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Report to Congress NHTSA's Crash Data Collection Programs

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Executive Summary

The National Highway Traffic Safety Administration's (NHTSA) data systems each have a unique and essential role in supporting our primary mission of saving lives and preventing injuries associated with motor vehicle crashes. NHTSA, in partnership with the safety community, addresses this mission in three ways: primary prevention (e.g., preventing the crash from occurring), motor vehicle crashworthiness (e.g., elimination of injuries and fatalities during a crash), and effective post-crash response (e.g. mitigation of crash consequences through a sound system of emergency medical services). NHTSA believes that combining sound science with quality crash and fatality data are absolutely essential to reducing the human and economic cost of motor vehicle crashes.

NHTSA's traffic safety data provide the underpinning for informed highway safety decision-making at the Federal, State, and local levels. Accurate, accessible, timely, and standardized data allow decision makers to identify the primary factors related to the source of crashes and their outcomes, develop and evaluate effective safety countermeasures, support traffic safety operations, measure progress in reducing crashes and their severity, design effective vehicle safety regulations, and target safety funding.

The General Accounting Office published a report in May 2003 titled *Program Evaluation: An Evaluation Culture and Collaborative Partnerships Help Build Agency Capacity* (GA0-03-454) in which NHTSA was cited as one of three exemplary agencies possessing "a commitment to self examination, data quality, analytic expertise, and collaborative partnerships."

NHTSA data are the **only source for timely national estimates** on real-world traffic crash data for fatalities, injuries, causation factors (primary prevention), occupant protection (crashworthiness), and safety program evaluations. NHTSA's various users and stakeholders routinely access our data, published reports, fact sheets, and research notes. Therefore, while NHTSA's data systems provide substantial support to our own programs and activities, they also have tremendous national and international relevance and value to supporting traffic safety. As such, NHTSA data sources are used throughout the world and frequently cited by stakeholders, researchers, State partners, other Federal agencies, and safety advocates regarding fatality counts, safety belt usage rates, or the need for safer vehicles and highways.

We estimate that it would cost nearly a billion dollars each year to collect and code the estimated 6.2 million police-reported crashes into a uniform format. Therefore, in the late 1970s, NHTSA devised a method that utilizes an efficient combination of census, sample-based, and existing State files to provide nationally representative traffic crash data on a timely basis and at a small fraction of this cost, about $30 million annually. For example, we convey information on the police-reported crashes by recoding basic information from the various crash records into a uniform format for two systems. Additionally, we perform detailed field investigations to populate four systems, and we use existing State data sets in two other systems.

The following are basic descriptions of the eight primary data systems:

Systems consisting of crash records coded for uniformity include:

- The Fatality Analysis Reporting System (FARS) which provides a census of the police-reported traffic crashes in which at least one fatality occurred; and

- The National Automotive Sampling System General Estimates System (NASS GES) which provides national estimates based on a sample of about 50,000 crashes annually to represent the annual 6.2 million police-reported motor vehicle traffic crashes.

Detailed crash investigation-based systems include:

- The National Automotive Sampling System Crashworthiness Data System (NASS CDS) which provides detailed nationally representative data on vehicle damage and occupant outcome (crashworthiness) based on a sample of approximately 4,500 crashes annually to represent the towed light passenger vehicle population in the 6.2 million total annual crashes;

- The National Motor Vehicle Crash Causation Survey (NMVCCS) which provides detailed nationally representative data on the factors or events that led up to a crash (primary prevention) based on a sample of approximately 3,000 crashes annually to represent the 6.2 million total annual crashes. (This survey was started at the beginning of 2005 after a 30-year lapse in collecting such data.);

- The Special Crash Investigations (SCI) program which serves as an early warning system and provides details on crashes involving motor vehicles with new technology; and

- The CIREN program which is collaborative research involving in-depth studies of crashes, injuries, and treatments at eight Level 1 trauma centers.

State data sets include:

- The State Data System (SDS) program which provides data from 29 participating States that are utilized to identify traffic safety problems, help develop and evaluate driver behavioral programs, evaluate vehicle crashworthiness regulations, and study crash avoidance issues; and

- The Crash Outcome Data Evaluation System (CODES) links data from the automated crash files to the medical record information files to provide detailed data on the costs and consequences of motor vehicle injuries.

NHTSA's data collection programs have been developed and modified over the years to use as few databases as possible and practicable. The Electronic Data System (EDS) is utilized as NHTSA's core enterprise architecture for the National Center for Statistics and Analysis (NCSA) data collection efforts, except for the few programs where operational constraints require the use of tailored structures.

The majority of the NCSA annual program budget covers the direct labor costs involved in the data collection process. NHTSA has a worldwide reputation for operating the premier highway safety data collection and analysis systems. NHTSA maintains very high standards for the individuals who assist in our data collection efforts and for the quality of our data and its analysis. To attract and retain the qualified staff necessary to maintain these high standards, we must assure the payment of competitive wages. These costs generally increase annually, at least to match the level of inflation. Therefore, by default, NHTSA must keep pace with these increased operating costs by constantly looking for efficiencies to maintain the same level of performance within our programs. The increased utilization of the EDS, as referenced above, has allowed us to achieve efficiencies in the operating costs of the NCSA data systems, while covering some of the escalating labor costs. We continually look for opportunities to further reduce these operating costs.

It should be noted that most States use a unique police crash report and separate and unique data file system. In States with paper-based systems, data files are typically not completed until years after the crash date. While in recent years some progress has been made in data standardization and electronic reporting, there are still no States with 100 percent of their police jurisdictions reporting crashes electronically. This makes the data collection effort very costly and does not optimize the potential efficiency of the processes and systems. Therefore, the recent enactment and funding of the Section 408 State Traffic Data Systems Grant program in SAFETEA-LU should greatly assist States in improving their processes, translating to improvements on our end as well.

In September 2003, NHTSA created the Data Integrated Project Team (Data IPT) to thoroughly review its data requirements and efforts. The Data IPT developed a long-term vision of the future for traffic safety data to determine what capabilities would be necessary to generate timely, accurate, complete, uniform, integrated, and accessible traffic safety data. Implementation of the recommendations from Data IPT will create efficiencies in the entire data system. We have already started to address the Data IPT findings through the creation of the DOT Traffic Records Coordinating Committee (DOT TRCC), and will use this group into the future to develop specific strategies and actions to improve DOT's data collection efforts.

Finally, NHTSA's Information Technology office has undertaken efforts to review all of NHTSA's systems, including those maintained by NCSA involving data collection.

NHTSA's Crash Data Collection Programs

I. Background

This report is prepared in accordance with House Appropriations Report HR109-153, page 39, that states, "…the Committee directs NHTSA to conduct a comprehensive review of data collection activities and report back to the Committees on Appropriations of the House of Representatives and Senate by March 31, 2006, with respect to the specific types of data collected in each of its data collection and analysis programs and any opportunities to consolidate these data into a system or systems that require less annual operating support yet retain critical safety information."

In response to this directive, NHTSA conducted an internal review of its data systems and has identified the unique characteristics of each system that fully justifies their continuance. Additionally, efficiency measures are routinely adopted within National Center for Statistics and Analysis (NCSA), such as sharing a database structure among several systems. This information was provided to the Appropriations staff in a briefing given by NCSA at the end of 2005, and more details on these systems are included in the body of this report. Also, as part of a larger review that is being conducted by NHTSA of all of its systems, the NCSA data systems were specifically reviewed over the past month by our contractor, G&B Solutions, Inc. A summary of the G&B Solutions, Inc report recommendations on the NCSA data systems are included in section VIII of this report. This independent report is being reviewed by NHTSA and will be incorporated into our future Information Technology planning. We are cognizant of the budget appropriation constraints and strive to assure the highest level of efficiency and effectiveness in all of our programs.

II. Mission and Vision

Through education, research, safety standards, and enforcement activity, NHTSA saves lives, prevents injuries, and reduces economic costs due to motor vehicle crashes. Our vision is to be the global leader in motor vehicle and highway safety. NCSA supports NHTSA's mission by providing the data and the analysis to enable better understanding of the nature, causes, and injury outcomes of crashes, as well as providing data and analysis used to identify the strategies and interventions that will reduce crashes and their consequences.

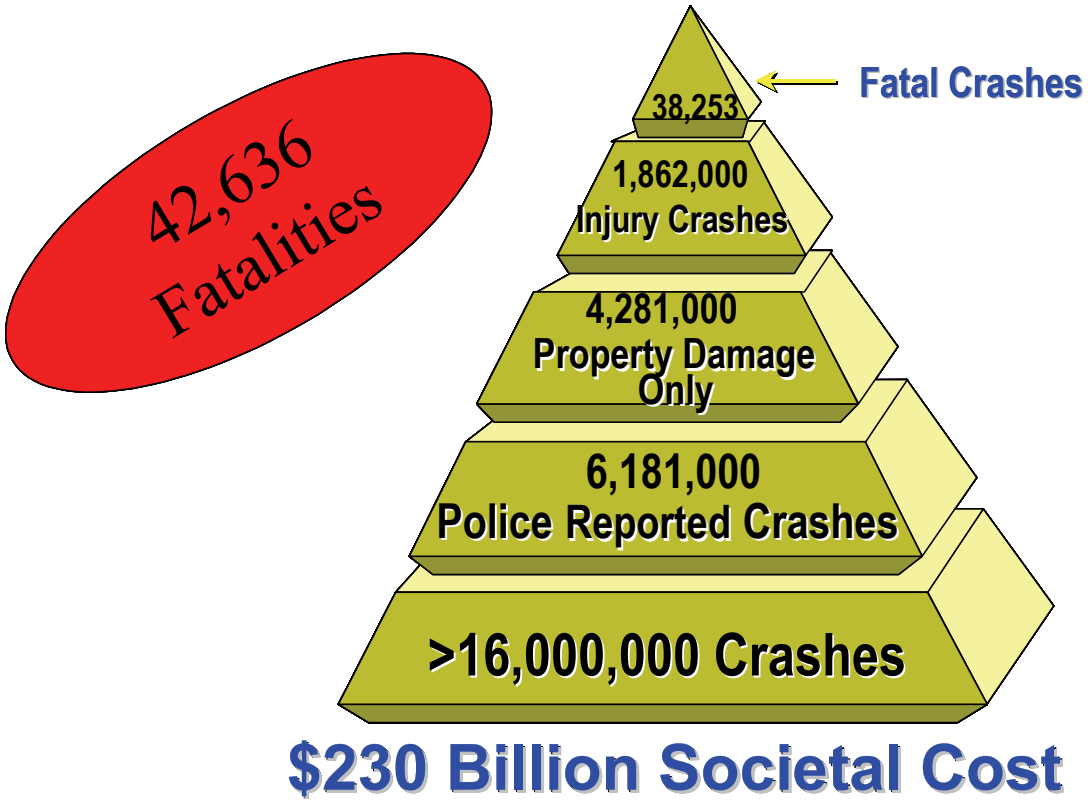
NHTSA, in partnership with domestic and international safety communities, addresses this mission through primary prevention (e.g., preventing the crash from occurring), motor vehicle crashworthiness (e.g., elimination of injuries and fatalities following a crash), and effective post-crash response (e.g. mitigation of crash consequences through a sound system of emergency medical services).

NHTSA data are essential to reducing the human and economic cost of motor vehicle crashes. NHTSA's various data systems are the **only source of real-world crash data** for conducting basic research, identifying problem areas, developing effective countermeasures, identifying program and rulemaking needs, developing and evaluating programs, rules, and standards, evaluating new technologies, and providing information to accurately assess and allocate grants for reducing crashes.

NHTSA was recently cited in a General Accounting Office (GAO) report as one of three exemplary agencies possessing "a commitment to self examination, data quality, analytic expertise, and collaborative partnerships." The GAO report, *Program Evaluation: An Evaluation Culture and Collaborative Partnerships Help Build Agency Capacity* (GA0-03-454), was published in May 2003.

Motor vehicle crash data in the United States cover a wide spectrum – from very minor crashes where information is exchanged by drivers for insurance reporting purposes to detailed reconstructions of all aspects of a specific crash. However, most research focuses on police-reported crashes. These tend to include the data most representative for evaluating crash outcomes.

An estimated 16 million crashes occur annually. Of that total, 6.2 million are police-reported crashes. Approximately 4.3 million of these are property-damage-only crashes. Injury and fatal crashes account for roughly one third of all police-reported crashes (approximately 1.9 million injury crashes and over 38,000 fatal crashes). The injury and fatal crashes are studied to identify areas where countermeasures could be created or improved. The property-damage-only crash data are used to provide information on the performance of occupant protection systems. As a result of this critical data, NHTSA has implemented motor vehicle safety standards that will continue to reduce crash consequences.



III. Stakeholders/ Users

NHTSA data are the only source for timely national estimates on real-world traffic crash data for fatalities, injuries, causation factors (primary prevention), occupant protection (crashworthiness), post-crash outcomes, and safety program evaluations. As such, NHTSA data sources are widely used throughout the world and frequently cited by other users including:

- Department of Transportation
  - Office of Secretary of Transportation (OST)
  - Federal Highway Administration (FHWA)
  - Federal Motor Carrier Safety Administration (FMCSA)
  - Research and Innovative Technology Administration (RITA)
- State governments
- Governors, State legislators, law enforcement
- Academic researchers
- Medical community
- Automotive industry
- Insurance industry
- Insurance Institute for Highway Safety (IIHS) and various insurance companies
- Safety advocates
- American Automobile Association (AAA), Advocates for Highway Safety, Public Citizen, Safe Kids, etc.
- Media
- Private citizens

The demand for crash data are increasing. A number of recent pieces of legislation, articles, and papers have referenced NHTSA crash data. Some examples of these are as follows:

- NHTSA is by far the single largest user of its own data.
  - NHTSA regulatory activities are data driven. They use real-world crash data to identify potential problems, quantify the size and scope of a problem, and gain detailed knowledge for their development and later to perform an evaluation of countermeasures.
    - In a recent GAO report (GAO-03-454) NHTSA was praised for using data in support of their evaluation culture.
  - NHTSA's traffic safety data provides the underpinning for informed highway safety decision-making at the Federal, State, and local levels. Accurate, accessible, timely, and standardized data allows decision makers to determine the cause of crashes and their outcomes, develop and evaluate effective safety countermeasures, support traffic safety operations, measure progress in reducing crashes and their severity, design effective vehicle safety regulations and target safety funding.

- The automobile industry is using NHTSA data in the development of their safety equipment. Most recently, the automotive industry has been using NHTSA data in rollover prevention and roof crush crashworthiness research.

- Recent articles referenced NHTSA data in the passage or proposal of new State laws (including Massachusetts, South Carolina, Tennessee, California, and Iowa) on safety belt usage, child safety seat requirements, teenage driving restrictions (graduated licensing), and countermeasures for driving while under the influence of alcohol.

- Medical professionals rely heavily on NHTSA data in their safety research. Since 2000, NHTSA data have been referenced in over 350 articles published in the Journal of the American Medical Association (JAMA), as well as over 60 articles since 1996 in the Annals of Emergency Medicine.

- The insurance industry routinely publishes highway traffic research based on NHTSA data.

- Advocacy groups frequently use NHTSA data as a tool to support their goals.

Almost every time one picks up the paper or watches a news report there are articles or segments discussing traffic safety. The vast majority of these sources cite NHTSA data whether the topic is fatality counts, safety belt usage rates, or the need for safer vehicles and highways. Most of this press is not generated by the Agency, but rather by NHTSA's various constituency groups and stakeholders that use NHTSA data.

Congress routinely relies on NHTSA data. The Government Performance and Results Act (GPRA) of 1993 established goals for the Department of Transportation and its various agencies. NHTSA data are integral to measuring performance. For example, the Department's goal is to reduce fatal injuries resulting from motor vehicle crashes to a rate of 1 fatality per 100 million vehicle miles traveled (VMT) by year 2008. The fatality rate has dropped each year since the early years of the program's existence, from more than 5 fatalities per 100M VMT to the current rate of less than 1.5.

The highway safety community, especially automobile manufacturers and their suppliers, use NHTSA data as their primary source to improve vehicle crashworthiness. Most manufacturers perform a wide variety of analyses using NASS CDS data, to include analyzing rollover, injury outcome, crash type (front, side, rear, rollover, etc.), and vehicle compatibility analyses (such as passenger cars versus sport utility vehicles). Manufacturers have reported to NHTSA that they have staff members exclusively devoted to using the NASS CDS data in their daily work.

The new NMVCCS data collection program will provide researchers with primary prevention data to identify the specific factors or events that led up to why a crash occurred. Among other things, these data will be useful in identifying and improving crash avoidance technologies at the environmental, human, and vehicle levels. Additionally, the auto manufacturers will use NMVCCS data to evaluate emerging technologies using the real-world crash environment.

The demand for crash data continues to increase. To adequately respond to this growing demand, NHTSA's data systems must remain topical and reliable.

IV. Overview of NHTSA's Data Systems

The annual death toll caused by traffic crashes remains tragically high. In 2004, 42,636 men, women, and children were killed on the Nation's roads, and an additional 2.79 million suffered injuries. Motor vehicle crashes are the leading cause of death and disability for Americans between the ages of 3 and 33. NHTSA's crash data are essential to making cost-effective improvements in highway safety. Each individual data collection system is a unique source of real-world crash data on fatalities, injuries, causation factors (primary prevention), occupant protection (crashworthiness), and safety programs.

Traffic crashes are not only a grave public health problem for our Nation, but also a significant economic burden. NHTSA estimates that it would cost nearly a billion dollars each year to collect and code all of the estimated 6.2 million police-reported crashes into a uniform format. Therefore, in the late 1970s, NHTSA devised a multidisciplinary approach to meet the data needs of our end users that utilizes an efficient combination of census, sample-based, and existing State files to provide nationally representative traffic crash data on a timely basis and at a small fraction of this cost, about $30 million annually or less than $5 per police-reported crash.

Systems consisting of crash records recoded for uniformity include the Fatality Analysis Reporting System (FARS) and the National Automotive Sampling System General Estimates System (NASS GES).

Detailed crash investigation-based systems include the National Automotive Sampling System Crashworthiness Data System (NASS CDS), the National Motor Vehicle Crash Causation Survey (NMVCCS), the Special Crash Investigations (SCI) program, and CIREN.

State data programs include the State Data System (SDS) and the Crash Outcome Data Evaluation System (CODES).

Each of these systems is discussed later in this report.

Electronic Data System (EDS) Enterprise Architecture

NHTSA completed the conversion to a "paperless," completely electronic system in FY1997. The Electronic Data System (EDS) contains multiple components. These components share **a common enterprise architecture** and backbone for their Information Technology (IT) resources such as data collection tools and methods, software development, network architecture, and operations maintenance and support. Architecturally, EDS has evolved into a reusable set of core data structures that provide the backbone for a number of primary and special study databases that also contain unique information.

FARS Database

The FARS database was designed to be scalable to meet the unique requirements of the information technology organizations of all 50 States, the District of Columbia, and Puerto Rico. The State data are then coded, at more than 50 different sites, into a uniform format and entered into one standardized database.

State Data Files

The data sets from 29 States provided to NHTSA initially lack the uniformity to be combined. Therefore, NHTSA must convert the various State data files into a standardized format. By standardizing the data sets, the combined data becomes practical to answer national safety issues that our other data systems are not robust enough to answer.

State Data System (SDS) files are received in various formats and are converted to Statistical Analysis System (SAS) data format. These SAS files are placed on the NHTSA Local Area Network (LAN) where they are available for the analytical needs of NHTSA staff and non-NHTSA researchers who are granted access.

The Crash Outcome Data Evaluation System (CODES) databases from 30 States are at the individual State level. Therefore, data files from various statewide systems can be linked to provide more detailed information on the costs and consequences of injuries sustained in motor vehicle crashes.

NHTSA Data Systems

Crash Data Programs	Data Description	Data Collection Method
FARS – Fatality Analysis Reporting System	Census on all police-reported fatal motor vehicle traffic crashes within the 50 States, the District of Columbia, and Puerto Rico.	Data are collected and entered by analysts located in the 50 States, the District of Columbia, and Puerto Rico.
National Automotive Sampling System (NASS) General Estimates System (GES)	Nationally representative, random sample of all types of police-reported motor vehicle traffic crashes	Crash reports are collected at 60 nationally representative sites around the United States. The crash reports are then coded into a uniform data set.
NASS Crashworthiness Data system (CDS)	Nationally representative, random sample of minor, serious, and fatal passenger motor vehicle traffic crashes.	Trained crash investigators obtain detailed nationally representative data on vehicle damage and the occupant outcome (crashworthiness) of towed light passenger vehicles.
National Motor Vehicle Crash Causation Survey (NMVCCS)	Nationally representative, random sample of minor, moderate, serious, and fatal passenger motor vehicle traffic crashes.	Trained crash investigators collect on-scene crash investigation data on the factors or events that led up to a crash (primary prevention).
Special Crash Investigations (SCI)	Topical in-depth crash data are collected to examine the impact of new, emerging, and changing technologies.	Comprehensive motor vehicle crash investigation by professional crash investigators.
CIREN	Highly detailed severe injury data on both pediatric and adult occupants involved in frontal, side, and rollover type crashes.	A network of eight trauma centers where surgeons, epidemiologists, crash investigators, and engineers that evaluate real world crash related severe injuries prospectively.
State Data System (SDS)	Crash data from 29 States is converted into 3 separate SAS files: crash, vehicle, and person. Each State's variables and values are unique; however some States share many common variables and values.	Police Accident Reports (PARs) are collected and recorded by participating State agencies.
CODES Data Network	State level data from the automated crash files that have been linked to the medical record information to provide detailed data on the costs and consequences of motor vehicle injuries.	A network of 30 States that utilize the identifiers in EMS, emergency department, death certificate, vehicle registration, driver licensing and/or various other traffic or medical records in the State data files to perform a probabilistic match and linkage of the data to perform more detailed analysis of crash outcomes.

Fatality Analysis Reporting System (FARS)

Quick facts:

Cost: (approximately $150 per fatality)
FY2005 = $6,543,000
FY2006 = $6,992,000

2004 = 42,636 Fatalities

Census of fatal traffic crashes in the United States collected in all 50 States, the District of Columbia, and Puerto Rico. FARS is the sole source of national statistics on police-reported fatalities.

Examples of Use:

- Identify trends in highway safety problem areas
- Provide basis for regulatory and consumer information initiatives
- Evaluation of the decrease in the BAC limit from .10 to .08
- Evaluation of motorcycle helmet usage legislation
- Evaluations of restraint usage laws

Overview

The Fatality Analysis Reporting System (FARS), established in 1975, is a data collection system that provides a census of all fatal traffic crashes in the United States. FARS data provides support for most of the traffic and highway safety programs aimed at reducing the number of fatalities on the Nation's highways and is extensively cited in legislative, enforcement, and educational programs. These data are collected on a purely voluntary basis through cooperative agreements between NHTSA and each of the 50 States, the District of Columbia, and Puerto Rico.

The FARS crash data files contain more than 100 coded data elements characterizing the crash, vehicles, and people involved. Data on crashes must be compiled separately, by State, from multiple-source documents (police accident reports and medical service reports) and State administrative records (vehicle registrations and drivers' licenses). NHTSA trains State staff and supervises the coding of the myriad data elements from each State into the common format of standard FARS data collection forms. Training procedures for each State must focus extensively the detailed content and form of the State systems for compiling police accident reports and other records. These systems often differ between States. Some data items are available from multiple sources within a State, which facilitates cross-checking information for accuracy. The final data set is then entered into the standardized database for uploading to NHTSA.

The complete listing of variables and attributes for the FARS program is available at the following URLs:

2004 FARS Coding & Validation Manual
ftp://ftp.nhtsa.dot.gov/FARS/FARS-DOC/2004 FARS C&V Manual.zip

2002 Analytical Users Guide
ftp://ftp.nhtsa.dot.gov/FARS/FARS-DOC/USERGUIDE-2002.pdf

National Automotive Sampling System (NASS)

Quick facts:

Total Budget
FY 2005 = $12,046,000
FY2006 = $12,108,000

Two Components:
General Estimates System (GES)
Crashworthiness Data System (CDS)

The NASS provides nationally representative data on fatal and nonfatal motor vehicle traffic crashes. These data are used to better understand the vehicle and occupant trauma knowledge and to determine the national crash trend experience. Consequently these data formulates the foundation for a comprehensive understanding of both the relationship between vehicle crash severity and occupant injury, and the scope of the highway safety problem.

NASS General Estimates System (GES):
GES Portion approximately $1.5 million (approximately $30 per case)

A nationally representative probability-based sample collected at 410 police jurisdictions in 60 locations around the United States. The approximately 55,000 annual cases are statistically weighted to represent the 6.2 million police-reported crashes annually.

The NASS GES is the sole source of national estimates statistics on police-reported injuries other than fatalities.

Examples of Use:

- Identify trends in highway safety problem areas
- Provide basis for regulatory and consumer information initiatives
- Provide basis for cost and benefit analyses of highway safety initiatives
- Defect investigations
- GPRA Goals

NASS Crashworthiness Data System (CDS):
NASS CDS Portion approximately $10.5 million (approximately $2,500 per case)

A nationally representative stratified sample collected in 27 locations across the United States. Approximately 4,500 annual cases are statistically weighted to represent the 6.2 million police-reported traffic crashes of the towed light passenger vehicle population annually.

NASS CDS uses investigation-based methods, including crash scene documentation, vehicle inspections (with detailed damage measurements), and driver interviews and injury documentation from medical records. More than 600 variables are collected in each NASS CDS Case.

In addition to its routine use, the NASS infrastructure has been repeatedly used as an inexpensive and effective means of conducting "one-time" nationally representative data collection efforts referred to as "special studies". Special studies have included:

- Large Truck Crash Causation Study
  - Data to support Federal Motor Carrier Safety Administration (FMCSA) study of large truck crashes
- Advanced Occupant Protection Special Study
  - In partnership with Alliance of Automotive Manufacturers added three additional NASS Primary Sampling Units to collect crashworthiness data on late model vehicles with advanced occupant protection systems
- Tire Pressure Studies
  - Data to support Tire Pressure Monitoring System (TPMS) rulemaking
- Pedestrian Study
  - Data to support NHTSA's rulemaking
- Impact Fires
  - Data to support Fuel Integrity Rulemaking Action
- Unsafe Driver Actions
  - Data to support Traffic Safety Programs and FHWA research
- Run-Off-Road Crashes
  - Data to support FHWA and TRB research

Examples of Use:

- Auto manufacturers to evaluate crashworthiness performance
- NHTSA Rulemaking

Overview

The NASS provides nationally representative data on crashes occurring in the United States. NASS General Estimates System (GES) data assists in assessing the trend and magnitude of the crash situation. The NASS Crashworthiness Data System (CDS) provides in-depth and descriptive data, which allows NHTSA and other users the ability to quantify the relationship between occupants and vehicles in the real-world crash environment.

NASS CDS data are collected at 27 sites in 17 States and NASS GES data are collected at 60 sites (including the 27 CDS sites) in 26 States. Police reported crashes are sampled according to a complex algorithm to produce nationally representative crash data. Highly specialized NASS CDS researchers under contract to the Agency collect data at the crash scene, inspect the vehicle(s) for specific damage and countermeasure performance, identify injuries from hospital or other medical records, and determine causes of injury. All NASS CDS and NASS GES data are carefully controlled to protect the privacy of involved persons.

NASS data have been electronically coded in computerized data files for statistical analysis since 1979. NASS CDS has investigated and collected detailed data on a sample of over 150,000 minor, moderate, serious, and fatal crashes. The NASS data receives extensive quality control reviews of field case, sampling procedures, and data such as scene diagrams and vehicle damage sketches. Additional case data, such as vehicle photographs and scene diagrams, are included for

detailed analysis by the Agency and the highway safety community. Performance of contractor staff is carefully monitored against defined goals to assure accuracy and completeness of the data.

Police reports used as the source for NASS GES data are collected by NASS CDS teams adjacent to GES sites or part-time contractor personnel at remote NASS GES sites. Data are converted to a common format and coded to the electronic file at two contractor locations

The complete listing of variables and attributes for the NASS program is available at the following URLs:

CDS Users Manual
http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/Manuals/CDSAUM04.pdf

CDS Coding & Editing Manual
http://www-nass.nhtsa.dot.gov/NASS/cds/AnalyticalManuals/aman2000.pdf

GES Users manual
http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/GES/2002_AUM.pdf

GES Data Collection, Coding & Editing Manual
http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/GES/04Coding.pdf

National Motor Vehicle Crash Causation Survey (NMVCCS)

Quick facts:

Cost: approximately $2,500 per case
FY2005 = $6,887,000
FY2006 = $7,920,000

A nationally representative probability-based sample collected in 24 randomly selected locations across the United States. Approximately 3,000 cases are collected annually that are statistically weighted to represent the factors or events that led up to a crash for towed-vehicle population in the 6.2 million annual police-reported traffic crashes.

NHTSA began data collection for the crash causation survey in January 2005.

An on-scene crash investigation is performed including detailed documentation of the crash scene, vehicle inspections, and in-depth interviews. More than 600 variables are collected.

Examples of Use:

- Agency and auto manufacturers to evaluate crash avoidance performance
- NHTSA rulemaking and programs
- Data to support primary prevention of crashes

Overview

While fatality and injury rates have declined, more needs to be done in primary prevention to substantially reduce highway-related fatalities and injuries (finding ways to prevent crashes from occurring).

The on-scene investigation yields a higher rate of participation by crash victims, a higher quality of interview and vehicle information, and a better understanding of the crash events because the physical evidence quickly diminishes with the passage of time.

The crash investigators are equipped with a tool to download the data from a select group of vehicles equipped with an event data recorder.

The NMVCCS data will provide researchers in government and the private sector with the scientific data needed to identify the specific factors or events that led up to a crash. These data will be useful in identifying the crash-avoidance technologies that are needed at the environmental, human, and vehicle levels, and how these technologies would need to be tailored to prevent crashes. Additionally, emerging countermeasure programs and technologies could then be evaluated in the real-world crash environment for their potential in preventing crashes. The NMVCCS data will also be used to identify what crash avoidance technologies are most beneficial.

Special Crash Investigations (SCI)

Quick facts:

Cost: approximately $8,000 per case
FY2005 = $1,675,000
FY2006 = $1,683,000

An elite team of investigators that perform very detailed in-depth investigations on a limited number of crashes. SCI data are the sole source of detailed data on new and rapidly changing technologies.

Examples of Usage:

- Primary data source for advanced air bag rule
- Only source for air bag-related fatality investigations
- Only source for school bus crashworthiness data
- Defect investigations

SCI investigations are focused on current hot topics within the highway safety community. This dynamic data system responds to requests from NHTSA's Office of Defects Investigations and others to research topics of interest.

Overview

The Special Crash Investigations (SCI) program of crashes performs approximately 200 in-depth investigations of high interest to the Agency annually. These real-world crash investigations enable NHTSA to examine and assess the safety performance of new technology in occupant protection systems and provide early detection of alleged or potential vehicle defects. Currently, the focus is in the following areas of concentration:

- Rollover air bag technologies
- Rollover mitigation technologies
- Electronic Stability Control (ESC)
- Side-impact head protection air bags
- Air bag-related serious injuries/fatalities
- Advanced occupant protection systems
- Side air bags/head protection
- Lower anchors and tethers for children (LATCH)
- Child safety seat cases (high-severity frontal crashes)
- Alternative fuel vehicles (Hybrid)
- School bus crashes
- Severe crashes with successful outcomes
- Crashes involving vehicles equipped with adaptive controls
- Crashes where alleged or potential vehicle defects have been reported
- Crashes to support other NHTSA and governmental offices

For example, the performance of advanced air bags, as an occupant protection system, is of extremely high interest to NHTSA. As a result of recent changes in the Federal Motor Vehicle Safety Standard No. 208 on occupant protection, automobile manufacturers have begun

introducing new features into their fleets. In an effort to determine how these advanced occupant protection systems affect occupants in real-world crashes, SCI is collecting data on crashes involving vehicles equipped with these systems.

Crash Injury Research and Engineering Network (CIREN)

Quick Facts:

Cost: approximately $9,500 per case
FY2005 = $3,800,000
FY2006 = $3,800,000

A network of trauma surgeons, epidemiologists, crash investigators, and engineers researching vehicle crashes resulting in serious and/or disabling injuries. Outcome data on occupants up to 12 months post-crash for research on long-term outcomes.

Examples of Usage:

- Only NHTSA crash data system prospectively reviewed by medical doctors and bio-engineers for NHTSA and academic research
- Core source for detailed organ-level injury mechanism data
- Lower extremity injury in offset frontal crashes
- Thoracic and abdominal response in frontal, side, and oblique crashes
- Contact and non-contact brain injuries
- Catalyst for the current Knee, Thigh and Hip (KTH) research conducted by NHTSA
- Current research on pediatric injury mechanisms and child safety seats
- Data used for initiation of updated Field Triage Guidelines by the American College of Surgeons
- Sole source of detailed injury mechanism field data for computer simulations

Overview

The CIREN consists of eight university-affiliated level 1 trauma centers located across the United States. These dedicated research teams are on the front lines of trauma care related to vehicle crashes. With this direct prospective access to real world data the CIREN system can document and validate data with an unmatched level of confidence.

The eight highly professional and experienced CIREN teams concentrate on both pediatric and adult occupants involved in frontal, side, and rollover type crashes. Through these investigations data can be collected and research continued on the following topics:

- Elderly injury patterns and tolerance
- Pediatric injury mechanics
- Adult and pediatric brain injuries
- Lower extremity injury causation
- EMS improvement in extrication procedures and triage
- Air bag-related injuries and fatalities
- Serious or disabling injury resulting from minor to moderate crashes
- Role of pre-morbid conditions on crash occupants
  - Obesity
  - Diabetes
  - Osteoporosis
  - Vascular calcification

The detailed crash reconstruction in tangent with the direct data stream from the trauma centers allow CIREN engineers to design and create computer models. The use of three-dimensional CAT scans allows CIREN researchers to pinpoint exact injuries and map the injury severity for improved computer models. These computer models aid in the understanding of injury causation and allow engineers to create injury thresholds for use in crash dummy design.

The outcome data collected by CIREN allows researchers to analyze the ability of the occupant to regain some or all of their physical and mental capacities over the 12 months following their crash. This type of data is paramount in discovering the types of injuries that result in long-term disability and/or life changing events. These injuries are often responsible for large economic losses in terms of lost wages and mental complications such as depression.

State Data Program (including State Data System (SDS) and Crash Outcome Data Evaluation System (shown below)

Quick facts:

Budget overall:
FY 2005 =$2,504,000
FY2006 = $2,515,000

State Data System portion of budget is approximately $500,000 (approximately $17,000 per State).

Computerized State crash data from 29 States.

Examples of Usage:

- Support Defect Investigations
- Research rollover propensity
- Rulemaking
- Occupant protection effectiveness

Overview

Since the early 1980s, NHTSA has been obtaining computer data files coded from police accident reports. NHTSA refers to the collection of these computerized State crash data files, currently obtained from 29 States, as the State Data System (SDS).

The SDS program provides data from 29 participating States that are utilized to identify traffic safety problems, help develop and evaluate driver behavioral programs, evaluate vehicle crashworthiness regulations, and study crash avoidance issues.

The State crash data files are requested annually from the appropriate State agencies. In most instances, the coordinating agency is the State police, the State highway safety department, or the State department of transportation. The data files are received in various formats and are converted to Statistical Analysis System (SAS) data format. These SAS files are placed on the NHTSA Local Area Network (LAN) where they are available for the analytical needs of NHTSA staff.

SDS provides essential data not available in any of NCSA's other data systems. The SDS includes census data taken directly from police accident reports which includes injury and property-damage-only crashes. The State Data System data has been successfully used for a variety of studies by providing census data sets at the individual State levels. The sheer volume of crash records allow for finding and quantifying the size and scope of problems.

SDS is a part of NCSA's overall State Data Program, which supports NHTSA's efforts to identify traffic safety problems, help develop and implement vehicle and driver countermeasures, evaluate motor vehicle standards, and study crash avoidance and crashworthiness issues and regulations.

Crash Outcome Data Evaluation System (CODES)

Quick facts:

Budget overall:
FY2005 $2,504,000
FY2006 $2,540,000

CODES portion of budget is approximately $1.5 M (approximately $50,000 per State).

Probabilistic linkage of crash data to EMS data in 30 participating States, to include emergency department, inpatient, death certificate information. Some States also link to vehicle registration, driver licensing, other traffic records, and/or other injury records. CODES is the sole source of national estimate statistics on medical and financial outcome cost.

Examples of Usage:

- Provides cost benefit analysis data to regulators
- Motorcycle helmets
- State laws
- Rulemaking
- Defect investigations

Overview:

The Crash Outcome Data Evaluation System (CODES) links data files from the automated crash files to the medical record information to provide detailed data on the costs and consequences of motor vehicle injuries. The linkage is performed between retrospective, and is person-specific, population-based data to generate State-specific crash outcome information. The focus is State-specific because State data are not regionally or nationally uniform. As of 2005, 30 States have been funded to implement CODES.

CODES generates statewide, population-based data that can fill in the gaps of understanding information not available in sampled data, particularly rare events that may turn out to be significant. Even though State data are not uniform and may be difficult to merge, trends can still be noted that increase the use of data for supporting legislative actions at the State level. The probabilistic/imputation techniques enable us to standardize State data collected using different reporting thresholds.

The CODES linkage electronically identifies and tracks injured victims at the scene and through the phases of emergency healthcare, enabling analysis of the causes of mortality, injury, severity, and health care charges resulting from motor vehicle crashes. This linkage enables the characteristics of the people, vehicles, and events involved in a crash to be matched to their specific medical and societal costs and outcomes so that the countermeasures that have the most impact on improving traffic safety can be identified and implemented where they are most needed.

The CODES linkage focuses on State databases containing information on crashes, EMS, emergency department, hospital discharge, and death certificates. Other electronic traffic records

(e.g., driver licensing, vehicle registration, citation and adjudication, roadway inventories or insuring risk), collected during other traffic safety events and maintained statewide, are added to the linkage to understand the association between problem drivers, vehicle and roadway characteristics, and different types of violations with crash outcomes.

V. Data Dissemination

Individually and collectively, NHTSA data are made publicly available at no cost and provides overall support to the mission of NHTSA and the safety community.

NHTSA was cited in a recent GAO report (GAO-03-454) for the quality of their public crash data files and their commitment to continuous improvements:

> "NHTSA uses a variety of quality control procedures to assess and ensure the accuracy of several public use data files. The ongoing collection, compilation, and monitoring of these statistical data series greatly facilitates analysis of variation in these data. Such analyses, in turn, lay the foundation for continuing improvements in measurement and in data quality assurance."

NHTSA's data are disseminated in three basic methods: completed publications, ad-hoc inquires, and complete database files. The Internet has become our primary outlet for data distribution. All of NHTSA's reports and data files are available at no cost via the Internet. NHTSA's publications include annual reports, Traffic Safety Facts, Fact Sheets, Enhanced Safety of Vehicles (ESV) Research Papers, Society of Automotive Engineers (SAE) reports, and research notes. In addition, NHTSA supports over 30,000 individual ad-hoc data requests through its Information Services Branch, again at no cost to the public. These requests come from a range of sources, such as the news media on a tight deadline, to students performing research for a school project.

NHTSA's publicly available data system files can also be downloaded via the Internet. The data files provided by these databases offer students, researchers, statisticians, and legislators a wide array of vehicle, occupant, environmental, injury, and crash information.

Typically, the year's most current data for FARS, NASS GES, and NASS CDS becomes available in August of the following year (i.e., 2004 data are available in August 2005). In addition, individual cases for NASS CDS may be viewed in a preliminary format approximately 90 days after the investigation is completed.

NHTSA has also begun development of "user friendly" data-retrieval systems for our various data systems. The first of these systems is the FARS Web-Based Encyclopedia. The FARS Web-Based Encyclopedia is the program's public Web site for FARS statistical reports and data, a resource for Traffic Safety data and information of all fatal motor vehicle crashes in the United States. A major goal in the NHTSA Strategic Plan is to "expedite the availability of information to customers and partners." The purpose of the FARS Web-Based Encyclopedia is to provide easy access and analytical functionality for professional and non-professional users to address traffic safety issues.

NHTSA provides a case viewer, as a component of the Electronic Data System (EDS), available over the Internet for NHTSA's various field investigation programs. The purpose of the case viewer is to offer NHTSA's end users the ability to view the most up-to-date, real-world crash data via the Web site. This system was developed as a direct result of automobile manufactures requiring the real-world crash data as soon as possible. As a result, cases can now be viewed

approximately 90 days after the crash in NASS and approximately 120 days after the investigation is completed in the SCI programs.

VI. Problem Solving: Using Real-World Data

NHTSA is data driven using real-world crash data to identify potential problems, quantify the size and scope of problems, and gain detailed knowledge for the development and evaluation of countermeasures.

Most large-scale problems, such as drinking and driving, are noted by the identification of trends in the data sets. However, each program has an independent method of finding problems in "real-world" crashes. FARS and NASS GES have variables in which the data from law enforcement officers can code the factors they felt contributed to the crash including potential vehicle issues. The field investigation programs (NASS CDS, SCI, and CIREN) go a step further. They have a method to directly notify NHTSA's Crash Investigation Division (CID) of potential problems. The problems are reported from the field, reviewed by the CID staff, and submitted to NHTSA's Office of Defects Investigations by way of our Field Safety Notifications system.

Regardless of the problem identification source, after an issue is noted a number of programs are used to determine the size and scope of the possible problem. In large-scale problems FARS and NASS GES can provide national estimates on the size of the issue for fatal and non-fatal crashes. However, if the event type or issue is small or rare enough that it does not show up in our sample scheme (55,000 NASS GES cases representing the 6.2 million police-reported crashes), then the State Data System and CODES program are used to delve into specific trends.

In an effort to gain more detailed knowledge on a specific event type or issue, NHTSA's "real-world" crash data collection systems are used to provide more detailed information. As examples: the NASS CDS was recently used to provide national estimates on a sample of crashes involving rulemaking action on rollover crashworthiness. SCI has been used in rulemaking actions and vehicle defect investigations by providing the most detailed data on specific crashes of interest. CODES data are the only source for providing details on the specific issues including cost.

Data collection systems provide data that is used to evaluate countermeasures in the "real-world" environment. FARS and NASS data provides national estimates on trend data that supports the decision-making areas that lead the way toward cost-effective improvements in highway safety.

The injury crashes are studied in an effort to quickly identify areas where countermeasures could be created. As a result, NHTSA has implemented motor vehicle safety standards that will reduce the crash consequences.

The most noteworthy case and point of NHTSA data being used for problem solving is the Federal Motor Vehicle Safety Standard (FMVSS 208) which regulates occupant protection. In the early years of this rulemaking action on air bags, a number of the data programs were used to evaluate the air bag as a requirement. FARS and NASS GES data identified a need to reduce deaths and injuries in frontal crashes. NASS CDS was used to identify the specific injury mechanisms. As a result of the research on frontal occupant protection from these data sets, FMVSS 208 required a phase-in schedule of the automatic occupant protection requirement from 1987 though 1990.

Air bags were introduced to the fleet as the preferred choice of automatic occupant protection for the driver for most of the model year 1990 light passenger vehicles. Shortly after the introduction of air bags into the fleet, the SCI program identified crashes where the air bag was confirmed as the injury mechanism. As a result, the Agency initiated a number of rulemaking changes as countermeasures including the on-off switch, sled-certification, and an advanced air bag rule based primarily on SCI data.

There were not enough observations of air bag-related fatal or life threatening injuries and there was not enough detail to recognize the problem in the other data programs. FARS lacked the detail to identify the air bag as the injury source in these low-speed crashes. The first case of an air bag-related fatality was selected and confirmed in the NASS CDS sample system in data collection year 1997, about the same time the new rules were being implemented.

VII. Efficiencies

NCSA is responsible for NHTSA data collection. NCSA's mission includes identifying innovations, technologies, systems, procedures, and practices that will make our data collection, analysis, and dissemination more efficient.

Implementing cost-effective initiatives has created a positive effect on all our data systems. We share our expertise across multiple programs, including data coding, investigation support, injury analysis, new technologies, and automated data processing. As a result, we have seen improvements in our overall data quality, quantity, and timeliness at all levels of data collection coding, quality control, and dissemination.

Numerous efficiencies have been implemented over time. One such example is the Electronic Data System (EDS) implemented in 1997. EDS was developed to support the automated data processing for the data collection programs. EDS was designed to share common enterprise architecture for Information Technology (IT) resources such as data collection tools and methods, software development, network architecture, and operations maintenance and support.

Architecturally, EDS has evolved into an extremely efficient reusable set of core data structures that provide the backbone for a number of primary and special study databases that also contain unique information. Collectively, these data are publicly available and provides overall support to the mission of NHTSA and other government agencies.

This reusable set of core data structures promotes system efficiency and design flexibility for specialized input, processing, and output of data. The following data systems use this core structure:

- National Automotive Sampling System Crashworthiness Data System (NASS CDS)
- National Automotive Sampling System General Estimates System (NASS GES)
- Special Crash Investigations (SCI) program
- Crash Injury Research & Engineering Network (CIREN)
- National Motor Vehicle Crash Causation Survey (NMVCCS) (the latest special study making use of the EDS infrastructure)

In addition, through the infrastructure of the NASS and EDS programs, NHTSA has performed a number of special studies:

- Large Truck Crash Causation Study (LTCCS) in partnership with FMCSA
- Advanced Occupant Protection Special Study in partnership with Alliance of Automotive Manufacturers
- Tire Pressure Monitoring System Study (TPMSS) performed in support of rulemaking activities mandated by the TREAD Act

In all of these special studies EDS enterprise architecture was used. This significantly reduced the costs involved and overall startup time. NHTSA currently spends approximately $4 million of its budget on EDS. Without utilizing the EDS infrastructure, the cost could be as much as double that amount.

As a result of using our internal infrastructure, startup costs and time from design to implementation for the National Motor Vehicle Crash Causation Survey (NMVCCS) were significantly reduced. The basis for the NMVCCS architecture was the Large Truck Crash Causation Study (LTCCS), which took almost two years from development through field-testing. NMVCCS went from development to field-testing to implementation and data collection in only 11 months.

Another example of cost-effectiveness is the e-mail system utilized by NASS and SCI. These programs make use of USDOT's existing e-mail infrastructure. As a result, the program areas only needed to expend minimal funds for electronic communication, an essential data collection activity.

The field training for NASS, NMVCCS, SCI, CIREN, and FARS has been consolidated and centralized at USDOT's Transportation Safety Institute in Oklahoma City, Oklahoma. Our overall training costs are now shared across all of the programs. In addition to the cost savings, this consolidation has also led to improvements in our overall data quality.

Efforts to Improve State Traffic Records

There is no Federal mandate for uniform definitions and attributes. However, on a voluntary basis most States have begun collecting a similar core of information about crashes. The Model Minimum Uniform Crash Criteria (MMUCC), a voluntary guideline for the implementation of uniform crash data elements, was a collaborative effort initiated by NHTSA, the Federal Motor Carrier Safety Administration (FMCSA), the Federal Highway Administration (FHWA), and the Governors Highway Safety Association (GHSA).

In addition, the crash reporting criteria at the State and local police jurisdictions are not uniform. The reporting criteria are affected by the resources available, especially the availability of law enforcement personnel to complete the crash reports. In most cases, the reporting criteria must attempt to balance between the law enforcement workload and the collection of crash data. Most States focus their data collection on fatal and severe injury crashes.

Another major issue is the speed at which crash data records are compiled into electronic files, which varies greatly by State. In States with paper-based systems, the data files are typically not completed until years after the crash date. Although in recent years some progress has been made in the areas of data standardization and electronic reporting, there are still no States with 100 percent of their police jurisdictions reporting crashes electronically.

In September 2003, NHTSA created the Data Integrated Project Team (Data IPT) to recommend priorities to the Administrator for how traffic safety data should be improved. This team consisted of representatives from NHTSA, Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), and the Bureau of Transportation Statistics (BTS).

In addition, the Data IPT worked to ensure that it included many of its non-government stakeholders during the review of the current traffic safety data. The Data IPT interviewed the

following list of organizations to gain their insight into our data systems and the future of traffic safety data. Their input was incorporated into the Data IPT report.

- Advocates for Highway Safety
- American Association of Motor Vehicle Administrators (AAMVA)
- Alliance of Automobile Manufacturers
- American Association of State Highway and Transportation Officials
- Ford Motor Company
- Governors Highway Safety Association (GHSA)
- Indy Racing League (IRL)
- International Association of Chiefs of Police (IACP)
- Insurance Institute for Highway Safety (IIHS)
- National Safety Council
- National Association of State EMS Directors
- NHTSA Regional Traffic Records Coordinators
- Public Citizen
- State Traffic Coordinating Committees from the following States: Connecticut, Indiana, Iowa, and Nebraska
- Traffic Safety Information Systems International Scan Tour
- University researchers

The Data IPT identified many persistent data problems that the traffic safety community has been unable to resolve for decades. Foremost, State data must be made available sooner. The delay begins at the law enforcement level with manual data collection and is compounded at the State records level when data cannot be transferred electronically and must be manually entered. Manually entered data results in more errors than machine-scanned data and must be reviewed and corrected in time-consuming edit checks. By the time the individual State data files have been entered and fully reviewed for accuracy, they are typically outdated.

The Data IPT developed a long-term vision of the future for traffic safety data to determine what capabilities would be necessary to generate timely, accurate, complete, uniform, integrated, and accessible traffic safety data. Implementation of the recommendations from the NHTSA Data IPT would create efficiencies in the entire data system.

The complete NHTSA Data IPT report is available at the following URL:
http://www.nhtsa.dot.gov/IPTReports.html

VIII. Summary -- G&B Solutions, Inc. Report

As part of NHTSA's commitment to self examination and data quality, NHTSA's Information Technology office has undertaken efforts to review all of NHTSA's data systems. The report from G&B Solutions, Inc. will be used to develop a longer-term improvement plan that assures NHTSA's IT resources maximize their value to the Agency and are most efficient in their use and delivery.

NCSA data systems were specifically reviewed by G&B Solutions, Inc. G&B Solutions, Inc. delivered three recommendations. The recommendations are being reviewed by NHTSA and will be incorporated into our future Information Technology planning.

The first recommendation in the G&B Solutions, Inc. report acknowledged the consolidation efforts already performed. However, they "suggest that the consolidation of the NASS-EDS and FARS infrastructure should be considered." NCSA will be exploring the impact a consolidation would have on our field operations and budget.

The second recommendation is related to the quality of the data. G&B Solutions, Inc. recognized the same need for complete, compatible, and accurate data sets from the States. NHTSA and its DOT partners have started to address this issue as result of the Data IPT findings through the creation of the DOT Traffic Records Coordinating Committee (DOT TRCC), and will use this group in the future to develop specific strategies and actions to improve DOT's data collection efforts. In addition, G&B Solutions, Inc. acknowledged the need for a common data structure at the NCSA level. NHTSA also recognized this need. In a recent reorganization, most of NHTSA's crash data systems (all but CIREN) were integrated into the Office of Data Acquisitions. Shortly after, a data compatibility workgroup was formulated and tasked with performing the integration of all the data systems variables and attributes into a single NCSA data repository.

The third recommendation involved improvements in the data delivery channels. G&B Solutions, Inc. recognized the need for a unified data delivery portal. NCSA will collaborate with NHTSA's IT office in an effort to improve our data delivery portal. The portal must meet the dissemination needs of all of the crash data programs wrapped within a common well-organized Section 508-compliant Web site.

IX. Conclusions

Additional and improved data are absolutely essential to support programs and activities that will reduce the terrible human and economic cost of motor vehicle crashes.

The demand for crash data will continue to increase. Crash data must be nationally representative, timely, accurate, complete, and uniform.

Due to regularly escalating costs in NHTSA's data program areas, namely for labor, the data program areas must constantly look for efficiencies to maintain the same level of quality and utility.

As recommended in the Data IPT report and being implemented and coordinated with other DOT Agencies in the Department‘s Traffic Records Coordinating Committee, NHTSA is working with State and local jurisdictions to modernize and improve their traffic record systems, which are the foundation of many of NCSA’s data systems.

Through innovations such as implementing new technologies, systems, procedures, and practices, NHTSA strives to ensure that its data collection, analysis, and dissemination remain accurate, reliable, and efficient.

This report examines the database structure and the usefulness of each of the crash data collection systems closely. The report describes how each data system functions and serves a different and unique purpose.

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