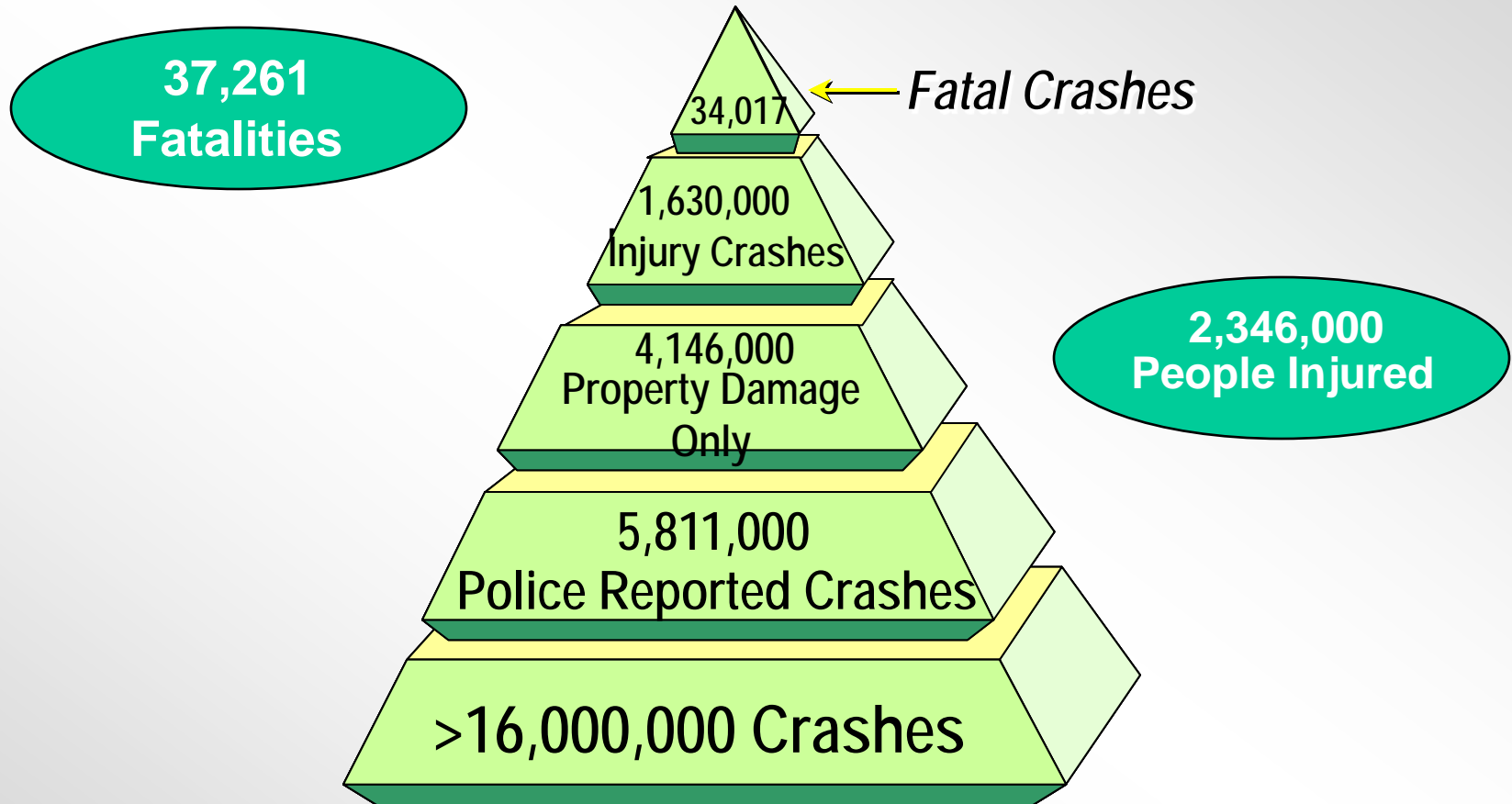# Overview of NHTSA's Investigation Based Programs:
NASS CDS, SCI and NMVCCS

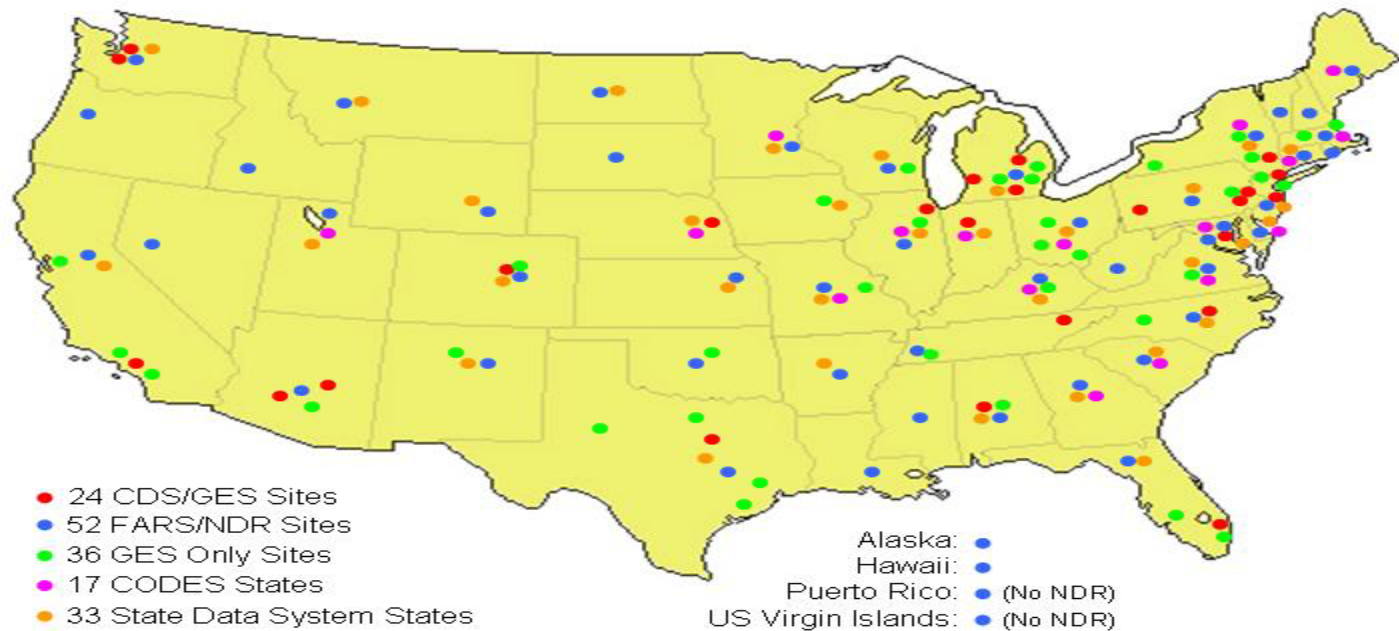*Augustus "Chip" Chidester,*
Director, Office of Data Acquisitions

37,261 Fatalities

Fatal Crashes
34,017

1,630,000 Injury Crashes

4,146,000 Property Damage Only

5,811,000 Police Reported Crashes

>16,000,000 Crashes

2,346,000 People Injured

$230 Billion Societal Cost in 2000

NCSA's Data Collection Network

- 24 CDS/GES Sites
- 52 FARS/NDR Sites
- 36 GES Only Sites
- 17 CODES States
- 33 State Data System States

Alaska:
Hawaii:
Puerto Rico: (No NDR)
US Virgin Islands: (No NDR)

Pubdocs\ncsa\informationtech\graphics

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NCSA Data Systems

Detailed Investigations
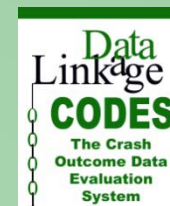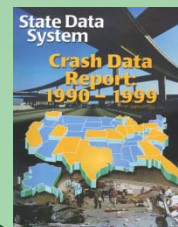
CDS · NMVCCS · SCI (Special Crash Investigations — National Highway Traffic Safety Administration)

Police Reports

FARS · GES

State Data

NEMSIS · State Data System Crash Data Report 1990 – 1999 · Data Linkage CODES The Crash Outcome Data Evaluation System

Not in Traffic Surveillance Data

NISS · NEISS

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National Automotive Sampling System (NASS)

- **CRASHWORTHINESS DATA SYSTEM (CDS)**
  - ♦ **Sole source**
    - o **Data on vehicle damage and the occupant outcome (crashworthiness) of towed light passenger vehicles**
 - ♦ **Nationally representative**
    - o **Sample based**
  - ♦ **Field Investigation Based**
  - ♦ **Over 600 CDS Data Elements Describe**
    - o **Crash Events**
    - o **Damage to Vehicle**
    - o **Crash Forces Involved**
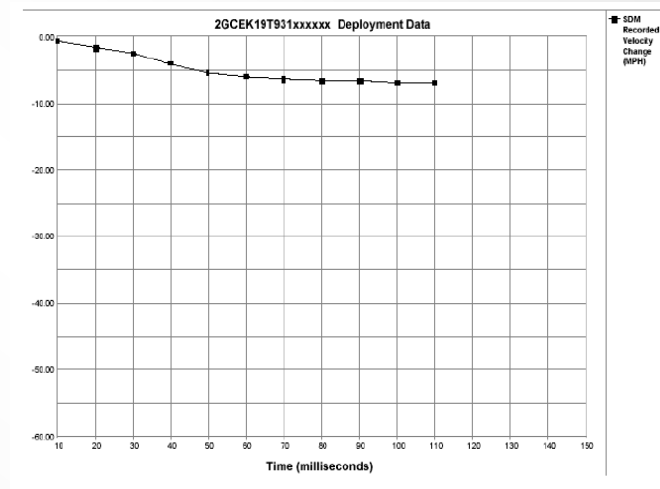   - o **Injuries to Victims**
    - o **Injury Mechanisms**

National Automotive Sampling System (NASS)

- **Police crash reports**
- **Scene inspections**
- **Vehicle inspections**
- **Driver and occupant interviews**
- **Autopsy and hospital records**

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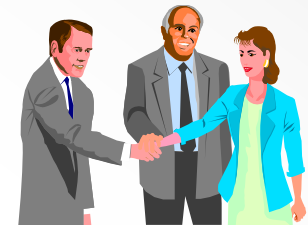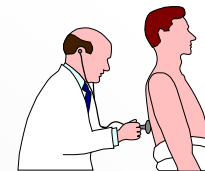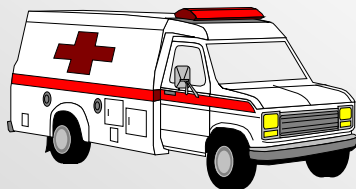
National Automotive Sampling System (NASS)

- # Crash Events
  - ♦ **Frontal, Side, Rollover, etc**
- # Crash Forces Involved
  - ♦ **Delta V**
  - ♦ **EDR**

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National Automotive Sampling System (NASS)

- **Detailed restraint data**
  - ♦ **Safety belts, air bags**
  - ♦ **Availability**
  - ♦ **Deployment and/or use**
- **Injuries to Victims**
  - ♦ **AIS 90 (update 98)**
  - ♦ **AIS 2005 (in 2010)**
- **Injury Mechanisms**

National Automotive Sampling System (NASS)

Using the NASS CDS data collection system infrastructure to perform special data collection studies

- **National Child Occupant Special Study (NCOSS)**
  - ♦ **Twelve month study to evaluate the feasibility of using the NASS-GES program as the basis for a child occupant survey**
- **Tire Pressure Study**
  - ♦ **Data to support an evaluation of TPMS rulemaking**
- **Off-Road Crashes**
  - ♦ **Data to support FHWA and TRB Research**
- **Support to Federal Motor Carrier Safety Administration (FMCSA)**
  - ♦ **Critical Reason Special Study (CRSS)**
  - ♦ **Large Truck Crash Causation Study**
- **National Motor Vehicle Crash Causation Study**
  - ♦ **Data to support primary prevention of crashes**
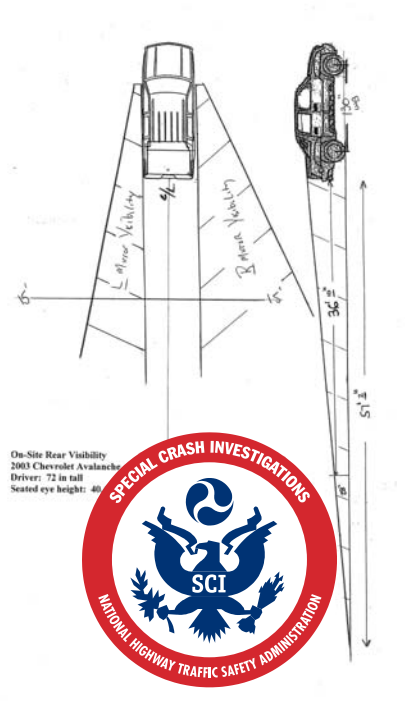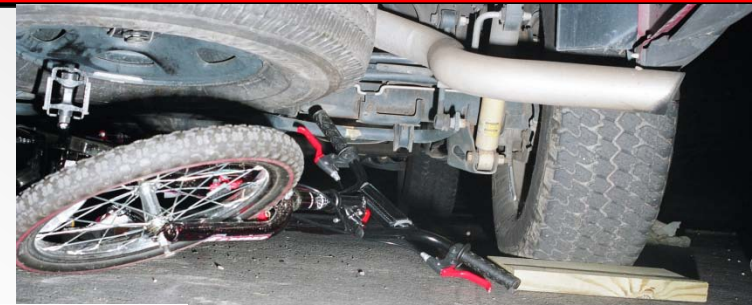
Special Crash Investigations (SCI)

- **Detailed data on new and rapidly changing technologies**
  - ♦ **First Alert (Problem Identification)**
  - ♦ **Most detailed investigations into:**
    - o **Backover Avoidance**
    - o **Motorcoach fires/crashes**
    - o **Alternative fuel systems**
    - o **Air Bag systems:**
      - ▪ **Front , Side, Rollover Canopy**
    - o **School Bus Crashes**
    - o **Potential Vehicle Defects**
- **160 cases annually**

On-Site Rear Visibility
2003 Chevrolet Avalanche
Driver: 72 in tall
Seated eye height: 40.

View from rear

SPECIAL CRASH INVESTIGATIONS
SCI
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

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National Motor Vehicle Crash Causation Survey (NMVCCS)

- **NATIONAL MOTOR VEHICLE CRASH CAUSATION SURVEY (NMVCCS)**
  - ◆ **Sole source**
    - o **On scene data on the factors or events that led up to a crash (primary prevention) of towed light passenger vehicles**
  - ◆ **Nationally representative**
    - o **Sample based**
  - ◆ **On scene field investigation**
    - o **Pre-crash events and associated factors related to how crashes occur**
      - ▪ **Starts at the critical event**
    - o **Detailed data on driver distraction**
  - ◆ **Data collection Period**
    - ▪ **2005 – 2007**
    - o **5,000 cases investigated**
  - ◆ **Preliminary reports on distraction**

Crash Qualification

- **EMS dispatch initiated**
- **On-scene response by NMVCCS researcher**
- **At least one of 1ˢᵗ three in-transport vehicles on scene**
- **One of 1ˢᵗ three in-transport vehicles must be a light vehicle towed due to damage**
- **Police crash report filed with State**

On-Scene Investigations

- **Higher rate of participation by crash victims**

- **Higher quality of interview and vehicle information**

- **Better understanding of the crash events**

- **Scene data quickly diminishes with the passage of time**

What Happened ?

Physical Evidence , Witness interviews, etc are all utilized by the researcher to determine the events and factors that led up to the crash.

Causation vs. Factors

- No single cause of crash

- Causal chain of events

- Factors alone do not cause crashes

- Factors increase the risk of a crash

Overview of NHTSA's PAR Based Databases:
FARS, NASS GES and NiTS

Marietta Bowen,
Team Leader, Fatality Analysis Reporting System

Outline of Presentation

- **Overview of Fatality Analysis Reporting System (FARS)**
  - ♦ **FastFars**
  - ♦ **GES**
  - ♦ **NiTS**

- **2010 Data Collection Changes**

Fatality Analysis Reporting System (FARS)

- **Fatality Analysis Reporting System (FARS)**
  - ♦ **Sole Source**
    - o **Census on all police-reported fatal motor vehicle traffic crashes within the 50 States, the District of Columbia, Puerto Rico and the Virgin Islands.**
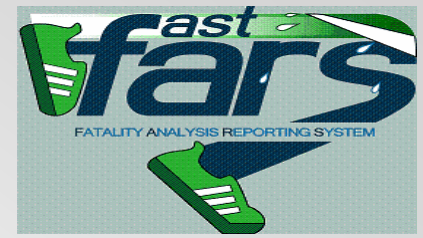 - ♦ **State data based**
    - o **Police Accident Report (PAR)**
    - o **Death Certificates**
    - o **DMV, etc**
    - o **Recoded at the State into a uniform national data set**
  - ♦ **Fatality w/in 30 Days of Crash**
    - o **~ 40,000 fatalities/year**

FastFARS

- **Objective: to quickly provide basic statistics on motor vehicle traffic**
    - FastFARS for Analytical Reporting began in CY 2008
        - Currently reporting quarterly
        - Holiday Reporting under development
- ♦ Operations:
    - Current - Manual
    - Built on FARS Infrastructure
    - Support, Coordination & Communication with Regional Offices
    - Future - Electronic Data Transfer (EDT)
- ♦ Benefits to FARS
    - Reactive to proactive
    - Improved data quality & timeliness

FARS Case Criteria

- **At least one motor vehicle involved in a crash while in transport on a traffic way**
- **At least one person involved in the crash died as a direct result of the crash within 720 hrs**

- **Reference ANSI D-16**
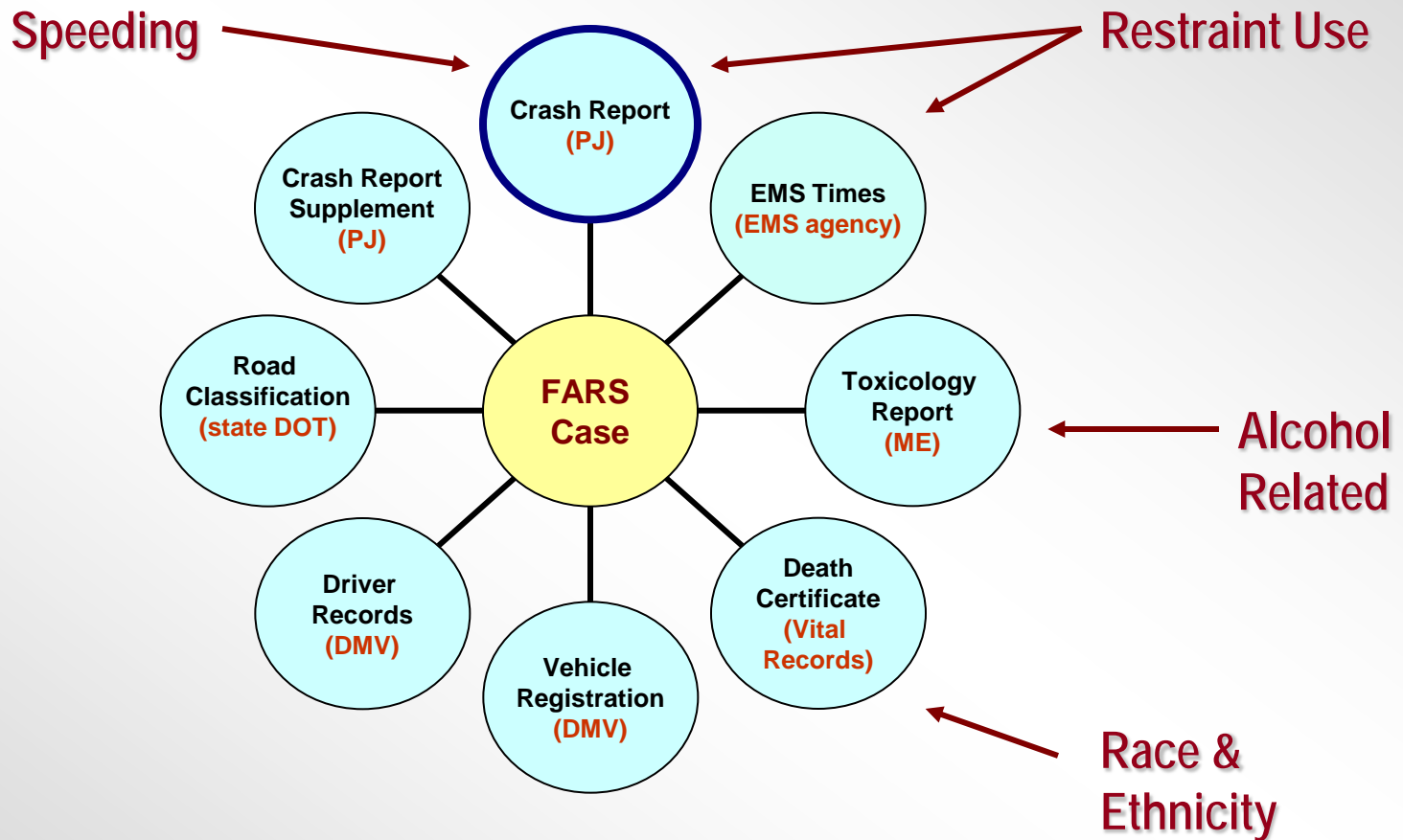
What is NOT a FARS case

- **Deliberate intent** (homicide, suicide)

- **Legal intervention** (except when the fatality is an innocent victim)

- **Cataclysm** (earth quake, flood, landslide, etc.)

- **Not on traffic way** (private property, parking lot)
  - ♦ **See NiTS**

- **Fatally injured person expires after 720 hours from the time of the crash** (30 days)

FARS Core Data Elements

- **Crash Level**
  - ♦ **Describes crash environment**
- **Vehicle Level**
  - ♦ **Characteristics of vehicles involved**
- **Driver Level**
  - ♦ **Driver history, licensing, related factors**
- **Pre-Crash Level**
  - ♦ **Basic information on driver distraction**
  - ♦ **Describes pre-crash circumstances, environment, actions by Vehicle/Driver**
- **Person Level (MV Occupant)**
  - ♦ **Restraint use**
  - ♦ **Air Bag Deployment**
  - ♦ **Ejection**
- **Person Level (Not a MV Occupant)**
  - ♦ **Drug/Alcohol use**
  - ♦ **Injury severity**
  - ♦ **Location**
  - ♦ **Actions**

Building the FARS Case

Speeding → Crash Report (PJ)

Restraint Use → Crash Report (PJ)

Center: FARS Case

Surrounding nodes:
- Crash Report (PJ)
- EMS Times (EMS agency)
- Toxicology Report (ME)
- Death Certificate (Vital Records)
- Vehicle Registration (DMV)
- Driver Records (DMV)
- Road Classification (state DOT)
- Crash Report Supplement (PJ)

Alcohol Related → Toxicology Report (ME)

Race & Ethnicity → Death Certificate (Vital Records)

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National Automotive Sampling System (NASS)

- **Nationally representative data**

- **Two Components**
  - ♦ **General Estimates System (GES)**
    - o **Tracks Motor Vehicle Crash Trends**
  - ♦ **Crashworthiness Data System (CDS)**
    - o **Evaluate Motor Vehicle Safety Countermeasures**

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National Automotive Sampling System (NASS)

- **GENERAL ESTIMATES SYSTEM (GES)**
  - ♦ **Sole Source**
    - o **National estimates on all police reported crashes**
      - ▪ **KABCO**
  - ♦ **Nationally representative**
    - o **Sample based**
    - o **Collected at 410 Police Jurisdictions**
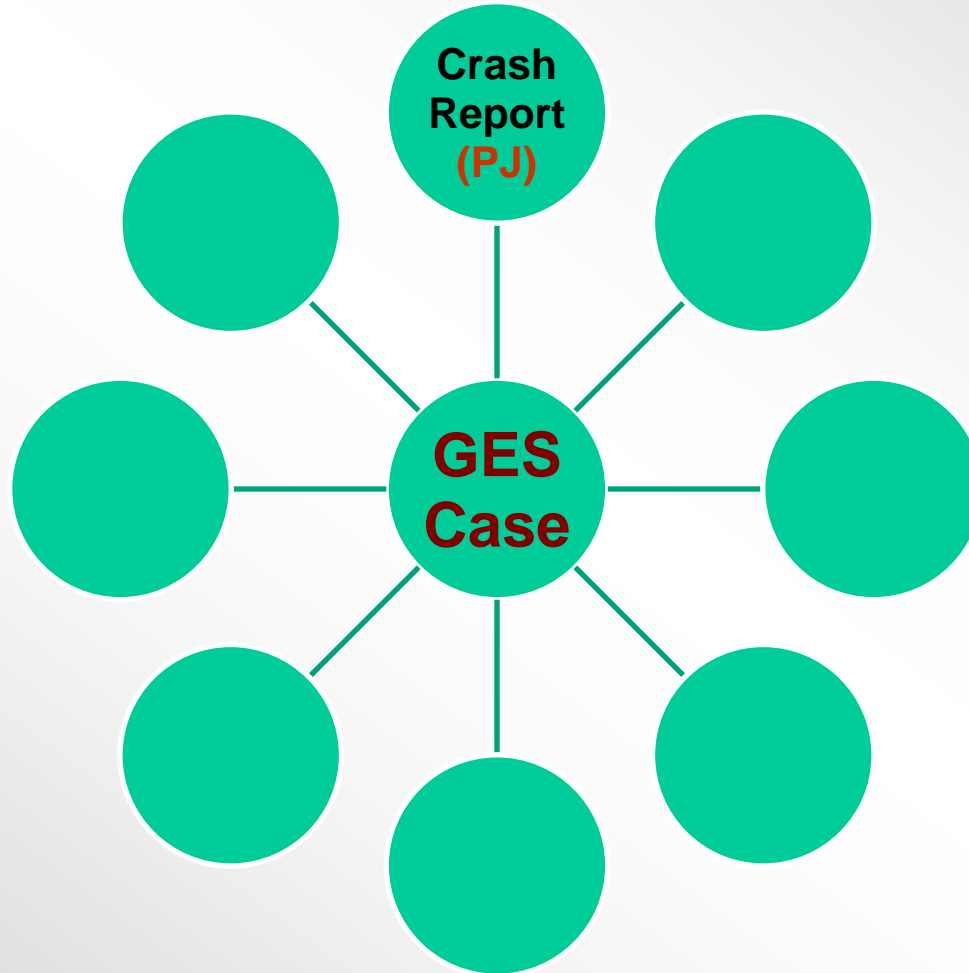   - o **in 60 locations across the US**
  - ♦ **~55,000 crashes annually**
  - ♦ **Infrastructure**
    - o **NiTS**
    - o **Special Studies**

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Building the GES Case

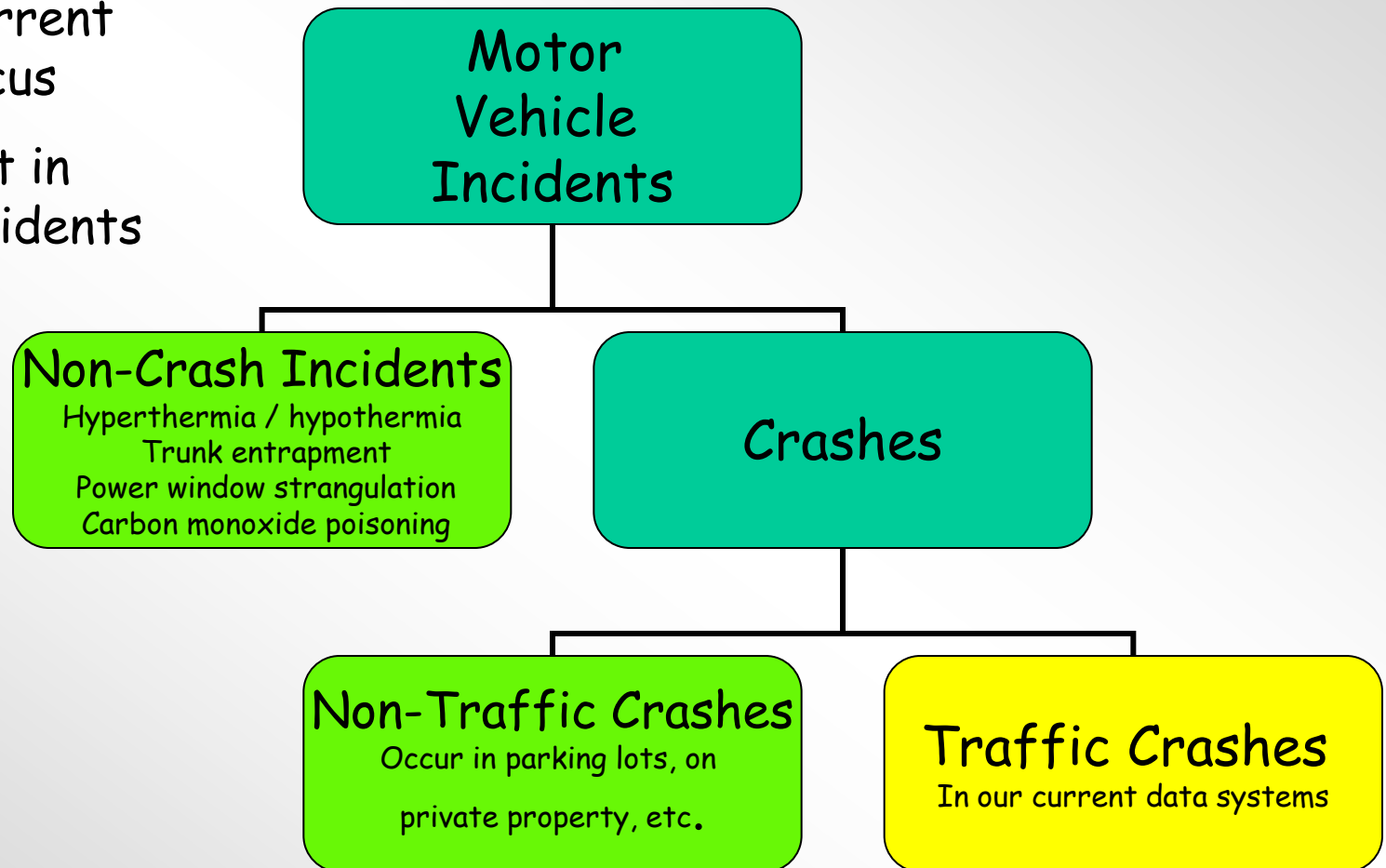# *2010 Data Collection Changes*

- **FARS/GES Variable Integration**
  - ♦ **PAR Based programs**
  - ♦ **MMUCC compatible**
- **New data collection**
  - ♦ **Pre-Crash Form (2010 FARS)**
  - ♦ **Person level Split**
    - o **Non-motor vehicle Occupant/Vehicle Occupant**
    - o **Pedestrian and Bicycle Typing**

Not in Traffic Surveillance (NiTS)

Yellow = Current NHTSA focus

Green = Not in Traffic Incidents

Motor Vehicle Incidents

Non-Crash Incidents
Hyperthermia / hypothermia
Trunk entrapment
Power window strangulation
Carbon monoxide poisoning

Crashes

Non-Traffic Crashes
Occur in parking lots, on

private property, etc.

Traffic Crashes
In our current data systems

Not in Traffic Surveillance (NiTS)

- **Data on non-traffic crashes & non-crash incidents**
  - **Information on deaths and injuries**
    - Not previously collected by NHTSA
    - Crashes off the trafficway (road environment)
    - Noncrash incidents involving motor vehicles
- **A virtual system using multiple existing systems**
    - NHTSA databases (GES, FARS, SCI)
    - CPSC's NEISS
    - CDC's NVSS
- **Created based on requirements:**
  - **SAFETEA-LU Sec. 10305; Sec 2012**
  - **Public Law 110–189, ''Cameron Gulbransen Kids Transportation Safety Act of 2007''or ''K.T. Safety Act of 2007''**
- **Report**
  - **Not-in-Traffic Surveillance 2007 – Children, June 2009**

Data Availability

- **Reports**
- **State Traffic Safety Information**
- **Data Files**
  - ♦ **All systems**
- **FARS Query System**
- **NASS Case Viewer**
- **SCI Case Viewer**

- **Through www.nhtsa.dot.gov NCSA web page**

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