LARGE TRUCK CRASH DATA COLLECTION

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Paper Number 209

ABSTRACT

The National Highway Traffic Safety Administration (NHTSA) is collecting crash data relating to large trucks. Two data collection programs are specified. One is a crash causation study to investigate the cause of fatal and serious large truck crashes over two years. The other study is a continuous effort collecting data on large truck motor carrier crashes in each state, as coded on police accident reports.

INTRODUCTION

Large Truck Data Collection and Analysis is an Interagency Project involving the National Highway Traffic Safety Administration and the Federal Motor Carrier Safety Administration (FMCSA). It is mandated and authorized by the Motor Carrier Safety Improvement Act of 1999, Section 224 - Study of Commercial Motor Vehicle Crash Causation and Section 225 - Data Collection and Analysis. A close working relationship between the agencies will ensure that problems are properly identified with the goals and objectives of each agency taken into consideration.

In 1999 (Fatality Analysis Reporting System-FARS, National Automotive Sampling System General Estimates System -NASS GES), large truck (≥4,536 kgs GVWR) involved crashes made up 12% of all fatal crashes, 5% of all injury crashes, and 8% of property damage crashes (Table 1.) Of the fatalities in crashes involving trucks (13%), 2% of the fatalities were truck occupants, while 10% were occupants of other vehicles in the crash (Table 2.) Of all injuries in crashes, 4% occurred in crashes involving trucks. The truck occupants experienced 1% of the injuries and other vehicle occupants experienced 2% of the injuries (Table 3.)

The project involves two separate data collection programs designed to address the perception that

1) the perception that commercial motor vehicle crash data are incomplete and/or inconsistent,
2) there is no existing data collection effort that meets all needs, and
3) heavy truck/passenger vehicle interactions are increasing.

Table 1.
All Traffic Crashes, 1999

Crash Type	Total	Truck Involved	% Truck Involved
Fatal	37,043	4,542	12%
Injury	2,054,000	95,000	5%
Property Damage	4,188,000	352,000	8%

Table 2.
Truck Involved Fatalities, 1999

	Truck Involved	% of All Fatalities
Total Fatal (includes non-occupants)	5,362	13%
Large Truck Occupants	758	2%
Other Vehicle Occupants	4,170	10%

Table 3.
Truck Involved Injuries, 1999

	Truck Involved	% of All Injuries
Total Injured (includes non-occupants)	142,000	4%
Large Truck Occupants	33,000	1%
Other Vehicle Occupants	105,000	2%

LARGE TRUCK CRASH CAUSATION STUDY

The Large Truck Crash Causation Study (LTCCS) is being conducted under Section 224 of the 1999 Act. Its goal is to determine the causes of large truck crashes. Based on the results of the study, effective countermeasures to reduce the occurrence and severity of large truck crashes will be implemented

The scope of the study is limited to motor vehicle traffic crashes involving at least one large truck and at least one fatality or serious injury.

The system is designed so that an early assessment of highly perishable data critical to understanding the cause of the crash can be determined. Data will be reported quarterly and on an ad hoc basis as needed.

Data is being collected at the 24 sites of the NASS Crashworthiness Data System (CDS) (see Figure 1.)

The NASS is being used because of its more than 20 year record in:

- providing nationally representative data on fatal and nonfatal motor vehicle crashes for use in developing and evaluating federal motor vehicle safety standards and other safety countermeasures
- randomly selected investigations initiated from police traffic crash reports
- quality assurance at multiple levels to ensure data completeness, accuracy, reliability, consistency, and timeliness
- quality assurance to identify trends and problems and to identify, measure and control errors
- required and established procedures for data confidentiality and availability

To conduct this study an additional 24 NASS CDS researchers had to be hired and trained. The study will involve two years of full data collection. An average of 13 potential cases will require screening before a valid selection for the study can be made. The national representative scheme will sometimes involve investigating all of the qualifying crashes in an area and in other areas a sampling scheme will be developed.

ESTABLISHMENT OF LTCCS

Cooperation

Through coordination with the FMCSA, NHTSA established contacts with Motor Carrier Safety Assistance Program (MCSAP) inspectors in each NASS CDS site. Cooperation was established with police agencies in each area. This was necessary because the LTCCS requires that the crash investigation work start on-scene at the time of the crash. MCSAP inspectors will assist the LTCCS staff in gaining cooperation from the various crash involved parties.

Causation Analysis

Expert crash reconstructionists at two quality control centers will be analyzing the crash information provided by the field researcher. They will be examining the information using a concept developed by Kenneth Perchonok where crashes are a linear sequence of causal chains, with each is linked to the following in a cause and effect relationship.

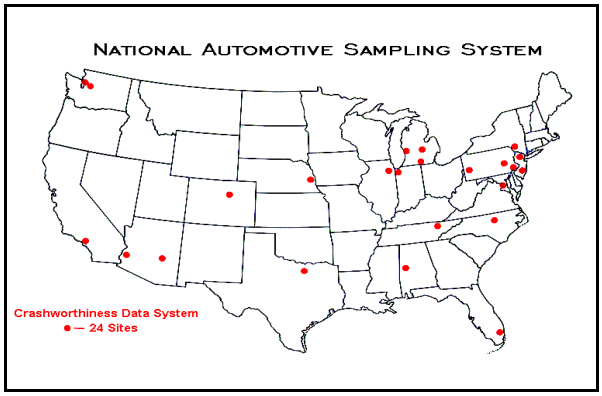

Figure 1. National Automotive Sampling System Sites

Status

Through the date of this paper, the work plan has been completed; liaison has been established with local and state authorities; the new electronic data system has been designed, developed and tested; researchers have been hired and trained; the pilot study has been completed; and data collection will begin Spring 2001. The preliminary analysis of the data will begin in the Fall of 2002.

COMMERCIAL VEHICLE ANALYSIS REPORTING SYSTEM

Section 225 of the Motor Carrier Safety Improvement Act, Data Collection and Analysis, requires improved collection and analysis of data on crashes involving commercial motor vehicles. The NHTSA in cooperation with the FMCSA is required to administer the program through agreements with the states, train and assure quality, integrate the data in a national file, and make the data file available to users.

The Commercial Vehicle Analysis Reporting System (CVARS) will be similar to FARS in its infrastructure, data elements, and data sources thereby taking advantage of the experience gained with that successful program. There may be some differences in coordination with state agencies, definitions, and sources.

Commercial motor vehicles involved in tow-away, injury, and fatal crashes will be included in a two-tier system. Tier one will include a subset of data elements that can be entered in a short time period from the date of the crash. Tier two will include detailed data that can be used for more in-depth analysis.

The system will review police reported crashes. It will be designed to capture information on commercial motor vehicle involved crashes and contain the level of quality and completeness experienced by FARS and necessary to accurate analysis.

As in FARS, an analyst will be present in each state who to review police reports. The data will be coded in a file and sent to NHTSA. Analytical files will be developed and distributed to users. NHTSA will develop training and quality control procedures and the data entry and processing system.

REFERENCES

Perchonok, K. (1972) Accident cause analysis. CAL Report. ZM-5010-V-3, Cornell Aeronautical Laboratory, Inc.