
Government/Industry G10 Session

Large Truck and Motor Vehicle Crash Causation Studies

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Overview

- **LARGE TRUCK CRASH CAUSATION STUDY (LTCCS)**
- **NATIONAL MOTOR VEHICLE CRASH CAUSATION SURVEY (NMVCCS)**

- **Motor Carrier Safety Improvement Act of 1999**

[SEC. 224. STUDY OF COMMERCIAL MOTOR VEHICLE CRASH CAUSATION.]

“The Secretary shall conduct a comprehensive study to determine the causes of, and contributing factors to, crashes that involve commercial motor vehicles.”

LTCCS- Cooperative Effort

- **NHTSA**

- **NASS Infrastructure**
- **Crash Researchers**

- **FMCSA**

- **Funding**
- **SafetyNet & MCMIS**
- **Expert Consultants**

- UMTRI, Accident Research & Analysis



LTCCS – Status/Milestones



- **Pilot Study:**
 - **July 2000 – April 2001**
- **Full data collection:**
 - **April 2001 – December 2003**
- **Final coding of the crash event assessments and associated factors, QC and SAS file created:**
 - **January 2004 – December 2004**
- **Public release of data:**
 - **Early 2005**

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- The following data may not be representative of the approximately 1,000 cases in the final weighted dataset
 - These are *unweighted* numbers. Final data will be weighted to obtain valid national estimates

LTCCS - Data

CONFIGURATION	LTCCS	TIFA	MCMIS
Tractor/semi-trailer	60%	60%	53%
Tractor/double trailers	4%	3%	2%
Single Unit – 2 axles	11%	18%	13%
Single Unit – 3 axles	13%	11%	13%
Truck/Trailer	8%	4%	11%
Truck Tractor (Bobtail)	1%	2%	3%
Other/Unknown	3%	1%	5%

LTCCS - Data

CRASH TYPE CATEGORIES		%
Single Vehicle	Run-off Road, Object in roadway	17
Multiple Vehicles	Same Trafficway Same Direction	32
	Same Trafficway Opposite Direction	10
	Change Trafficway Vehicle Turning	14
	Intersecting Paths	9
Other	Backing, Jackknife, etc.	18

LTCCS - Data

CRITICAL EVENTS* <i>*Two Vehicle Crashes</i>	%
Action of Truck Driver	29
Action of Other Driver	60
Truck Vehicle Failure	1
Other Vehicle Failure	2
Roadway, Weather	6
Other/Unknown/Neither	3

LTCCS - Data

CRITICAL REASONS* <i>*Two Vehicle Crashes</i>	Truck	OV
Driver Non-Performance	4%	16%
Driver Recognition error	47%	37%
Driver Decision error	33%	18%
Driver Performance error	4%	6%
Driver Error - unknown	6%	10%
Vehicle	4%	3%
Roadway, Weather, Other	0	8%
Unknown	2%	2%

LTCCS - Data

FACTORS (in two vehicle crashes)	Truck	Other Vehicle
Fatigue	10	23
Alcohol Use	0	15
Illegal Drugs	2	10
Legal Drugs – Prescription, OTC	51	49
Driver Decision - Traveling Too Fast	17	24
Driver Recognition - Poor Surveillance	1	15
Driver Recognition - Distraction	10	23

LTCCS – Data

FACTORS* <i>*Two Vehicle Crashes</i>	Truck	Other Vehicle
Driver Recognition – Inattention	10	26
Unfamiliarity with Roadway	29	15
Unfamiliarity with Vehicle	13	3
Vehicle	20	9
Roadway	23	25
Weather	23	25

LTCCS - Data

TRUCK CRITICAL REASONS*	%
Not Coded to Truck	60
Driver Recognition	18
Driver Decision	14
Driver Performance	1
Vehicle	3
Roadway	1
Other	1
Unknown	1

**Multi-Vehicle Crashes*

LTCCS - Data



CRITICAL REASONS*	<i>*Single Truck Crashes</i>	%
Driver Non-Performance		14
Driver Recognition		8
Driver Decision		32
Driver Performance		8
Driver Unknown		2
Vehicle		12
Roadway, Weather		8
Unknown		2
Not Truck: phantom vehicle, pedestrian		14

LTCCS - Data



CRITICAL REASON*	<i>*All Cases, Truck Coding ONLY</i>	%
Not coded to Truck		57
Driver Non-Performance		3
Driver Recognition		14
Driver Decision		15
Driver Performance		2
Unknown Driver problem		1
Vehicle		4
Roadway, Weather, Other		2
Unknown		1

NMVCSS - Objective



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- Develop and conduct a nationally representative on-scene survey of crashes for a general-purpose database to provide current and future research with information on the events and factors related to the causation of crashes.

NMVCCS - Why

- Have made great strides in vehicle crashworthiness and occupant protection systems
 - Resulted in large reductions in fatalities
 - Recently improvements have slowed
- Next great strides will come from primary prevention
 - Preventing crashes from occurring in the first place
 - To do this, data on how crashes occur are needed



NMVCCS - Why

- We lack basic real world data on how crashes occur
- NMVCCS designed to fill the void
- Will provide essential data
 - Events and factors related to how crashes occur
- Will be used to identify what crash avoidance technologies are needed
 - Tailor these technologies
 - Evaluate emerging technologies



NMVCCS – How & What

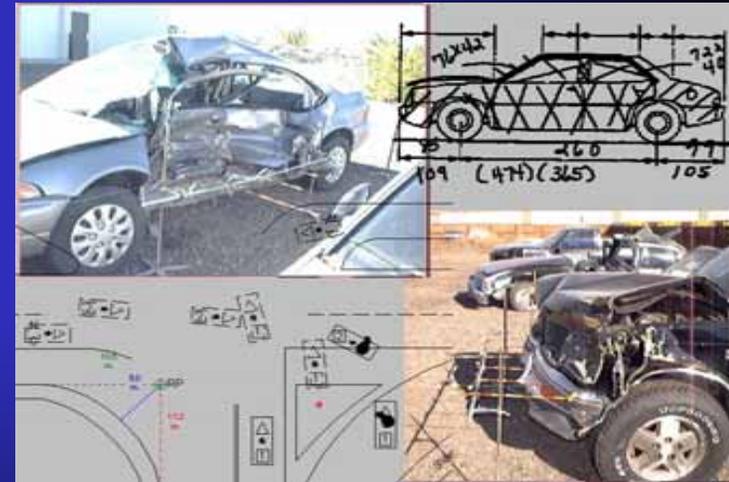
- Utilizing the NASS CDS Infrastructure
 - Nationally representative
 - On-scene
 - Real world data obtained from interview, scene and vehicle inspections
 - Detailed and comprehensive investigations
- For analysis purposes, at least 5000 cases per year will be needed.
 - Annual files
 - Identify trends
 - Research new innovations/technology
 - Evaluate countermeasures



NMVCCS Program Objectives - FY2004



- Hire and train personnel (ZC & PSU)
- Purchase Investigator Equipment
- Develop variables and attributes
- Develop the Methodology
- Develop the sample frame
- Develop Software
- Continue the cooperation
- Field test new technologies and procedures
- Develop Training Materials



NMVCSS – 2004

- Personnel
 - NHTSA, Zone Centers, ADP
- Program Development
 - Sample Design
 - Field Procedures
 - Variables and Attributes

NMVCSS - On Scene



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- **The on-scene investigation as opposed to a reactive approach (follow-on investigation) provides significantly more detail on events and factors that led up to the crash.**
 - **These data quickly diminishes with the passage of time.**

NMVCCS – On Scene

- The information obtained during an on-scene interview can be quickly verified as the investigator completes their comprehensive physical evidence documentation of scene and vehicle inspections.



Examples From LTCCS

- Evidence obtained on-scene contradicted statements made by the driver during his interview



- The Driver indicated that he departed the roadway due to a tire blowout, yet the researcher inspected the tires and the roadway and found no evidence of a blowout.
- The driver stated that he had had plenty of sleep the previous night and then the NASS researcher observed him dozing off between interviews.
- Several log books were found upon inspection of his vehicle as well as additional papers hidden in his pants.



Questions?