

INFORMATION SUBMISSION FOR NAS

December 2010

**Office of Data Acquisitions
National Highway Traffic Safety Administration**

1.0 INTRODUCTION

Office of Data Acquisitions (ODA) objective is to provide the information that allow a complete understanding of the nature, causes, and injury outcomes of motor vehicle traffic crashes, the strategies and interventions that will reduce crashes and their consequences, and the potential impact, costs and benefits of highway safety programs and regulatory activities; To target the collection and analysis of data and the dissemination of information to quickly identify potential highway safety problems, evaluate expected program and regulatory impact and actual goal achievement, and support data driven decisions; and To continuously identify, advance and promote new methodologies, technologies, systems, and procedures that make data collection, analysis, and evaluation more complete, accurate, timely, and accessible.

The Office of Data Acquisitions (ODA) consists of two divisions as follows:

- (1) Crash Investigations Division – performs multi-level programs of crash investigation, data collection, automation and distribution in conjunction with other components of the National Highway Traffic Safety Administration, Federal, State, and local agencies and the private sector; and to provide timely, complete, and high quality data to the Agency for motor vehicle safety research.
- (2) State Data Reporting Systems Division - provide databases developed from state highway safety related data for use in analyses aimed at reducing deaths, injuries, crashes, and medical costs; work with States to improve their highway safety related databases; and provide sampling, quality control, and other statistical support to NCSA, NHTSA, and outside organizations.

Each data system lists/screens/samples a portion of the approximately 6 million police reported crashes pertaining to the U.S. vehicle population of approximately 250 million vehicles for inclusion into the systems of crash data records. For example:

- The NASS researchers lists and stratifies approximately 500,000 crash reports per year and in order to conduct a nationally representative sample of approximately 4500 CDS detailed investigations and 55,000 GES cases recoded from the police data per year.
- The SCI program screens approximately 400 notifications which result in about 160 detailed crash investigations per year.
- The FastFARS program receives approximately 40,000 notifications of motor vehicle related fatalities that are distributed into the FARS and NiTS programs.

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.

ODA estimates that it would cost nearly a billion dollars each year to collect and code the estimated 6 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 \$25 million annually.

ODA conveys the 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 two systems, and we use existing State data sets in three 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)** provides information on all motor vehicle traffic crashes in the United States in which one or more people die as a result of their crash injuries within 30 days of the crash.

The **National Automotive Sampling System General Estimates System (NASS GES)** is a nationally representative sample of all police-reported motor vehicle traffic crashes throughout the United States. Data are based on information collected from the police crash report.

Detailed crash investigation-based systems include:

The **National Automotive Sampling System Crashworthiness Data System (NASS CDS)** is a nationally representative sample of police-reported motor vehicle traffic crashes involving towed passenger vehicles in which detailed investigations are conducted to support NHTSA's crashworthiness standards development and evaluation programs.

The **Special Crash Investigations (SCI)** program uses highly trained and skilled motor vehicle crash reconstructionists to perform detailed, in-depth investigations on a limited number of crashes involving new and rapidly changing occupant protection technologies or high-profile crashes of interest to the agency.

State data sets include:

The **Not-in-Traffic Surveillance system (NiTS)** is a virtual data collection system designed to provide counts and details regarding fatalities and injuries that occur in nontraffic crashes and in non-crash incidents

The **State Data System (SDS)** is a multi-year database of computerized police-reported crashes. SDS has grown rapidly in recent years as more States have contributed their crash data, further

increasing the value of SDS to NHTSA and the greater highway safety community.

The **Crash Outcome Data Evaluation System (CODES)** is a program which encourages States to link statewide motor vehicle crash data and medical outcome databases to match vehicle, crash, and human behavior characteristics to their specific medical and financial outcomes.

Special Studies

The infrastructure of ODA's field data collection staff allows NHTSA to respond to changing needs. Examples of this flexibility include special studies. A few examples of previous studies include:

Pedestrian Study: The pedestrian crash data study was conducted over a 3-year period to collect detailed crash reconstruction data on pedestrian crashes through the NASS CDS. The study was developed to provide up-to-date information on whether late-model-year passenger vehicles (most recent five years) produced the same types of injuries as older vehicles. The data were also used for laboratory- and computer reconstruction to establish injury criteria for use with instrumented impact devices for simulating pedestrian impacts.

Tire Pressure Study: The tire pressure study was conducted to respond to section 13 of the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act of 2000. Data on the frequency and pervasiveness of tire under inflation were collected and provided as well as the extent to which passenger vehicle operators are aware of the recommended air pressure for their tires.

Large Truck Crash Causation Study (LTCCS): The large truck crash causation study is a nationally representative survey of a sample of large truck crashes in which at least one vehicle involved in the crash is a medium or heavy truck and where at least one person involved in the crash was either killed or seriously injured. The data were obtained through interviews, scene inspections, vehicle inspections, and medical records.

The **National Motor Vehicle Crash Causation Survey (NMVCCS):** NMVCCS is a nationally representative survey of light-passenger-motor-vehicle traffic crashes that will provide information on the events and associated factors related to a crash. NMVCCS provides information on the contribution of pre-crash human factors, vehicle factors, and environmental factors related to crash causation to identify, develop, and evaluate potential crash avoidance countermeasures.

The ODA currently has a staff of 27 employees to accomplish its mission. The information technology (IT) team consists of 4 employees that report directly to ODA Director. The IT team consists of three information technology specialists and one program analysis.

A brief description of each division is listed below:

1.1 Crash Investigations Division (CID):

The Crash Investigations Division (CID) plans, develops and manages national, multi-level

programs of crash investigation, data collection, automation and distribution in conjunction with other components of the National Highway Traffic Safety Administration, Federal, State, and local agencies and the private sector; and to provide timely, complete, and high quality data to the Agency for motor vehicle safety research. The CID consists of 8 employees. One program manager, five crash investigation specialists, one general engineer, and one mechanical engineer.

1.2 State Data Reporting Systems Division (SDRSD):

The State Data Reporting Systems Division provides databases developed from state highway safety related data for use in analyses aimed at reducing deaths, injuries, crashes, and medical costs; work with States to improve their highway safety related databases; and provide sampling, quality control, and other statistical support to NCSA, NHTSA, and outside organizations. The SDRS division consists of 13 employees, including: one program manager, six program analysts, five math statisticians and one general engineer.

Detailed crash investigation-based systems

The NASS Crashworthiness Data System (CDS) and the Special Crash Investigations (SCI) programs use highly trained investigator staff to perform detailed crash investigations including documenting the data from scene evidence, recording the vehicle damage, imaging the event data recorder data, calculating the vehicle specific energy differential, reporting on possible vehicle defects and coding all crash-related injuries from medical records into a worldwide injury severity index.

More than 600 variables are collected in each detailed investigation case including:

Scene Inspection

- Physical Plant (Roadway Features)
- Evidence (Skid marks, etc)
- Scaled Diagrams

Vehicle Inspection Exterior

- Crush Profile - Length, Depth, and Location
- Collision Deformation Classification (CDC)
- Principle Direction Of Force (PDOF)
- Tires
- Rollover (More Detail 2006)
- Side Impact (More Detail 2008)

Vehicle Inspection Interior

- Ejection/Entrapment
- Intrusion
- Restraint Systems
- Occupant Contacts

Crash Severity Indicators

- WINSMASH- Delta V
- Barrier Equivalent Speed

- Visual Estimates
- Speed Changes in Ranges (Minor, Moderate, or Severe)

Event Data Recorder

- Delta V over Time
- Air bag logic
- Precrash data

Injury Determination

- Medical Record Review & Injury Coding
 - NASS Injury Coding Based on AIS-90 (Update 98) through 2009
 - AIS 2005 (in 2010)

The physical evidence, witness interviews, etc. are all utilized by the investigators to provide the sole source for in-depth information on motor vehicles to quantify the relationship between vehicle crash severity and occupant injury utilized to initiate, develop and evaluate effective countermeasures.

Crash records coded for uniformity:

The FARS and NASS GES programs code the data in existing state records into standardized, Police Accident Report (PAR) based information to create national databases on an annual basis. The combination of these files provides a national picture of the police-reported traffic crashes.

The GES data is based solely on the Police Accident Report (PAR) as the source of the data.

The FARS data is gathered from a number of State source documents and is coded by the FARS analyst at the State level. These analysts initiate, seek, track, obtain and code the documents needed to complete the FARS cases, which generally include some or all of the following:

- Police Accident Reports (is not a standardized form)
- State Vehicle Registration Files
- State Driver Licensing Files
- State Highway Department Data
- Vital Statistics
- Death Certificates
- Toxicology Reports
- Emergency Medical Service Reports

In an effort to improve compatibility with states and ease data analysis for users, ODA completed harmonization efforts and aligned the Police Accident Report (PAR)-based record systems, FARS and National Automotive Sampling System General Estimates System (NASS GES) with the Model Minimum Uniform Crash Criteria (MMUCC). This was a major undertaking that creates the underlying infrastructure for compatibility between State and NHTSA crash data files.

Financial Information

Listed below ARE the financial resources provided to ODA in FY-2010 and FY-2011 to support its activities:

ODA Program Funding – FY-2010

Project	Obligated
National Automotive Sampling System	\$12,530,000.00
Fatality Analysis Reporting System (Includes FastFARS)	\$8,472,000.00
Special Crash Investigations	\$1,700,000.00
State Data Systems	\$2,490,000.00
	\$ 25,192,000.00

ODA Program Funding – FY-2011

Project	Allocated
National Automotive Sampling System	\$12,906,000.00
Fatality Analysis Reporting System (Includes FastFARS)	\$8,725,000.00
Special Crash Investigations	\$1,800,000.00
State Data Systems	\$2,490,000.00
	\$ 25,921,000.00

Supplemental Funding - FY 2010

Special Crash Investigations Inspections.....\$570,000
Polk Vehicle Registration Data.....\$900,000

Supplemental Funding – FY 2011

House Bill.....\$1,500,000 to study NASS expansion
Senate Bill\$25,000,000 to study and begin the expansion of NASS