Current Issues in Child Passenger Safety

Injury Prevention Through the Life Cycle
Atlanta, GA

Lawrence E. Decina
Kathy H. Lococo
TransAnalytics, LLC
Kulpsville, PA

May 14, 2009
Current Issues in Child Passenger Safety

Topics

• Types of Restraints
• Restraint Laws
• Restraint Use and Misuse
• Injury Prevention
• Effects of Laws on Injury and Restraint Use
• Public Opinion of Child Restraint Laws
• Enforcement of Child Restraint and Booster Laws
• Summary
• Questions

TransAnalytics
Current Issues in Child Passenger Safety

Types of Restraints

Rear-Facing Infant Seat: Birth to at least 1 year old, and at least 20 pounds.

Forward-Facing Toddler Seat: Age 1 and at least 20 pounds, to about age 4 and at least 40 pounds.
Types of Restraints (Continued)

Backless Belt-Positioning Booster Seat

For children who have outgrown their forward-facing child safety seats, but are too small for the adult seat belt to fit properly: Ages 4 and 40 pounds up to age 8, (or until the child is 4 feet 9 inches tall). Must be used with vehicle lap and shoulder belt.

High-Back Belt-Positioning Booster Seat
Types of Restraints (Cont’d)

Appropriate for a child who is at least 4 feet, 9 inches tall (usually about age 8), and who can:

- Sit without slouching
- Keep their back against the vehicle seat back
- Keep their knees completely bent over the edge of the seat
- Keep their feet flat on the floor
- Stay comfortably seated this way
- Keep the lap belt low and snug across their upper thighs/lower hips
Child Restraint (CR) Laws

- Between 1978 – 1985 all 50 States and D.C have passed child passenger safety (CPS) laws covering children younger than age 4.
- The first “enhanced” child restraint law (known as a “booster seat law”) was passed in July 2002 in Washington.
Child Restraint Laws (Cont’d)

- State laws vary in their definitions of which children must be restrained in which CR type, and in which vehicle positions they must be restrained.
  - In some States, children can ride unrestrained in the back seat.
  - In some States, children age 5 may be restrained using the seat belt.
Booster Seat Laws

• Almost 90 percent of the States have booster seat provisions for children who have outgrown their CRs, but there are exemptions and limited coverage to many of these laws.

• One of the most serious gaps that continues is the limited age range covered (sometimes stated as weight and/or height ranges).
Booster Seat Laws (Cont’d)

State Booster Seat Use Requirements
By Upper Age Limit, as of May 1, 2009

- Up to Age 6
- Up to Age 7
- Up to Age 8
- Up to Age 9
- No Requirement

TransAnalytics
Booster Seat Laws (Cont’d)

• In all but 4 States with booster seat laws, the booster seat law is primary.
• In the 4 States (PA, CO, OH, MT) with secondary booster seat laws, drivers cannot be cited for a booster seat violation unless they are pulled over and cited for a primary violation (e.g., speeding, disobeying a sign or signal).
Restraint Use Rates by Age

NHTSA’s 2007 National Survey of the Use of Booster Seats and National Occupant Protection Use Survey found the following:

- Birth to 12 months: 98%
- Ages 1 to 3 years: 96%
- Ages 4 to 7 years: 85%
- Ages 8 to 12 years: 83%

Current Issues in Child Passenger Safety

Driver-Child Restraint Use Relationships

• When a driver was wearing a seat belt, 91.7% of the child occupants less than 80 pounds were restrained.
• When a driver was not wearing a seat belt, only 62.3% of the child occupants less than 80 pounds were restrained (37.7% of the children were unrestrained).

NHTSA Observation Study of Restraint Type Used for Children Age 4-7

• Child Safety Seat: 13%
• Booster Seat: 37%
• Seat Belt: 35%
• Unrestrained: 15%

NHTSA Observation Study of CR Misuse

- Critical misuse data collected for 5,527 children weighing less than 80 lb in 4,126 vehicles in 6 States: AZ, FL, MS, MO, PA, and WA.
- Overall critical CRS misuse was 72.6 percent.
- Most common critical misuses:
  - loose harness straps securing the child to the CR
  - loose vehicle seat belt attachment securing the CR to the vehicle seat.

Current Issues in Child Passenger Safety

Lower Anchors and Tethers for Children (LATCH)
LATCH Misuse

- Although the LATCH System (Lower Anchors and Tethers for Children) holds the promise of simplifying the installation of a CR to the vehicle’s seat, many drivers transporting young children have difficulties using this technology.

• Observations of approximately 1,000 children less than 5 years of age in CRs in the back seats of vehicles that were equipped with tether and lower anchors, in 7 states.
• Tethers were used for 51% of the children when the forward-facing CR had tether straps and the vehicle had tether anchors.
• Lower anchors were used for 58% of the children when the CR had lower attachments and the vehicle had lower anchors.
LATCH Misuse (Cont’d)

• The most common tether and lower attachment misuses were:
  – loose tether straps (18% of cases).
  – loose lower attachment installation (30% of the cases).

• Vehicle safety belts were used in combination with lower attachments in 20% of all lower anchor installations.
Current Issues in Child Passenger Safety

Injury Prevention

• Use of an age- and size-appropriate restraint is the most effective strategy for preventing injury and death to children involved in crashes.

• Child safety seats and booster seats reduce the risk of death by 28% for children ages 2 to 6 years, as compared with the use of seat belts alone.

Injury Prevention (Cont’d)

• In 2005, 45 percent of the children ages 4 to 8 who were killed in crashes were unrestrained.

Injury Prevention (Cont’d)

• While the use of an adult seat belt reduces the risk of fatalities for children in this age group by 48 percent when compared to no restraint use at all, a belt-positioning booster seat reduces the risk by 54 percent (NHTSA, 2002).

Injury Prevention (Cont’d)

• A seat belt that does not fit properly can cause severe head, spine, and abdominal injuries to a child involved in a crash.

Injury Prevention (Cont’d)

• Belt-positioning booster seats lower the risk of significant injury to children in crashes by 59 percent compared to the use of seat belts alone. (Durbin, Elliot, and Winston, 2003).

Current Issues in Child Passenger Safety

Effects of Laws on Injury and Restraint Use

• FHWA Public Policy study analyzed crash data 1975-1994 in all 50 States.

• They estimated that CR laws during this period reduced young-child fatalities by an average of 18% (1,840 child fatalities were averted).

Effects of CR Laws on CR Use and Injury Reduction

- Found strong evidence of the effectiveness of CR laws to reduce fatal and non fatal injuries and to increase CR use.


TransAnalytics
Effect of Booster Seat Laws on CR Use

• Children ages 4-7 in States with booster seat laws are 39% more likely to be appropriately restrained in a booster seat or child safety seat than children in States without such laws.
• Children ages 6-7 were more likely to be appropriately restrained if the law included 4-7 year olds, rather than 4-5 year olds.

Public Attitudes Toward Enforcement of CR Laws

- Tandem telephone survey with 1,372 households with the presence of a child under age 9.
- 85% support for ticketing CR violations at every opportunity.
- 65% support for fines of $50 or more.
- 51% support for fines of $100 or more.

Effect of Enforcement of CR Laws on CR Use

- Two suburbs of Phila, PA showed an increase in CR use and “proper use” of 10% after an enforcement campaign consisting of warnings, tickets, and earned media.

- A control community in the study showed no increase.

Effect of Enforcement of Booster Seat Laws

- WI enacted a booster seat law on June 1, 2006.
- Booster seat use in WI was observed before and after the law was enacted.
- Booster seat use was also observed in a control State (MI) that did not enact a booster seat law, during the same time periods.

Current Issues in Child Passenger Safety

Effect of Enforcement of Booster Seat Laws (Cont’d)

Combined CSS and booster seat use significantly increased 9.1% in WI.

<table>
<thead>
<tr>
<th>Restraint Type</th>
<th>Wisconsin</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (N=407)</td>
<td>Post (N=355)</td>
</tr>
<tr>
<td>Safety Belt</td>
<td>30.7%</td>
<td>21.1%</td>
</tr>
<tr>
<td>CSS</td>
<td>8.6%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Booster</td>
<td>40.0%</td>
<td>45.9%</td>
</tr>
<tr>
<td>Unrestrained</td>
<td>20.6%</td>
<td>21.1%</td>
</tr>
</tbody>
</table>
Nationwide CR Law Enforcement

• Click-It Or Ticket Mobilization May 2008.
• All States and DC, and U.S. Territories.
  – Seat Belt Citations: 603,860
  – Child Passenger Law Citations: 33,351
  (no distinction made between child restraint and booster law violations)
NHTSA Booster Seat Law Implementation Study

- 9 Police Departments in 4 States
- Communities of 4,000 to 100,000 population.
- Study included:
  - Training officers in child restraint use by age
  - Enforcement Cards for summons book (CR laws)
  - Dedicated enforcement
  - Funds to cover staff time
  - Unearned media
## NHTSA Booster Seat Law Implementation Study (Cont’d)

<table>
<thead>
<tr>
<th>Law Enforcement Agency</th>
<th>Child Restraint Citations</th>
<th>% Booster Seat Citations</th>
<th>Enforcement Hours</th>
<th>Enforcement Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passaic, NJ</td>
<td>364</td>
<td>68%</td>
<td>244</td>
<td>Checkpoints</td>
</tr>
<tr>
<td>Westhampton Twp., NJ</td>
<td>232</td>
<td>84%</td>
<td>387</td>
<td>Checkpoints</td>
</tr>
<tr>
<td>Galloway Twp., NJ</td>
<td>151</td>
<td>85%</td>
<td>373</td>
<td>Dedicated Roving Patrol</td>
</tr>
<tr>
<td>Grant Co., WA</td>
<td>120</td>
<td>n/a</td>
<td>145</td>
<td>Dedicated Roving Patrol</td>
</tr>
<tr>
<td>Exeter Twp., PA</td>
<td>22</td>
<td>32%</td>
<td>136</td>
<td>Stationary &amp; Roving Patrol</td>
</tr>
</tbody>
</table>
### NHTSA Booster Seat Law Implementation Study (Cont’d)

<table>
<thead>
<tr>
<th>Law Enforcement Agency</th>
<th>Child Restraint Citations</th>
<th>% Booster Seat Citations</th>
<th>Enforcement Hours</th>
<th>Enforcement Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Castle City, DE</td>
<td>21</td>
<td>86%</td>
<td>192</td>
<td>Dedicated Roving Patrol</td>
</tr>
<tr>
<td>Georgetown, DE</td>
<td>18</td>
<td>72%</td>
<td>108</td>
<td>Stationary Patrol</td>
</tr>
<tr>
<td>Millsboro, DE</td>
<td>6</td>
<td>33%</td>
<td>160</td>
<td>Stationary Patrol</td>
</tr>
<tr>
<td>Haverford Twp., PA</td>
<td>4</td>
<td>25%</td>
<td>64</td>
<td>Stationary &amp; Roving Patrol</td>
</tr>
</tbody>
</table>


TransAnalytics
Current Issues in Child Passenger Safety

Checkpoint Set Up
Current Issues in Child Passenger Safety

Pull-Off Lane for Ticketing/Educating
“Getting in the Vehicle”
Current Issues in Child Passenger Safety

“Taking License Information”
“Something Was Wrong With The Harness Straps”
Current Issues in Child Passenger Safety

“Why We Do This Work”
Current Issues in Child Passenger Safety

Checkpoint Set Up - Westamptom Township, NJ
Spotters’ Notes on Windshield (for Ticket Write-Ups)
“Going in the Vehicle to Check Car Seats”
Recommendations for Enforcement of Booster Seat Laws

- Checkpoints and patrols using stationary positions appear to be the most efficient and productive methods for enforcing all CR laws.
- Details should use several officers (e.g., spotters and ticket writers). Additional officers should be considered if other violations are to be enforced.
Recommendations for Enforcement of Booster Seat Laws

- A CPS-certified officer should be on hand at the detail.
- A method of channeling traffic (e.g., cones along lane lines) to slow traffic down and stop motorists to clearly see in vehicle and then interact with drivers (e.g., ask age of children) should be used.
Recommendations for Enforcement of Booster Seat Laws

- Safe pull-off areas for processing CR law violators is important. Also allows for educating and giving out car seats.

- Details should be conducted near locations where motorists are transporting young children (e.g., schools, shopping centers, child care centers).
Recommendations for Enforcement of Booster Seat Laws

- Enforcement activities should occur during times of the day when motorists are likely to be traveling with young children (e.g., school drop-off and pick-up).
Closing the Gaps in Child Restraint Laws

• Child restraint laws should include children up to 8 years of age.
• Seat belt laws and child restraint/booster seat laws should be primary laws.
Current Issues in Child Passenger Safety

Questions?

Lawrence E. Decina
TransAnalytics, LLC
1722 Sumneytown Pike,
Box 328
Kulpsville, PA 19443
ledecina@transanalytics.com