SAE Government and Industry Meeting

Frontal Crash Protection

Air Bag Crash Investigations

May 14, 2001

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National Highway Traffic Safety Administration

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Topics

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- NCSA Objectives
- Air Bag Related Fatalities
- Redesigned Air Bags
- Advanced Air Bags

Objectives of the NCSA Air Bag Data Collection Program

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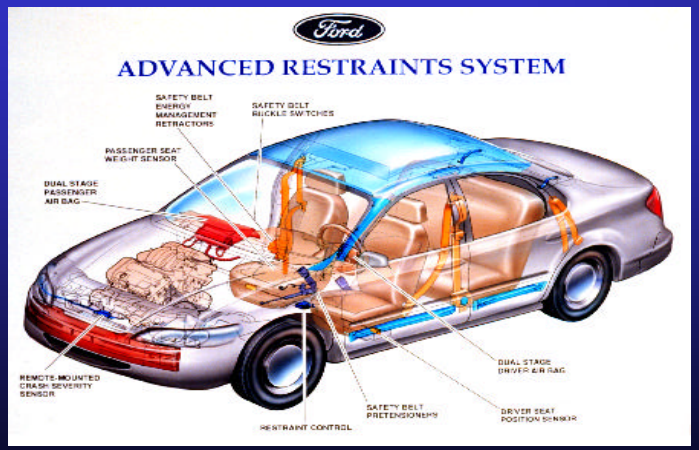
- Examine safety impact of rapidly changing technology in airbags.
- Provide early detection of alleged or potential vehicle defects.



Objectives of the NCSA Air Bag Data Collection Program

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- Crashes involving air bag deployment related fatal and seriously injured occupants.
  - The delta V is less than 25 mph
  - A Life Threatening or Fatal Injury related to the Air Bag Deployment.
- New and/or emerging occupant protection system technology
  - Crashes involving Redesigned or Advanced Air Bag Deployments
  - Side Air Bags
  - Other cases of interest

NHTSA Findings on Air Bag

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- Data Published Quarterly on NHTSA Web site:
  - Crashes involving air bag deployment related fatal and seriously injured occupants with a delta V less than 25 mph.
  - Redesigned Air Bags
  - Advanced Air Bags
  - Side Air Bags

Air Bag Related Fatalities with a delta V less than 25 mph

SCI- Driver Air Bag Related Fatalities as of 4/1/01

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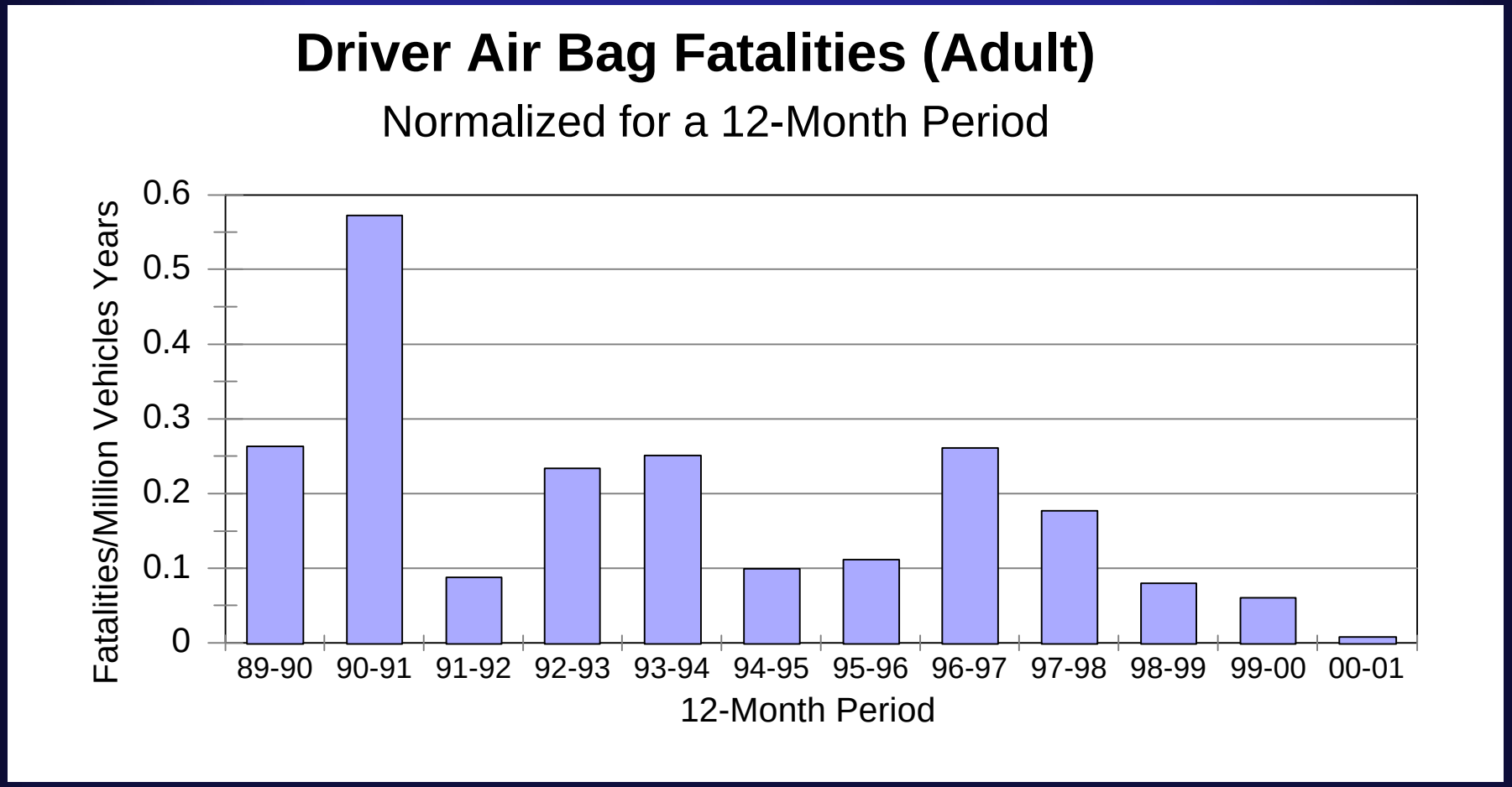

SCI- Driver Air Bag Related Fatalities as of 4/1/01

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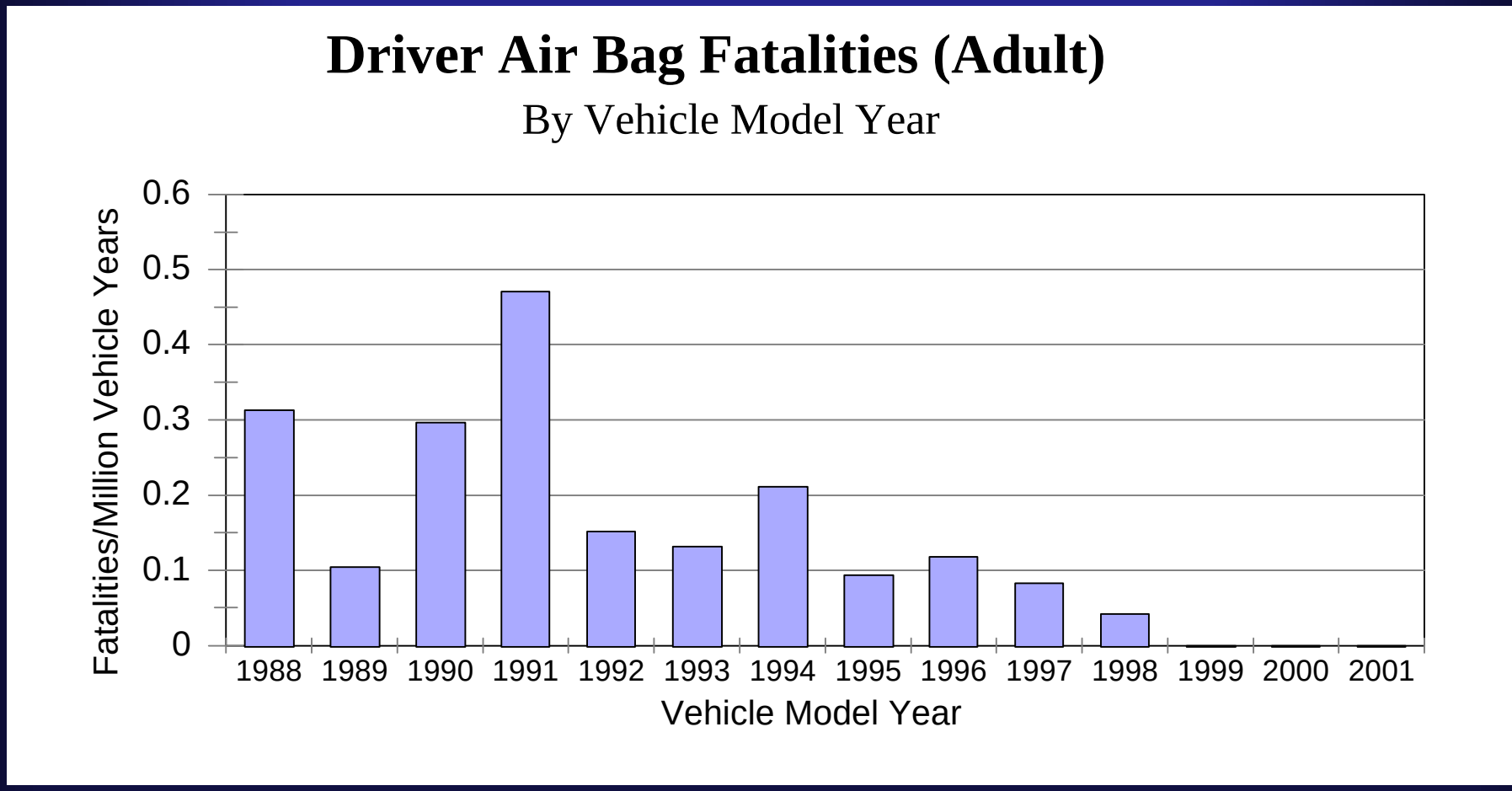

SCI- Passenger Air Bag Related Fatalities as of 4/1/01

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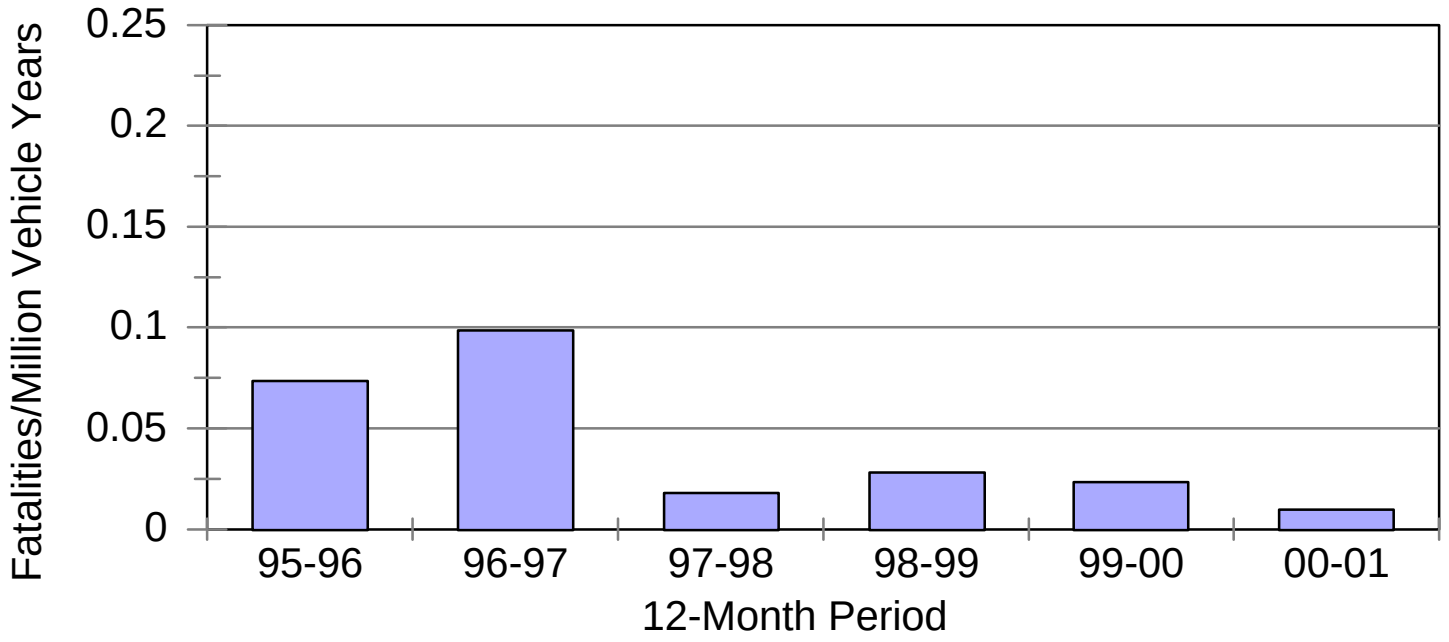
Passenger Air Bag Fatalities (Adult)

Normalized for a 12-Month Period



SCI- Passenger Air Bag Related Fatalities as of 4/1/01

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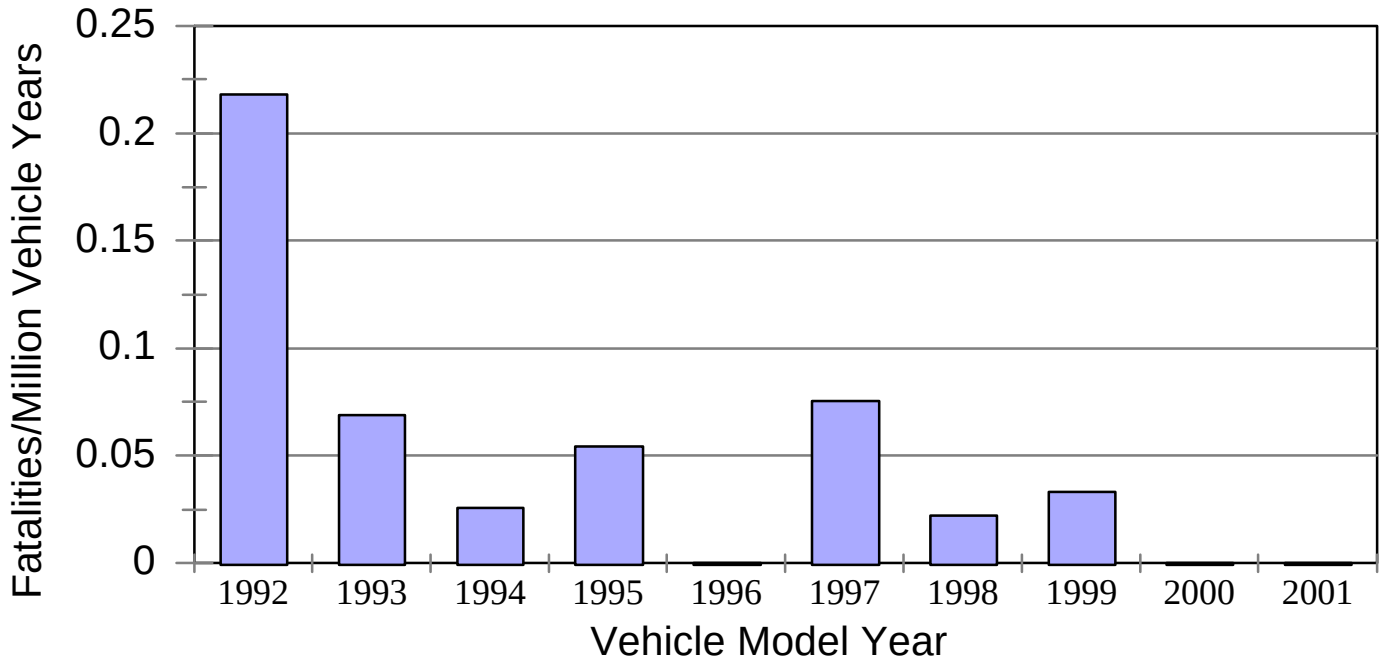
Passenger Air Bag Fatalities (Adult)

By Vehicle Model Year



SCI- Passenger Air Bag Related Fatalities as of 4/1/01

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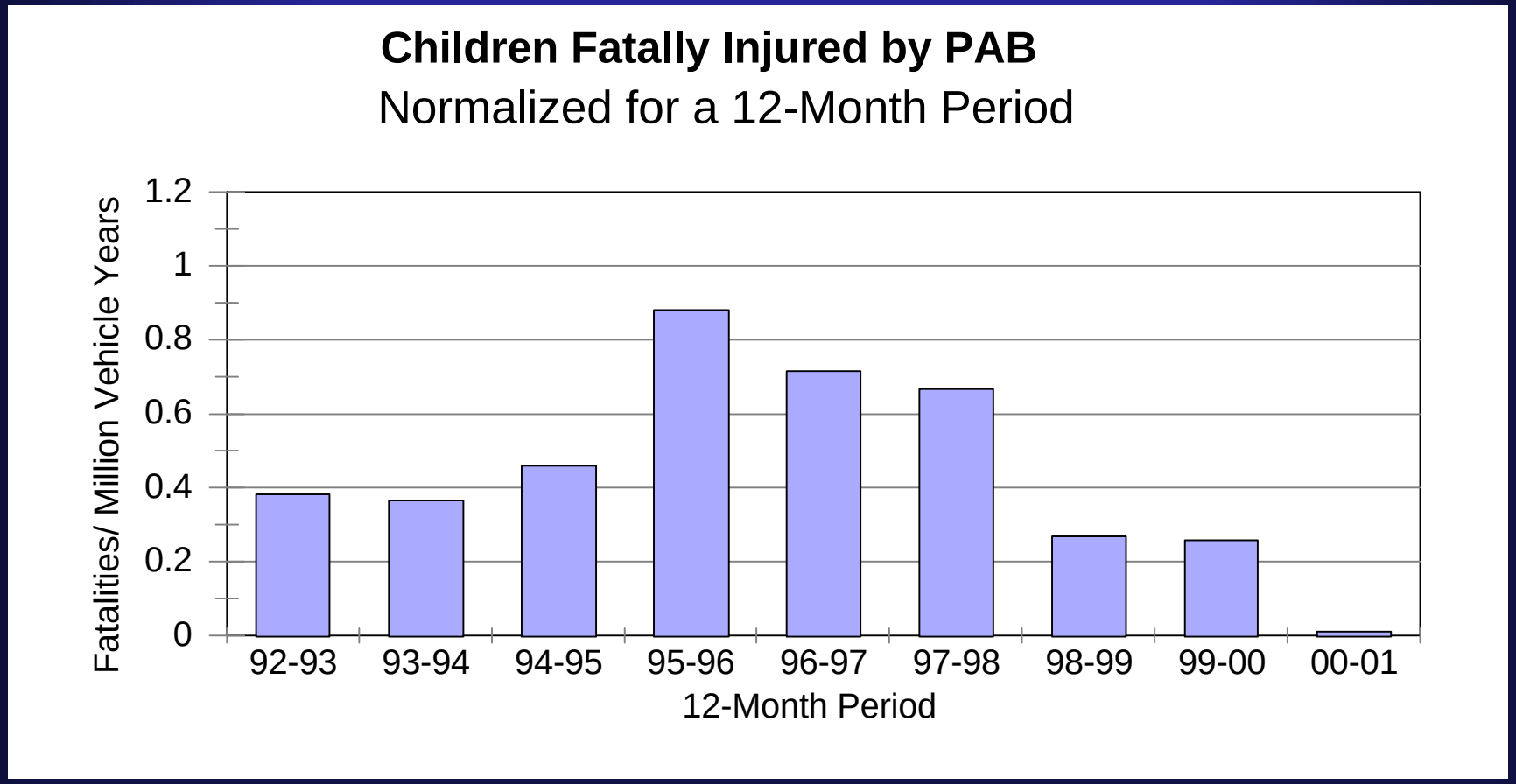

SCI- Passenger Air Bag Related Fatalities as of 4/1/01

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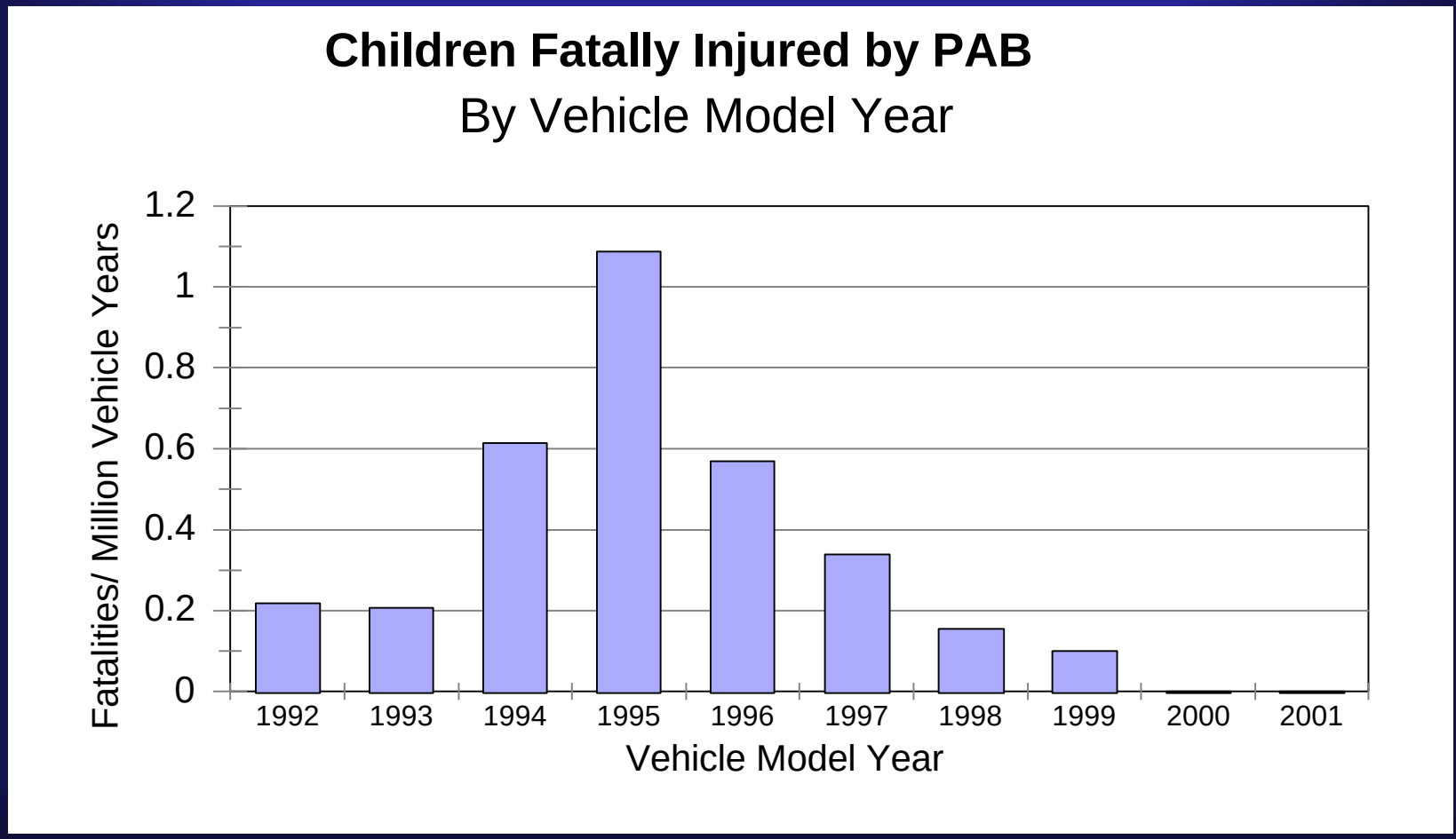

Redesigned Air Bag (Sled Certified)

Redesigned (Sled Certified) Air Bag Cases as of 4/1/01

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- NASS CDS Counts (Front - 11,12 or 01)

Data Collection Year	1997	1998	1999	2000	Total
Unweighted	1	142	240	333	716
Weighted	449	21,290	35,997	N/A	

- Partners

UMTRI -		70	81	40	191
Lehman	2	10	7		19
Total					210

- SCI

SCI	29	32	36	4	101
NASS (Combination)	1	168	24	1	194
Total					295

NCSA Reports on Findings

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Currently NCSA is Developing Paper on the Effectiveness of Redesigned (Sled Certified) Air Bags

- Summarize Data from the 500 SCI/Partners Crashes
- Analyze Effectiveness

Advanced Air Bags

Advanced Occupant Protection System Study (AOPSS)

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- The objective of the Advanced Occupant Protection System Study (AOPSS) is to provide data that will assess the "real world" performance of advanced air bags and determine if they offer a greater measure of ***safety for children and out of position occupants while still offering adequate protection to adults in crashes of high severity***

NASS

SPECIAL CRASH INVESTIGATIONS
SCI
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Minimum Criteria for AOPSS Selection

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- 2000 model year vehicle involved in a frontal crash (11, 12 or 01 o'clock) equipped with an advanced air bag system and towed due to damage
  - Special Crash Investigations 100/year.
  - NASS will select cases within sample only.
  - All PARS meeting the AOPSS criteria noted during the NASS sampling are faxed to SCI headquarters.

NASS

SPECIAL CRASH INVESTIGATIONS
SCI
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Advanced Occupant Protection Characteristics

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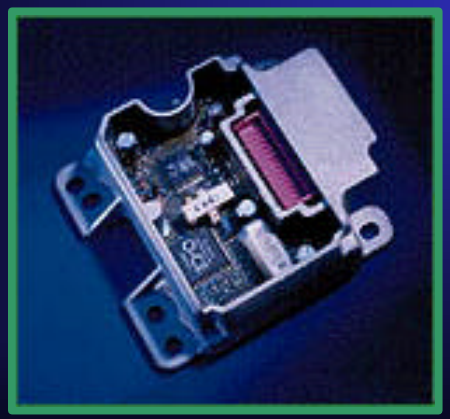
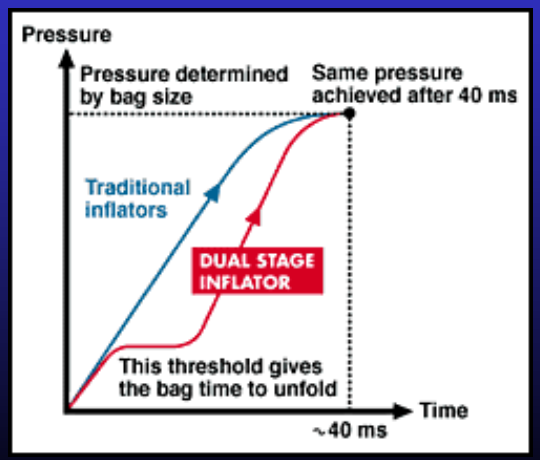
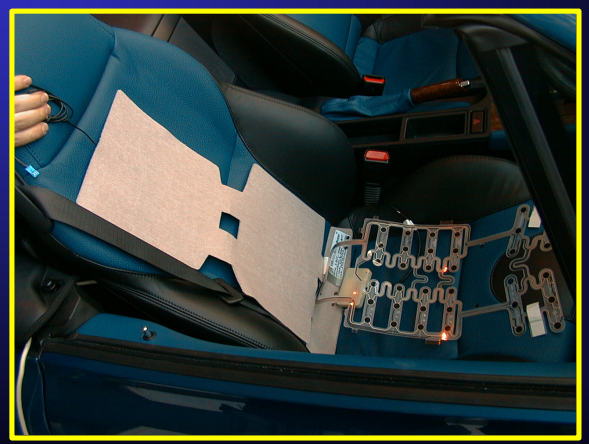
- To included in AOPSS the vehicle should be equipped with an Event Data Recorder and one or more of the following:

  Rollover sensors, weight sensors, seat position sensors, multi-stage inflators, and automatic air bag suppression.







Advanced Occupant Protection System Data Collection

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- **Research Priorities:**
  - **Air Bag Related Fatalities**
  - **Out-of-position and Children**
  - **Unusual circumstances**
    - Investigations of crashes involving unusual circumstances to provide NHTSA with early identification of potential problems with advanced airbag systems.

Other Activities with AOPSS
Coordination with Industry

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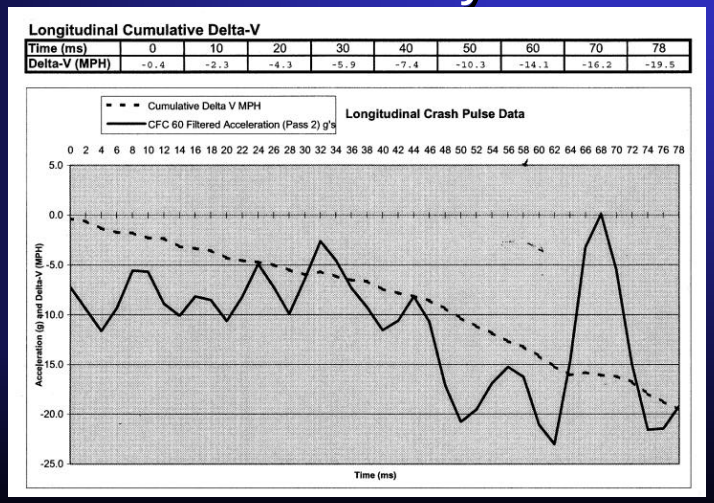
- **Working with Crash Investigators, Engineers and Designers**
  - **Case-by-Case Evaluation on**
    - EDR Readouts
    - Real World Performance of the Advanced Occupant Protection System Technologies



Longitudinal Cumulative Delta-V

Time (ms)	0	10	20	30	40	50	60	70	78
Delta-V (MPH)	-0.4	-2.3	-4.3	-5.9	-7.4	-10.3	-14.1	-16.2	-19.5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Questions?