TechBrief

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Impact of Local/Short Haul Operations on Driver Fatigue: Focus Group Summary and Analysis

The vision of the Office of Motor Carriers is to help move people, goods, and commercial motor vehicles on our Nation's highways in the most efficient, economical, and crash-free manner possible. The OMC research and technology program focuses on improving safety in interstate commercial motor vehicle operations and serves a trucking and motor coach industry that carries more than 40 percent of all intercity freight.

Studies are conducted in the following areas: commercial driver human factors, health, and performance needs; new and emerging driver and vehicle technologies; safety-related data collection and analysis needs; and performance-based changes to the Federal Motor Carrier Safety Regulations.

The OMC's human factors research projects aim to promote alert, healthy drivers and seek to improve the uniformity and effectiveness of driver training and licensing.

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Introduction

Local/short haul (L/SH) operations are defined as those in which commercial motor vehicle drivers primarily engage in trips of 100 miles or less from their home base. L/SH drivers usually make multiple deliveries in a single trip, sometimes load and unload the vehicle, carry packages, and perform many tasks in addition to driving. This is in contrast with the duties of long-haul commercial motor vehicle drivers, whose primary task is driving the truck, and who are typically involved in "hook-and-drop" operations, in which a trailer is hooked to a truck, driven to a destination, and dropped off.

Due to the nature of the long-haul driver's task, one of the most prevalent safety issues in long-haul operations is driver fatigue. Long-haul drivers have variable schedules, may be on the road for several days or weeks at a time, and may drive, eat, and sleep at irregular times. L/SH drivers, however, work primarily during daylight hours and begin and end their day at their home base.

The characteristics of the schedule and the work performed by L/SH drivers suggest that fatigue may not be as important an issue in L/SH as it is in long-haul trucking. This tech brief summarizes a report (FHWA-MC-98-029) that covers the first of a two-phase FHWA study to examine the extent of fatigue in the L/SH driving industry.

Purpose

Researchers sought to determine if fatigue is equally as important a factor influencing the safety of L/SH truck operations. Accordingly, researchers conducted focus groups in eight cities, across five states. The purpose of these sessions was to gain an understanding of the general safety concerns related to the L/SH trucking industry and specifically, if fatigue is a safety-critical issue in L/SH trucking.

Methodology

Between May and August 1997, 11 focus groups were held in New Jersey, North Carolina, Pennsylvania, Virginia, and Washington State. Eighty-two L/SH drivers participated in the focus group sessions: 76 participants were male and 6 were female. The participants worked in a variety of industries, including: air freight, beverage/beer, building materials, chemicals/fertilizers, construction/heavy equipment, gas/oil, produce, seafood, and snack foods.

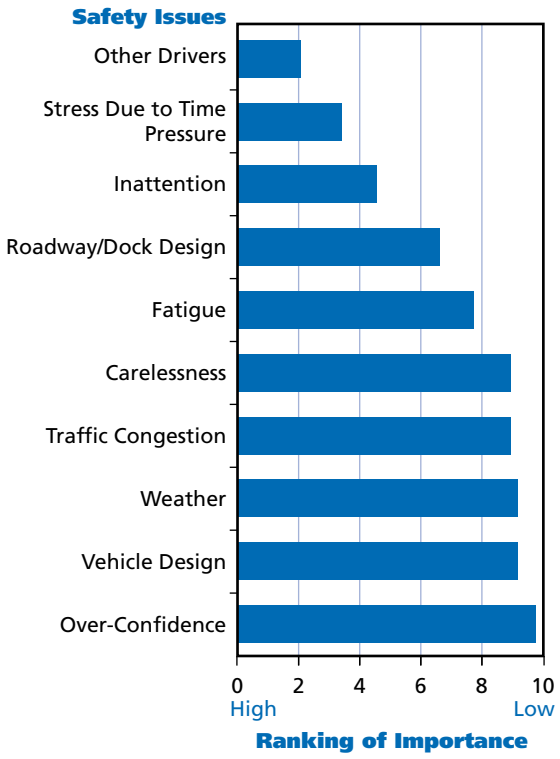
Drivers were selected for participation in this study by one of three methods. Researchers placed advertisements in local newspapers; drivers who responded to the ad were screened over the phone to assess their eligibility. Researchers also recruited participants by distributing flyers in trucking companies in the areas where the focus groups were held, and by making arrangements directly with L/SH trucking company management.

During the course of the sessions, drivers were given the opportunity to describe and discuss issues that they felt were important to the industry. In addition to answering questions concerning general safety issues and driver fatigue, drivers discussed the L/SH industry in general. Participants were not informed that the study was specifically concerned with investigating fatigue in the L/SH industry.

At the start of each focus group session, drivers provided a general description of their jobs and the tasks they typically perform. Then drivers were asked to recall critical incidents, both driving and non-driving, that they had experienced or heard about, and the factors that may have caused the incidents. A critical incident was defined as an incident that has the potential to cause a crash, such as another vehicle making a sudden stop or a pedestrian stepping into the truck's path.

This discussion generated a list of safety issues associated with the critical incidents; drivers were asked to rank the issues in order of importance. Drivers also discussed fatigue-related concerns/ problems that they experienced and the safety issues involved, then ranked each fatigue-related safety issue in terms of importance.

Figure 1.
Ranking of top 10 safety issues.
(Higher rankings depicted by shorter bars.)



Findings

Driver Descriptions

All of the participating drivers described themselves as full-time L/SH drivers or as driving L/SH at least 50 percent of the time.

The mean number of hours drivers spent working per week was 48.9 hours, ranging from 20 hours to 65 hours. Thirty-three percent of drivers indicated that they occasionally drove outside a 100-mile radius from their work center. Seventy-eight percent stated that at least 50 percent of their day was spent driving. The mean number of miles driven per day was 157 miles, ranging from 3 miles to 425 miles. The mean reported number of years of truck driving experience was 12.8 years and the mean number of L/SH driving experience was 9.5 years.

General Safety Issues

Most of the focus group discussion centered on general safety issues within the L/SH industry. Drivers chose the following as their top five safety-related issues:

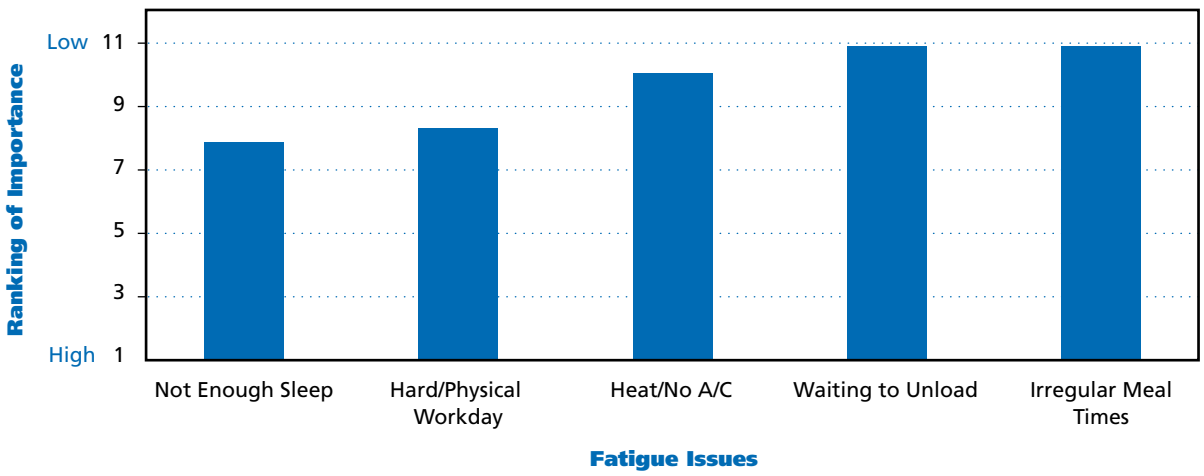
1. Problems caused by drivers of "light vehicles" (defined below)
2. Stress due to time pressure
3. Inattention to the road
4. Problems caused by roadway/dock design
5. Fatigue

Figure 1 illustrates the ranking the drivers gave the general safety issues. This ranking represents a consolidation of responses received in all 11 sessions. Drivers ranked the issues from 1 to 15, in order of importance, with the most important issue receiving a ranking of 1. Because high rankings were assigned low numerical values, higher rankings are depicted by shorter bars.

The highest ranking critical issue, and the only issue mentioned in all 11 sessions, was "problems caused by drivers of light vehicles." Examples of "light vehicles" would include cars, pickup trucks, and recreational vehicles. According to focus group participants, the problems caused by these vehicles stem from two sources. Participants felt that light vehicle drivers were "discourteous" to truck drivers and "show them little respect." Also, the participants believed there is a need for more education for light vehicle drivers in order that they might better know how to interact with trucks.

Fatigue was raised as a safety issue in 36 percent of the focus group sessions and ranked fifth overall. This contrasts with "problems caused by drivers of light vehicles," raised in 100 percent of the sessions, and

Figure 2.
Ranking of top 5 fatigue issues. (Higher rankings depicted by shorter bars.)



"stress due to time pressure," mentioned in 91 percent of the sessions.

Fatigue Issues

Later in each of the focus group sessions, drivers were also asked to describe incidents when they were fatigued on the job, and to discuss how they thought fatigue affects the L/SH industry. As in the discussion of general safety issues, drivers were asked to list and rank causal factors of on-the-job fatigue. As shown in **Figure 2**, the following are the top five fatigue-related issues as perceived by drivers:

1. Not enough sleep
2. Hard, physical workday
3. Heat/no air conditioning
4. Waiting to unload
5. Irregular meal times

On a questionnaire, drivers were asked about the amount of sleep they typically got each night. Researchers compared the average amount of sleep reported by drivers who cited fatigue as a safety issue with the amount of sleep reported by drivers that did not. The comparison found that drivers who listed fatigue as a concern reported less sleep per night than those that did not consider fatigue to be an issue, suggesting that drivers who get more sleep are less likely to cite fatigue as an issue during the workday.

In discussing the impact of fatigue, drivers gave several reasons why they believe fatigue is not as critical an issue in L/SH as it is in long-haul trucking. These L/SH drivers reported that they typically work during daylight hours, have work breaks that interrupt their driving, end their shift at their home base, and sleep in their own beds at night. This research suggests that, concerning fatigue, L/SH drivers are more like workers of non-driving professions than long-haul drivers. In this case, fatigue may not result from work, but may be influenced by personal choices, such as not getting enough sleep at night.

Further Research

The focus group sessions described here are the first step in an ongoing L/SH driver fatigue research project. This first phase presents the perceptions of the L/SH drivers with respect to general safety issues in the industry and the relative significance of fatigue, which was fifth among general safety issues, yet less significant than interactions with other vehicles.

The L/SH project researchers have begun state-of-the-art, instrumented-vehicle data collection that will include a capability for driver error/incident capturing and determination of antecedent conditions, including fatigue, distraction (both inside and outside of the vehicle), and other factors. This second phase of the study will provide an empirical assessment and quantification of the role of fatigue and other factors in errors made by L/SH drivers. Understanding driver error and its antecedents will further the FHWA's understanding of the human factors of crash causation. Instrumented vehicle data on CMV driver backing and lane-changing performance will also be collected as an ancillary effort to this fatigue study.

Researcher
This study was performed by the Center for Transportation Research, Virginia Polytechnic Institute and State University, 1700 Kraft Drive, Suite 2000, Blacksburg, VA, 24601-0536. Contract No. DTFH61-96-C-00105.

Distribution
This Tech Brief is being distributed according to a standard distribution. Direct distribution is being made to the Resource Centers and Divisions.

Availability
The study final report is available from the National Technical Information Service, Telephone: (703) 605-6000.

Key Words
local/short haul, truck, driving, fatigue, inattention, focus group, taxonomy, human factors.

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