Air Bag Crash Crash Investigations

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National Highway Traffic Safety Administration
Topics

- NCSA Objectives
- Air Bag Related Fatalities
- Redesigned Air Bags
- Advanced Air Bags
Objectives of the NCSA Air Bag Data Collection Program

- 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

- 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

- 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
Driver Air Bag Fatalities (Adult)

Normalized for a 12-Month Period

Fatalities/Million Vehicles Years

12-Month Period

89-90 90-91 91-92 92-93 93-94 94-95 95-96 96-97 97-98 98-99 99-00 00-01
Driver Air Bag Fatalities (Adult)
By Vehicle Model Year

Vehicle Model Year:
- 1988
- 1989
- 1990
- 1991
- 1992
- 1993
- 1994
- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001

Fatalities/Million Vehicle Years:
- 0.0
- 0.1
- 0.2
- 0.3
- 0.4
- 0.5
- 0.6

SCI - Driver Air Bag Related Fatalities as of 4/1/01
Passenger Air Bag Fatalities (Adult)

Normalized for a 12-Month Period
SCI - Passenger Air Bag
Related Fatalities as of 4/1/01

Passenger Air Bag Fatalities (Adult)
By Vehicle Model Year

Fatalities/Million Vehicle Years

Vehicle Model Year

Children Fatally Injured by PAB
Normalized for a 12-Month Period

Fatalities/ Million Vehicle Years

12-Month Period

92-93 93-94 94-95 95-96 96-97 97-98 98-99 99-00 00-01
Children Fatally Injured by PAB
By Vehicle Model Year

Fatalities/ Million Vehicle Years

Vehicle Model Year

0
0.2
0.4
0.6
0.8
1
1.2

Redesigned Air Bag
(Sled Certified)
# NASS CDS Counts (Front - 11,12 or 01)

<table>
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<tr>
<th>Data Collection Year</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>Total</th>
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<tr>
<td>Unweighted</td>
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<td>142</td>
<td>240</td>
<td>333</td>
<td>716</td>
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<tr>
<td>Weighted</td>
<td>449</td>
<td>21,290</td>
<td>35,997</td>
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## 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
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
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.
Minimum Criteria for AOPSS Selection

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.
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
- Automatic air bag suppression.

Advanced Occupant Protection Characteristics
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

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

![Graph showing longitudinal cumulative delta-V and crash pulse data](image)
Questions?