not unanimity, on the following:

- **Safety flows downward:** Insurers believe that the primary and paramount criterion of a safe trucking company is a strong commitment to safety at the senior management level. This high-level attention to safety should result in the creation of a safety program that has direct reporting functions to a high-level officer, such as the President or Vice President. In addition, successful safety programs extend beyond "training" to education which moves drivers beyond the basics, and provides them with the intellectual tools needed to react to unexpected and uncontrollable occurrences. Finally, safety programs should focus on individuals, to ensure that both training and safe driving recognition "are not lost in the crowd."
 - **Safe driver factors:** The industry believes that safe drivers can be molded and produced by a good safety program that starts with the hiring and screening of applicants where high standards must be developed and enforced. Once drivers are hired, they should be
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Researcher

This study was performed by TransAnalytics, LLC, 1722 Sumneytown Pike, Box 328, Kulpsville, PA 19443 and The ATA Foundation, Inc., 1280 W. Peachtree St., NW, Suite 300, Atlanta, GA 30309. Contract No. DTMC75-01-P-00027.

Availability

The study final report FMCSA-RT-03-004 is available from the National Technical Information Service.

Key Words

analysis, commercial motor vehicle, crash risk, driver, hiring, MCMIS, retention, safety, selection, truck, training, turnover.

Notice

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considered the company's most valuable asset, and companies should be financially motivated to retain them. Insurers also believe that age alone is not a good indicator of safety. In fact, insurers believe that crash data refute any presumed, singular effects of age and experience in safety. Rather, additional variables must be considered including familiarity with driving routes, vehicle maintenance, level and type of safety training or education, and years of crash-free driving.

- **Role of government:** Insurers believe that safe drivers are a public commodity and responsibility, and that government programs should focus more on safety training, education, and enforcement, and less on regulatory compliance. Insurers argued that this focus would result in improved safety training for all CMV drivers regardless of their place or length of employment. It would also address safety training for high turnover drivers. Finally, with regard to the role of government, insurers believe that both Federal and State DOT intervention in the form of training and safety program development assistance is the best method for correcting poor carrier safety records.

The Carrier/Driver Association Perspective

The ATA Foundation supplemented the industry contacts identified above with input from the National Association of Small Trucking Companies (NASTC), an organization representing the interests of small firms (i.e., those generally operating fewer than 100 vehicles).

The NASTC membership strongly believes that smaller trucking companies offer operational benefits to drivers that encourage driver retention and result in safer operations even if the actual level of pay is somewhat lower than what drivers could earn at a larger firm. According to NASTC, there are a number of reasons why small companies have lower driver turnover rates, relative to larger companies. These include:

- Drivers have a more personal relationship with owners, managers, and dispatchers.
- Drivers appreciate the sense of ownership or "say" in the company and feel that their opinions count in operational decisions such as dispatches, equipment purchases, and general business decisions.
- The terminals, customers, and types of runs characteristic of smaller companies allow them to give their drivers plenty of miles while still getting them home on weekends.
- Smaller companies demonstrate driver appreciation through safe driving awards. Awards banquets and events involving the drivers' families, cash or merchandise awards, and bonuses tied to safe performance are among the incentives used most often. The latter are often team-based, which creates a greater support network among the drivers.

Conclusions

It may be concluded from the results of this research that a significant relationship exists between job change rate and crash involvement. There is evidence that drivers, whose (verified) employment history indicates that they have averaged more than two jobs with different carriers each year for a period of two years or more deserve special scrutiny during the hiring process to determine whether there are mitigating circumstances that have placed the individual in an increased-risk category.

Another conclusion that can be drawn from this study is that additional phases of analysis, based on the present methodology, have the potential to yield even greater benefits by identifying specific factors that can explain the broad statistical relationship between job change rate and safety. It is logical to assert that certain types of job changes, for certain categories of driver and vehicle variables, will better predict the likelihood of crash involvement than others.

Because of the more specific information about risk factors that could be provided, the most useful guidance for industry in selection, hiring, and training would be expected to result from follow-on analyses including, though not necessarily limited to, temporal sequencing of critical events, cargo type, and vehicle type and/or gross vehicle weight rating.

References

Staplin, L., Gish, K., Decina, L., and Brewster, R., *Commercial Motor Vehicle Driver Retention and Safety*. FMCSA, FMCSA-RT-03-004, Washington, DC, March 2003.



U.S. Department of Transportation
Federal Motor Carrier Safety Administration

October 2003

Publication No. FMCSA-RT-04-002