

NAEMSP® Ambulance Safety Conference 2010

The Vehicle Panel – The Problem

John Brophy, NHTSA Special Crash Investigations
&
Dave Bryson, Office of Emergency Medical Services

Traffic Safety Facts

1994 - 2007

What we know.....

- 21 Ambulance driver fatalities
- 100 Ambulance passenger fatalities
- 288 Occupants of other vehicle fatalities
- 43 Pedestrian fatalities
- 3 Pedalcyclist fatalities

Traffic Safety Facts

1994 - 2007

What we know.....

- 455 total fatalities over 14-year period
- Average of 32.5 fatalities each year
- Lowest number of fatalities (15) in 1999
- Highest number of fatalities (49) in 2005

Data Collection

- FARS
 - Census of Fatal Crashes
 - 50 states, District of Columbia & Puerto Rico
 - ~38,000 crashes per year
- SCI
 - Special crash circumstances
 - In-depth investigations
 - Screened by NHTSA EMS office

NCSA's Data Programs

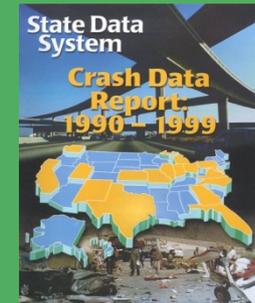
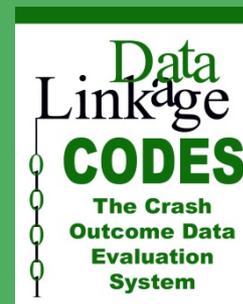
Investigation Based



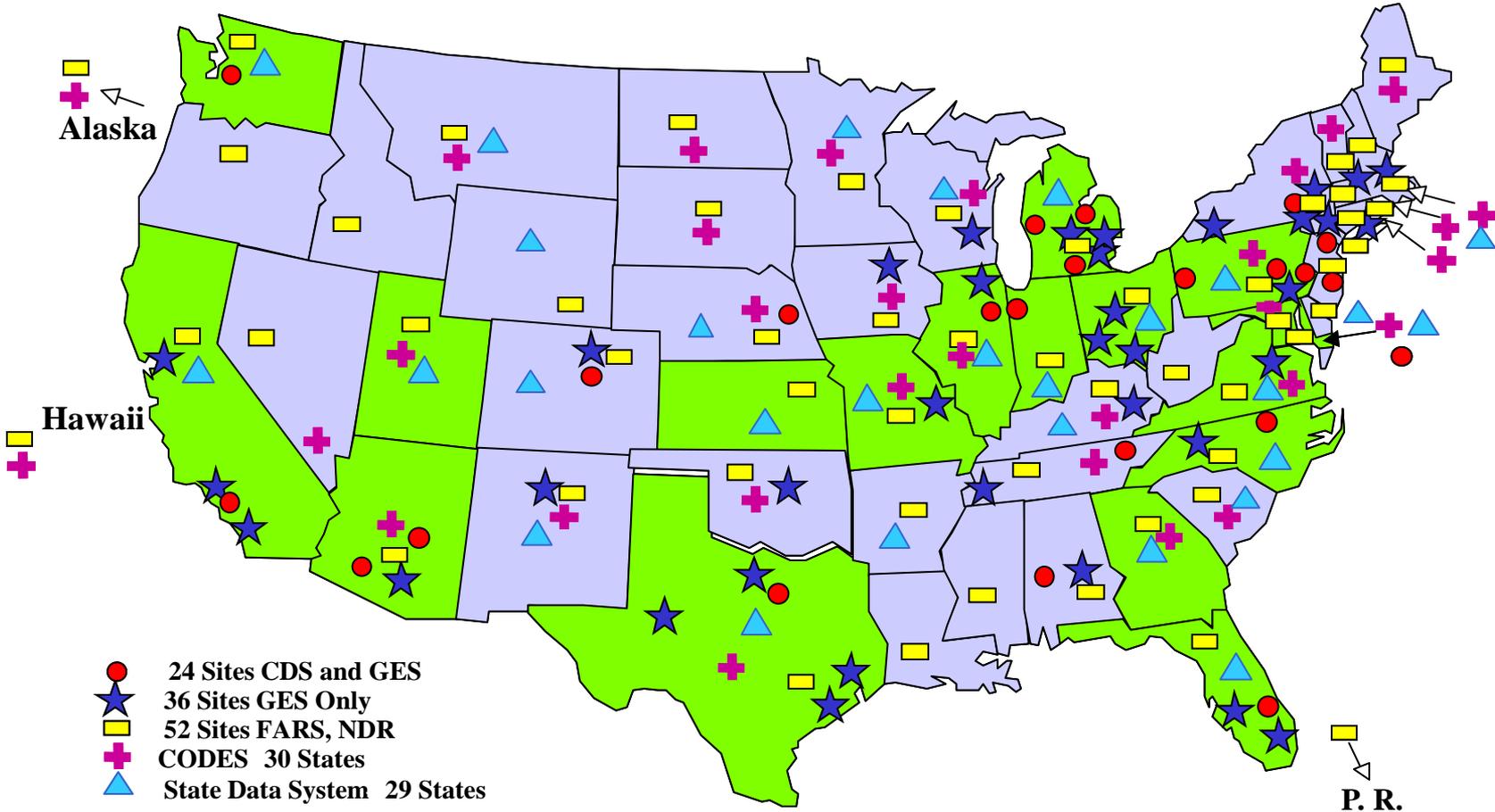
Police Crash Report Based



State Data Based



NCSA's Data Collection Network



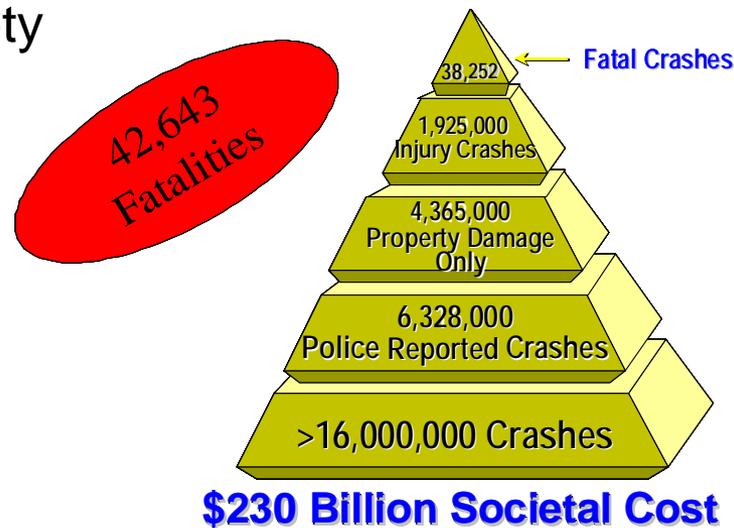
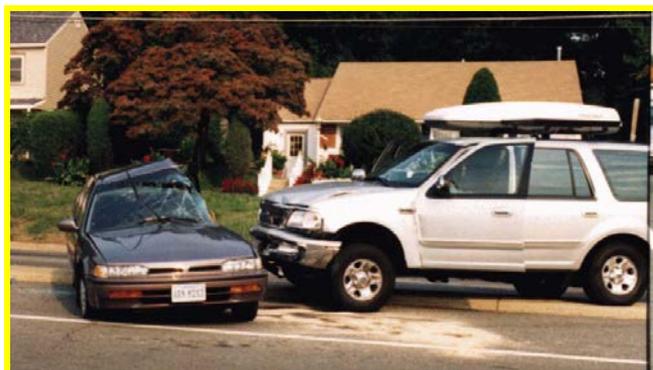
Data Availability on Emergency Vehicles in NHTSA Data Systems

- For each of the data systems, the comprehensive review addresses the following questions:
 - What is currently available on fatal and non-fatal crashes involving an emergency vehicle? (last two years)
 - Is there limited information available about non-fatal ambulance crashes?
 - How often these type crashes are occurring?
 - Who is getting injured?
 - What is the injury outcome?
 - Can we conduct special crash investigations to collect anecdotal data? What specific data can be collected?
 - What could be performed in the future?

National Automotive Sampling System



- Two Components
 - General Estimates System (GES)
 - Track Motor Vehicle Traffic Crash Trends
 - Crashworthiness Data System (CDS)
 - Evaluate Motor Vehicle Safety Countermeasures



National Automotive Sampling System (NASS)

– General Estimates System (GES)

- National estimates of statistics on police reported crashes



- Nationally representative samples of traffic crashes
- Collected from more than 600 Police Jurisdictions in 60 locations
- ~55,000 crashes annually
- Data based on Police Crash Report (PAR) only



National Automotive Sampling System (NASS GES)

- The data obtained from the PAR only
 - coded for all crashes regardless of the severity of the crash.
 - That is, fatal and non-fatal crashes have the same information coded.
- The GES can identify crashes involving an ambulance
 - by using the variable SPECIAL USE.
 - The variable BODY TYPE does not identify the motor vehicle as an ambulance
 - but as an automotive station wagon that may have sheet metal rearward of the B-pillar rather than glass (Auto based panel (cargo station wagon, auto based ambulance/hearse)).
 - Therefore, BODY TYPE is not recommended.

National Automotive Sampling System (NASS GES)

Number of Crashes Involving an Ambulance in 2003 and 2004 GES by Emergency Use

| Special Use | 2003 GES | | | | 2004 GES | | | |
|-------------|---------------|-----|---------|-------|---------------|-----|---------|-------|
| | Emergency Use | | | | Emergency Use | | | |
| | No | Yes | Unknown | Total | No | Yes | Unknown | Total |
| Ambulance | 6 | 33 | 8 | 47 | 12 | 25 | 6 | 43 |

National Automotive Sampling System (NASS GES)

- Less than 50 crashes out of more than 57,000 crashes selected for the GES annually involve an ambulance.
- Use the variable “EMERGENCY USE”
 - To determine if the ambulance was on an emergency run
 - Defined as ‘the vehicle was on an emergency run with the vehicle’s red lights flashing and/or a siren sounding at the time of the crash.’
 - More than half of the ambulances involved in crashes were on an emergency run.

National Automotive Sampling System (NASS GES)

- It is not possible to identify the occupants other than the driver of the ambulance
 - This is due to the limitation of the variable SEATING POSITION where all of the occupants that are located within the patient area are given the same attribute ‘Other Passenger in Passenger or Cargo Area’.
 - It should be noted that the PARs do not identify which occupant was the patient and which was the EMT (emergency medical technician).
 - If the PAR does not make the distinction, the GES obviously cannot.
 - The GES does code the KABCO level of injury to the occupants
 - But cannot identify who (patient or technician) was injured and who was not.
 - We only know that someone in the ‘patient area’ of the ambulance was injured. Also, we code only injuries as a result of the crash. If someone suffered a heart attack or went into a diabetic coma, this information is not coded.

National Automotive Sampling System (NASS GES)

- For example: if an ambulance on an emergency run, taking a patient to the hospital due to a heart attack, is involved in a crash and the patient is not injured beyond the heart attack, the injury severity for this occupant is coded as 'not injured'.
- If the technician is injured then the corresponding injury severity would be coded for this occupant. When conducting analysis of these crashes, the user will not know if the patient or the technician was injured. The user will only know that someone seated in the patient area was injured.

National Automotive Sampling System (NASS GES)

- The GES continues to collect other occupant characteristics such as age, ejection, sex, taken to hospital or treatment facility, and restraint use.
- NHTSA has recommended to MMUCC expand the Person Type variable to include:
 - Passenger – Technician of Ambulance
 - Passenger – Patient in Ambulance
- This is easier than modifying Seating Position or adding a variable.

National Automotive Sampling System (NASS)

– Crashworthiness Data System (CDS)

- National estimates of statistics to evaluate performance of motor vehicle crashworthiness



– Nationally representative sample of traffic crashes

- » 170 Police Jurisdictions in 24 locations
- » ~4,500 cases each year

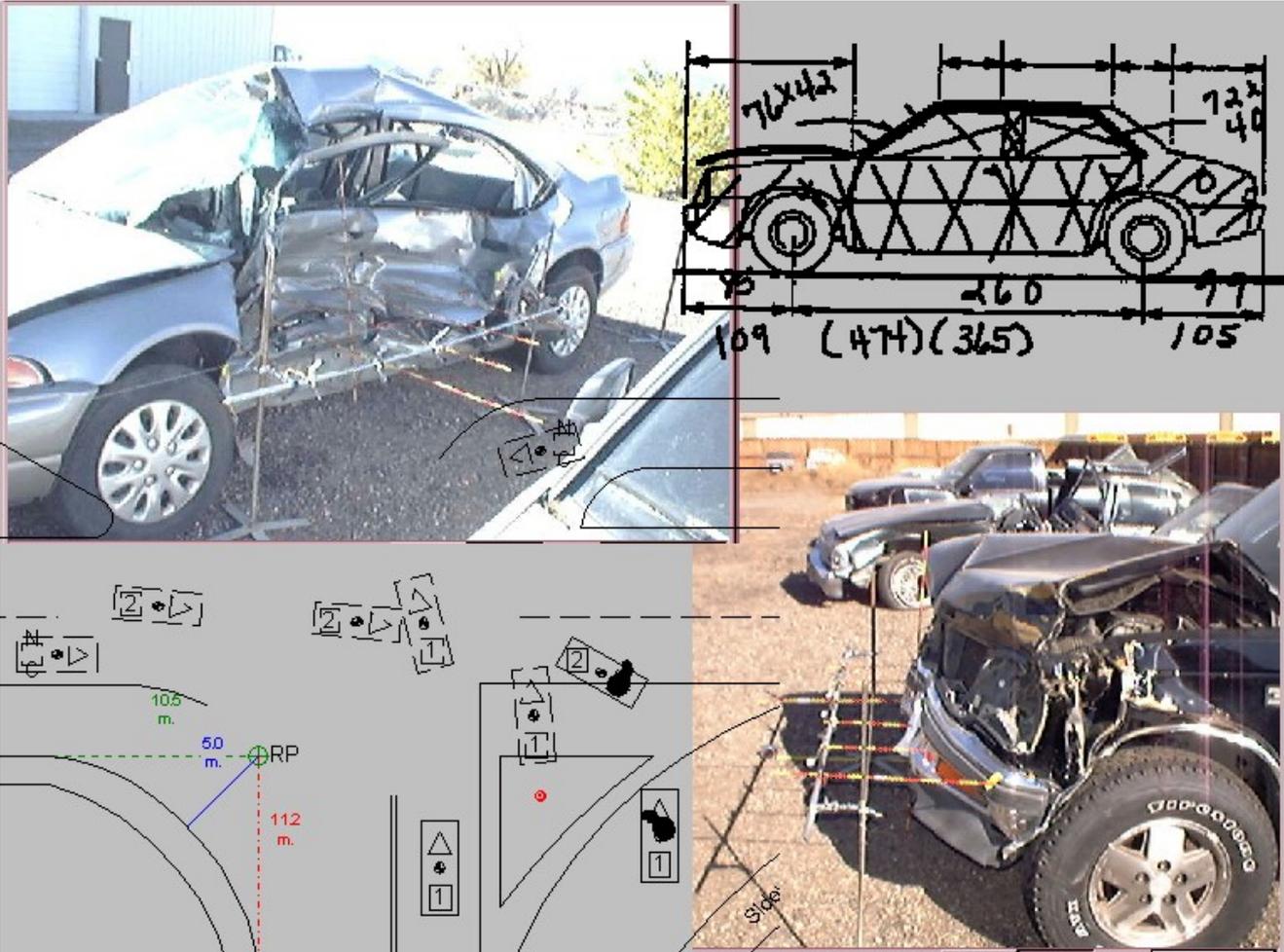
– Field Investigation Based

- » Damage to Vehicle
- » Crash Forces Involved
- » Injuries to Victims
- » Injury Mechanisms



National Automotive Sampling System (NASS CDS)

Images and Documentation from a NASS Case



National Automotive Sampling System (NASS CDS)

- In the NASS CDS, ambulance units can be identified by the variable “Vehicle Special Use”.
 - Special use means “in use” and not necessarily emergency use.
- The important consideration when using the CDS data is that only ambulances less than 10,000lbs GVWR would have the detailed data included in the sample.
 - Some EMS agencies are using vehicles well beyond this CDS limit and thus important data may not be captured.
- If a crash involving an ambulance vehicle has been selected in the NASS CDS, a vehicle used as an ambulance vehicle (which is all ambulance vehicles) has the same extensive data collected on it as any other vehicle.

National Automotive Sampling System (NASS CDS)

- Crashes involving EMS vehicles in the NASS CDS
 - 2003 5 crashes
 - 2004 7 crashes
 - See table in next slide for police reported injury severity (KABCOU) and the maximum injury (MAIS) to the occupant.

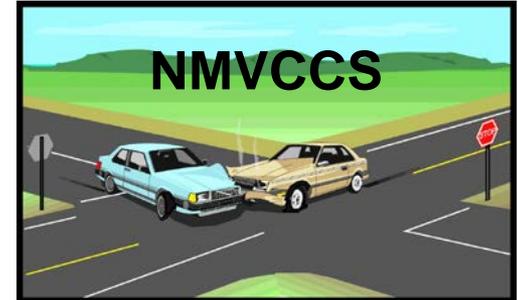
National Automotive Sampling System (NASS CDS)

Police reported injury severity (KABCOU) and the maximum injury (MAIS) to the occupant.

| | Occupant | Occupant | Patient | Comments |
|---|----------|----------|---------|---|
| 1 | NA | NA | NA | Non tow vehicle, no injury information |
| 2 | A/MAIS1 | A/MAIS1 | A/MAIS3 | |
| 3 | O/MAIS1 | O/MAIS1 | C/MAIS1 | |
| 4 | NA | NA | NA | Non tow vehicle, no injury information |
| 5 | C/MAIS1 | C/MAIS1 | NA | |
| 6 | O/MAIS1 | O/MAIS1 | O/MAIS0 | |
| 7 | O/MIAS0 | C/MAIS1 | NA | |
| 8 | | | | don't know who was patient--2 occupants-O/MAIS0; 1 occupant-A/MAIS1 |
| 9 | NA | NA | NA | Non tow vehicle, no injury information |
| 1 | | | | |

National Motor Vehicle Crash Causation Survey (NMVCCS)

- National estimates of statistics on the factors or events that led up to why a crash occurred.
 - Nationally representative sample of traffic crashes
 - 2,000 - 3,000 crashes in 24 locations annually
 - On scene field Investigation
- Planned Usage:
 - Evaluate emerging crash avoidance technologies
 - Develop countermeasure programs



National Motor Vehicle Crash Causation Survey (NMVCCS)

- **No single cause of crash**
- **Causal chain of events**
- **Factors alone do not cause crashes**
- **Factors increase the risk of a crash**



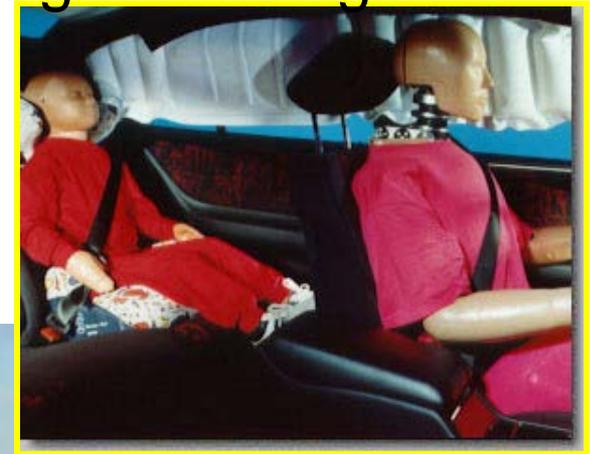
National Motor Vehicle Crash Causation Survey (NMVCCS)

- Beginning in 2005 the National Motor Vehicle Crash Causation Survey (NMVCCS) began collection the “Vehicle Special Use” variable.
- The NMVCCS responds to crashes on-scene and collects data focusing on crash factors.
- The frequency of an ambulance crash in NMVCCS is not likely to be any larger than the occurrences in the CDS.



Special Crash Investigations (SCI)

- Detailed data on new and rapidly changing technologies
 - First alert (Problem Identification)
 - Elite Team of Investigators
 - Most Detailed Vehicle Data
 - Alternative fuel systems
 - Air bag systems
 - School Bus
 - Potential vehicle defects



Special Crash Investigations

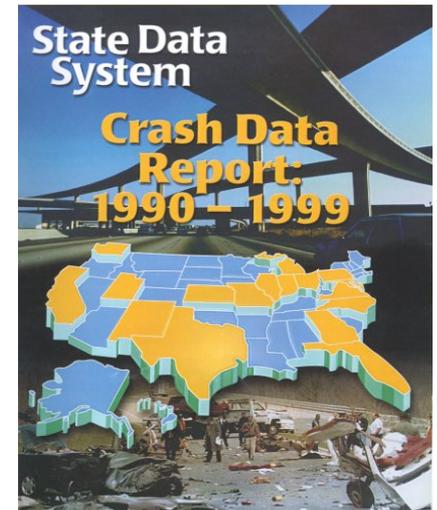
- In the past, Special Crash Investigations (SCI) supported the National Institute for Occupational Safety and Health (NIOSH) on a study of crashes involving ambulances.
- This was a limited-scope study as defined by NIOSH.
- Although information was collected on all occupants in the ambulance,
 - the focus was the patient care provider (PCP) in the rear of the ambulance.
 - Detailed data was documented relative to the PCP position / task, the injuries sustained, and the injury contact source along with damage information and delta V data.

Special Crash Investigations

- The data that SCI collects is entered into our Electronic Data System (EDS) which includes all NASS - crashworthiness data collection (CDS) system data (e.g. scene, vehicle, occupant, safety systems, injury and injury source data).
- Completing a detailed Special Crash Investigation on these types of crashes averaged around 16k per crash in 2004 dollars.

State Data System

- State Data System (SDS)
 - Crash census data by state
 - Computerized state crash data from 29 states.
 - Provides the data where a very large number of cases are needed for an analysis



State Data System

- This analysis provides an overview of emergency vehicles in crashes available in the NHTSA's State Data System (SDS).
- Eighteen states were selected for this overview based upon the availability of current data (year 2002 or later).
- The analysis began with a search of each state's SDS user manual for elements and attributes related to emergency vehicles.
- Once the elements were identified, they were classified according to the closest match to the MMUCC elements motor vehicle body type and special function of motor vehicle in transport.
- Each element's attributes were also given common names to enable comparison across the states.
- This overview used the definitions to calculate statistics for emergency vehicles in crashes.

State Data System

- The following tables:
 - list the states, the element and attributes, the rate of emergency vehicle involvement per thousand crashes, and the number of injuries and fatalities in those crashes.
 - The states are ordered from the highest emergency vehicle involvement rate to the lowest.
 - However, as noted, three states report only a subset of emergency vehicles, and the rate is not reported because it would not be comparable with the other rates in the table.

Emergency Vehicle Involvement Rates in Selected SDS States

| State and Year | Element | Attributes | Emergency vehicle involvement per 1,000 crashes | Injuries in crashes | Fatalities in crashes |
|------------------|-------------------------|---|---|---------------------|-----------------------|
| MD (2004) | Body type | Ambulance, Fire, Police | 27 | 903 | 6 |
| FL (2003) | Special function | Ambulance, Fire, Police | 15 | 2,864 | 24 |
| PA (2003) | Special function | Ambulance, Fire, Police, Other emergency vehicle | 12 | 1,757 | 10 |
| SC (2003) | Special function | Ambulance, Fire, Police | 11 | 557 | 6 |
| CA (2003) | Body type | Emergency vehicle | 10 | 2,307 | 21 |
| IL (2003) | Special function | Ambulance, Fire, Police | 10 | 1,747 | 12 |
| KY (2004) | Body type | Emergency vehicle | 9 | 347 | 6 |
| MO (2003) | Special function | Ambulance, Fire, Police, Other emergency vehicle | 9 | 473 | 6 |
| OH (2003) | Special function | Ambulance, Fire, Police | 7 | 926 | 6 |
| VA (2003) | Body type | Emergency vehicle | 7 | 577 | 3 |
| WY (2002) | Body type | Ambulance, Fire, Police, Unknown emergency vehicle (derived using vehicle owner) | 7 | 39 | 0 |

Emergency Vehicle Involvement Rates in Selected SDS States

| State and Year | Element | Attributes | Emergency vehicle involvement per 1,000 crashes | Injuries in crashes | Fatalities in crashes |
|------------------|--|---|---|---------------------|-----------------------|
| NM (2004) | Body type (derived from body type and body style) | Ambulance, Fire, Police, Other emergency vehicle | 5 | 112 | 1 |
| DE (2002) | Body type | Ambulance, Fire, Police | 2 | 22 | 0 |
| AR (2003) | Body type | Emergency vehicle | 1 | 42 | 0 |
| KS (2003) | Body type | Emergency vehicle | 1 | 25 | 2 |
| | | | | | |
| MT (2004) | Body type | Ambulance, Fire | * | 3 | 0 |
| UT (2002) | Body type | Ambulance | * | 21 | 0 |
| WI (2003) | Body type | Ambulance, Fire, Police (only on emergency) | * | 110 | 0 |

- * Involvement rate not presented because the count of emergency vehicles is not comparable to those of the other states.

Ambulance Involvement Rates in Selected SDS States

| State and Year | Element | Attributes | Emergency vehicle involvement per 10,000 crashes | Injuries in crashes | Fatalities in crashes |
|------------------|--------------------------------|------------------|--|---------------------|-----------------------|
| MD (2004) | Body type | Ambulance | 32 | 119 | 3 |
| PA (2003) | Special function | Ambulance | 21 | 345 | 1 |
| OH (2003) | Special function | Ambulance | 14 | 250 | 1 |
| IL (2003) | Special function | Ambulance | 13 | 215 | 1 |
| SC (2003) | Special function | Ambulance | 13 | 77 | 0 |
| FL (2003) | Special function | Ambulance | 10 | 268 | 0 |
| MO (2003) | Special function | Ambulance | 9 | 68 | 1 |
| UT (2002) | Body type | Ambulance | 7 | 21 | 0 |
| MT (2004) | Body type | Ambulance | 6 | 1 | 0 |
| WY (2002) | Body type | Ambulance | 5 | 39 | 0 |
| DE (2002) | Body type | Ambulance | 2 | 8 | 0 |
| NM (2004) | Body type (derived) | Ambulance | 2 | 4 | 1 |
| WI (2003) | Body type | Ambulance | 1 | 17 | 0 |

Emergency Vehicle Involvement Rates in Selected SDS States

- The rate of emergency vehicle involvement in crashes ranges from a low of about 1 crash per thousand in several states to a high of 27 crashes per thousand in Maryland.
- It also appears that there are a small, but substantial, number of injuries and fatalities in these crashes.
- Some of the variation across states appears to be the result of differences between the Police Accident Reports (PARs).
- In general, states that report emergency vehicles through an element similar to special function appear to report higher crash involvement of emergency vehicles than states which report emergency vehicles within vehicle body type (average of 11 per thousand versus 8 per thousand).

Emergency Vehicle Involvement Rates in Selected SDS States

- From a theoretical standpoint, we would expect states to underreport emergency vehicle involvement when emergency vehicles are included as part of a body type variable.
- The reason is that the categories (attributes) are not mutually exclusive; for example, a police car could either be coded as a car or as a police vehicle. Therefore, it is likely that the states with a special function element on their PAR reflect a more accurate rate than those without it.

Emergency Response Status of Emergency Vehicles in Select SDS States

- A secondary question is whether the emergency vehicle was involved in emergency operations at the time of the crash.
- However, only eight of the states in the table collect information regarding emergency operations.

Emergency Response Status of Emergency Vehicles in Select SDS States

- The next table lists the states that report whether an emergency vehicle was on an emergency response, the number of emergency vehicles on an emergency response involved in a crash, and the percent of emergency vehicles in crashes that were on an emergency response.
- For most states, emergency response status is determined by an “emergency response” attribute.
 - For Florida, however, the attribute of “police pursuit” was also used.

Emergency Response Status of Emergency Vehicles in Select SDS States

| State and Year | Emergency vehicles on an emergency response | Percent of emergency vehicles on an emergency response |
|------------------|---|--|
| FL (2003) | 1,064 | 28% |
| IL (2003) | 524 | 12% |
| KY (2004) | 390 | 28% |
| MD (2004) | 1,290 | 44% |
| MO (2003) | 375 | 23% |
| OH (2003) | 746 | 27% |
| UT (2002) | 21 (ambulances only) | 55% |
| WI (2003) | 180 | Only reports vehicles on emergency response |

Emergency Response Status of Emergency Vehicles in Select SDS States

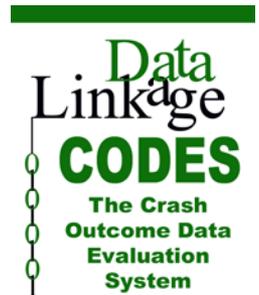
- The percent of emergency vehicles on an emergency response varies across the states.
- Utah has the highest percentage, but they only report information on ambulances.
- The six other states with a percent of emergency vehicles on an emergency response range from a low of 12% in Illinois to a high of 44% in Maryland.
- Three of the states (Florida, Kentucky, and Ohio) reported similar percentages around 28%.

State Data System

- As stated previously, the purpose of this analysis is to provide an overview of emergency vehicles in crashes available in the NHTSA's State Data System (SDS).
- The SDS also contains many variables that describe the crash, the vehicles, and the occupants.
- For example, these variables could be used to describe the circumstances of crashes involving emergency vehicles, the types of vehicles with which they collide, the use of safety equipment by the occupants, and the severity of injuries.
- Also, the sample sizes could be increased with additional years of data as well as additional states that will become available over time.

Crash Outcome Data Evaluation System (CODES)

- Crash Outcome Data Evaluation System (CODES)
 - Estimates for statistics on medical and financial outcome cost
 - Links Crash and Hospital Data
 - 27 CODES states funded



Crash Outcome Data Evaluation System (CODES)

- The CODES States were surveyed as to what variables, if any, potentially exist in their CODES databases that may be used to identify emergency vehicles in crashes.
- The results are shown in the following table are for those States with available information.

CODES States with available variables for tracking Emergency Vehicle crashes

| <i>State</i> | <i>Variable</i> | <i>Attribute(S)</i> |
|--------------|-----------------------------------|---|
| AZ | Vehicle Body Style | Emergency Vehicle |
| | Owner Class | Unknown, Private, Federal Government, State Of Arizona, County, City, Other Government |
| CT | Vehicle Type | Emergency Vehicle |
| DE | Vehicle Style | Fire Apparatus, Ambulance, Police Vehicle |
| GA | Vehicle Class | Police, Fire |
| | Vehicle Type | Ambulance |
| IL | Vehicle Use | Ambulance, Fire, Police |
| | Driver Action | Emergency Vehicle On Call |
| IA | Emergency Vehicle Type | Police, Fire, Ambulance, Towing, Military, Maintenance |
| | Emergency Status | Yes - In Emergency, No - Not In Emergency |
| ME | Emergency Vehicle Involved | Police, Vehicle, Ambulance, Fire Department Vehicle, Wrecker, Other |

CODES States with available variables for tracking Emergency Vehicle crashes

| <i>State</i> | <i>Variable</i> | <i>Attribute(S)</i> |
|--------------|---|---|
| MD | Vehicle Body Type | Ambulance/Emergency, Ambulance/Non-Emergency, Fire Vehicle/Emergency, Fire Vehicle/Non-Emergency, Police Vehicle/Emergency, Police Vehicle/Non-Emergency |
| MA | Plate Mask (MA Hasn't Used This Field For Analysis So Doesn't Know Much About Data Quality For This Field) | Emergency Vehicle, Fire Fighter, Ambulance Normal Or Ambulance Reserved, Municipal Police, Municipal Fire, State Police Motorcycle, Capitol Police Motorcycle, Environmental Police Motorcycle, MA Dept. Of Conservation Police, State Police, Fire Marshal, Municipal Fire Department |
| MN | Vehicle Type | Police, Fire, Ambulance |
| | Vehicle Use | Police Dept Vehicle – Lights/Siren Not Operating, Police Dept Vehicle – Lights/Siren Operating, Fire Dept Vehicle – Lights/Siren Not Operating, Fire Dept Vehicle – Lights/Siren Operating, Ambulance – Lights/Siren Not Operating, Ambulance – Lights/Siren Operating |

CODES States with available variables for tracking Emergency Vehicle crashes

| <i>State</i> | <i>Variable</i> | <i>Attribute(S)</i> |
|--------------|---|--|
| NE | Emergency Vehicle (Note – NE found large variation between years indicating that this variable was not reported with preference) | Y/N |
| NY | Vehicle Body Type | Police Vehicle, Fire Vehicle, And Ambulance. |
| OH | Type Of Unit | Police Vehicle, Fire Truck, Ambulance/Rescue |
| | Emergency Use | (Yes/No) |
| OK | Vehicle Type | OHP Unit, Other Police Units, Ambulance, Fire Truck |
| PA | Vehicle Usage | Fire, Ambulance, Other Em. Vehicle, Police |
| | Contributing Factors | Failure To Respond To Emergency Vehicle |

CODES States with available variables for tracking Emergency Vehicle crashes

| <i>State</i> | <i>Variable</i> | <i>Attribute(S)</i> |
|--------------|-----------------------------|--|
| RI | Unit Type | Fire Truck, Ambulance, Rescue Vehicle |
| SC | Vehicle Use | Ambulance, Police, Fire |
| TN | Vehicle Usage | Police, Ambulance, Fire, Apparatus, Rescue |
| UT | Vehicle Type | Ambulance - Emergency, Ambulance - Not Emergency, Ambulance - Public Owned, Special Mobile Equipment (Fire Trucks Are Captured Here But So Is Construction Equipment) |
| | License Plate Number | Can Be Used To Identify Highway Patrol Vehicles |
| WI | Vehicle Type | Police On Emergency, Ambulance On Emergency, Fire Truck On Emergency |

Crash Outcome Data Evaluation System (CODES)

- CODES Data Network States, by agreement, may supply aggregate information to NHTSA upon request.
 - For example, New York State volunteered that there were about 1,300 police vehicles, 250 fire vehicles, and 200 ambulance vehicles involved in crashes in New York State in 2003.
 - South Carolina volunteered that there were an average of 1,167 emergency units involved in crashes in South Carolina each year from 2000 to 2004.

Crash Outcome Data Evaluation System (CODES)

- Pennsylvania volunteered that the PA Dept. of Health annually prepares a report entitled “EMS Vehicle and Personal Injury Report” separately from CODES.
 - “During calendar year 2005, a total of 105 accidents were reported by 65 ambulance services in the Commonwealth (there were several services with multiple accidents).
 - This number is a reduction of 10 accidents from 2004 when there were 115 reportable accidents, a reduction of 9%.”



Fatality Analysis Reporting System

- Purpose - Provide an objective basis to evaluate the effectiveness of motor vehicle safety standards and highway safety programs
- All fatal crashes
 - Fatality w/in 30 Days of Crash
 - ~ 43,000/year
 - Covers All 50 States, DC, and Puerto Rico
- Began Operation in 1975
- Operated Cooperatively with States



Ambulance Crash Investigations

NHTSA Special Crash Investigations...

- **DS02003 Washington, February 2002**
<http://www-nass.nhtsa.dot.gov/SCIREPORTS/925032989/RPT925032989.pdf>
- **CA02009 Kentucky, March 2002**
<http://www-nass.nhtsa.dot.gov/SCIREPORTS/790057529/RPT790057529.pdf>
- **CA02028 New Jersey, July 2002**
<http://www-nass.nhtsa.dot.gov/SCIREPORTS/817849522/RPT817849522.pdf>
- **CA02033 Minnesota, July 2002**
<http://www-nass.nhtsa.dot.gov/SCIREPORTS/933060821/RPT933060821.pdf>
- **CA03004 Kentucky, January 2003**
<http://www-nass.nhtsa.dot.gov/SCIREPORTS/790069293/RPT790069293.pdf>
- **CA04048 Maryland, November 2004**
<http://www-nass.nhtsa.dot.gov/SCIREPORTS/817111538/RPT817111538.pdf>

Ambulance Crash Investigations

NHTSA Special Crash Investigations.....

- SCI regularly screens for ground ambulance crashes with serious or fatal injuries to an occupant of the ambulance and when a crash is identified, SCI forwards the information to NHTSA's OEMS to determine if further pursuit of the crash would potentially provide substantive, relevant data to the Agency.
- Goal is to provide actual crash data for all to use in an effort to best protect EMS personnel and those traveling within the ambulance.

Ambulance Crash Investigations

NIOSH Fatality Investigation Programs...

Fire Fighter Fatality Investigation & Prevention Program (FFFIPP)

- **F2003-05 Texas, January 2003**
<http://www.cdc.gov/niosh/fire/pdfs/face200305.pdf>
- **F2003-33 Nebraska, August 2003**
<http://www.cdc.gov/niosh/fire/pdfs/face200333.pdf>
- **F2005-12 Florida, April 2004**
<http://www.cdc.gov/niosh/fire/pdfs/face200512.pdf>

Ambulance Crash Investigations

NIOSH Fatality Investigation Programs...

Fatality Assessment and Control Evaluation (FACE) program

- **F2001-11 Kentucky, May 2001**

<http://www.cdc.gov/niosh/face/In-house/full200111.html>

- **F2001-12 New York, July 2001**

<http://www.cdc.gov/niosh/face/In-house/full200112.html>

Ambulance Standards

EXISTING STANDARDS.....

- General Services Administration Federal Specification for the Star-of-Life Ambulance (KKK-A-1822F, 8/07)
 - Federal Government purchasing standard
 - Many states have adopted
- Ambulance Manufacturers Division (AMD) of the National Truck Equipment Association (NTEA) Standards (August 2007)
- ASTM F2020-02A (2009) Standard Practice for Design, Construction and Procurement of EMS System Ambulances

Ambulance Standards

IMPROVING THE STANDARDS...

- **National Institute for Occupational Safety and Health (NIOSH)**
 - 4-year effort to help improve existing standards and focus is on patient and EMS personnel safety in back of a ground ambulance
- **National Fire Protection Association (NFPA) Technical Committee on Ambulances**
 - Multi-year effort to define requirements for new automotive ambulances designed to be used under emergency conditions to provide medical treatment and transportation of sick or injured people to appropriate medical facilities.