NHTSA Program Evaluations

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Outline

We will discuss:

1. Electronic Stability Control (Completed)
2. Life Saving Technology (Completed)
3. Redesigned Air Bags (Underway)
4. State Motorcycle Programs (Planned)
Electronic Stability Control Evaluation

(Completed)
Electronic Stability Control

- Anticipates dangerous situations
- Automatically intervenes
- Brakes one wheel
- Corrects oversteer and understeer
- Prevents skids, spins
- Reduces situations leading to run-off-road and rollovers
How ESC Works

Understeering ("plowing out")
- Desired Course
- Without ESC
- Left Rear Braking Force
- Correcting Yaw Torque

Oversteering ("spinning out")
- Desired Course
- With ESC
- Right Front Braking Force
- Without ESC
- Unintended Course
- Correcting Yaw Torque
Analysis Method

- U.S. fatal crashes, 1997-2003
- All crashes in 5 States, 1997-2002
- Ratio of single-vehicle to multi-vehicle (control group) crash involvements
- Reduction in this ratio with ESC vs. the same make-models without ESC
### 2004 Crash Data Analysis

<table>
<thead>
<tr>
<th></th>
<th>Passenger Cars</th>
<th>Sport Utility Vehicles</th>
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</thead>
<tbody>
<tr>
<td><strong>Fatal single vehicle crash reduction</strong></td>
<td>30%</td>
<td>63%</td>
</tr>
<tr>
<td><strong>All single vehicle crash reduction</strong></td>
<td>35%</td>
<td>67%</td>
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Life Saving Technology Evaluation

(Completed)

Goal: lives saved by the agency’s vehicle regulations & voluntary technologies

Method

- Evaluate the individual safety technologies one-by-one
- Review actual fatalities since 1960
- Estimate how many additional fatalities without the technologies
328,551 Lives Saved in 1960-2002

115 lives saved in 1960, 24,561 saved in 2002
Lives Saved in 2002

- Safety Belts: 14,570
- Improved Door Locks: 1,398
- Air Bags: 2,473
- EA Steering Assemblies: 2,657
- Side Impact Improved: 994
- Other: 2,470

Total Lives Saved in 2002: 24,561

Goal: consumer’s cost per vehicle added by the agency’s safety regulations

Method: evaluate cost of the individual safety standards one-by-one by:

- Disassembling safety equipment to its smallest components
- Estimating cost of materials, labor, tooling, assembly, overhead & mark-ups
Cost per new car in 2001: $839

- Air Bags: $397
- Side Impact Protection: $181
- Safety Belts: $137
- Other: $125
Redesigned Airbag Evaluation
(Underway)
Redesigned Air Bags, 1998

Safety Problem
- Air bags harmed out-of-position children and some adults

Regulatory Remedy
- Modify test requirements to allow air bags that deploy less forcefully
Redesigned Air Bags, 1998

Evaluation Questions

1. Have they reduced harm to children and out-of-position adults?

2. Have they preserved the life-saving benefits of air bags for other adults?
Analysis Method

- U.S. fatal crashes, NHTSA special investigations and U.S. vehicle registrations, 1990-2004
- Redesigned air bags vs. same make-models with original air bags
- Measure change in
  - Frontal fatalities/million vehicle years
  - Frontal fatalities/non-frontal fatalities
State Motorcycle Program Evaluation

(Planned)
State Motorcycle Programs

Motorcyclist fatality rates have increased each year since 1997, while car fatality rates decreased

♦ 8% increase from 2003 to 2004

Motorcyclist injuries have increased each year since 1998

♦ 14 % increase from 2003 to 2004
Evaluation of State Motorcycle Programs

Concentrates on

- Impaired driving
- Helmet use
- Non-compliant helmets
- Rider licensing
- Rider education
- Conspicuity