Implementation and Evaluation of a School-based Program to Increase Booster Seat Use among Children 4-7 Years of Age from Economically-disadvantaged Areas

Safe States 2016 Annual Meeting
April 14, 2016
Albuquerque, NM
The Injury Prevention Center of Greater Dallas was established in 1994 to implement proven, effective primary prevention strategies.
Injury Prevention Center

Guiding Principles

- Use data to drive strategies
- Collaborate with the community
- Use evidence-informed strategies
- Evaluate all interventions

[Diagram: Define the Problem, Identify Groups at Risk, Implement Proven Strategies, Evaluate Strategies]
The Facts

- Car crashes are the second leading cause of death and leading cause of injury death for children 5-9 years of age.\(^1\)

- Booster seats reduce the risk of serious injury in motor vehicle crashes by 45% for children 4-8 years of age as compared to seat belt use alone.\(^2\)

- Texas Law: All children less than 8 years old, unless 4’9” tall, must use a child safety seat every time they ride in a motor vehicle.

- 2013 estimates of booster seat use in Texas\(^3\) (for children 5-8 years old):
  - 9% were correctly restrained in a booster seat
  - 53% were completely unrestrained

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3 Texas Transportation Institute, 2013. Observational Survey of Safety Belt Use Among School Aged Children in Texas. Analysis for 5-8 year-olds, by request. [cited 17 December 2013]
Project Overview

• One-year project implemented in 2 project schools per year for 4 consecutive fiscal years (Oct 2011 – Sept 2015)
  – 2-4 comparison schools with similar demographics did not receive the intervention
• Goal → Increase booster seat use of children 4-7 years of age
• Funded by one-year grants through the Texas Department of Transportation (TxDOT)
Selection of Project Schools

1) Economically-disadvantaged

2) Emphasis on minority populations

3) Supportive staff and active parents/parent groups
Methods
Search for Evidence
NHTSA and AAP Recommendations
Focus Groups
Baseline Observations
Previous Experience

Intervention Strategy
Stakeholder surveys and suggestions from previous years

Search for Evidence

NHTSA and AAP Recommendations

Focus Groups

Baseline Observations

Previous Experience

Intervention Strategy
Letter of Commitment

• Discussed during initial meeting with school leadership

• Formalizes commitment by the school to support all aspects of the project

• Demonstrates to school leadership that the project is a shared responsibility and a team effort
Train-the-Trainer Presentations

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NHTSA and AAP Recommendations
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Stakeholder surveys and suggestions from previous years
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Train-the-Trainer Presentations

Parent Presentations
Stakeholder surveys and suggestions from previous years

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Intervention Strategy

Train-the-Trainer presentations

Parent Presentations

Tailored Communication
Stakeholder surveys and suggestions from previous years

Search for Evidence
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Focus Groups
Baseline Observations
Previous Experience

Intervention Strategy

- Train-the-Trainer presentations
- Parent Presentations
- Tailored Communication
- Bilingual Fact Sheet Distribution

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Intervention Strategy

- Search for Evidence
- NHTSA and AAP Recommendations
- Focus Groups
- Baseline Observations
- Previous Experience

- Stakeholder surveys and suggestions from previous years

- Train-the-Trainer presentations
  - Parent Presentations
  - Tailored Communication
  - Bilingual Fact Sheet Distribution
  - Walk-Around Education

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Intervention Strategy

- Search for Evidence
- NHTSA and AAP Recommendations
- Focus Groups
- Baseline Observations
- Previous Experience

Stakeholder surveys and suggestions from previous years

- Train-the-Trainer presentations
- Parent Presentations
- Tailored Communication
- Bilingual Fact Sheet Distribution
- Walk-Around Education
- Inspection Stations

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Search for Evidence
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Previous Experience

Train-the-Trainer presentations
Parent Presentations
Tailored Communication
Bilingual Fact Sheet Distribution
Walk-Around Education
Inspection Stations

Stakeholder surveys and suggestions from previous years

Sustainability Plan

Intervention Strategy

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Evaluation Plan

• Formative → Focus groups
• Process → Ongoing feedback and stakeholder surveys
• Impact → Observational surveys
Formative Evaluation – Focus Groups

• **Purpose:**
  - To better understand the opinions and the concerns of our stakeholders
  - To specifically tailor the project to each school.

• **Topics of discussion:**
  - School and community safety concerns
  - Pre-existing knowledge about child passenger safety and the Texas law
  - Perception of law enforcement
  - Effective communication methods
Why are parents not restraining their kids in a booster seat every time they are in a motor vehicle?

- Lack of knowledge
- Lack of financial resources
- “It won’t happen to me” mentality
- “We’re just going to the store around the corner!”
Process Evaluation

• Program is continually being monitored and assessed.
  – Biweekly planning meetings
  – Stakeholder feedback

• Stakeholder survey at end of project
  – Successes and challenges discussed
Impact Evaluation - Observations

• Standardized Form
  – Child’s estimated age/race/gender
  – Seating position and vehicle type
  – Restraint type

• 2 project and 2-4 comparison schools
  – During morning drop-off (same time & location for each school)
  – Strategic location: vehicles are slow-moving
  – Analyzed data for children 4-7 years of age

Conducted an average of 3,700 per year and a total of almost 15,000 observations.
Observation Results
<table>
<thead>
<tr>
<th></th>
<th>Pre-Intervention Time Period (Oct-early Dec)</th>
<th>Post-Intervention Time Period (Apr-early Jun)</th>
<th>Odds Ratio (95% Confidence Limits)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comparison</strong></td>
<td>4.7%</td>
<td>4.9%</td>
<td>1.03</td>
<td>.39</td>
</tr>
<tr>
<td></td>
<td>138/2929</td>
<td>153/3148</td>
<td>(0.82, 1.31)</td>
<td></td>
</tr>
<tr>
<td><strong>Project</strong></td>
<td>4.8%</td>
<td>25.7%</td>
<td>6.90</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>(96/2014)</td>
<td>517/2013</td>
<td>(5.50, 8.67)</td>
<td></td>
</tr>
</tbody>
</table>
Combined Results
Booster Seat Use in Comparison vs. Project Schools
Children 4-7 Years of Age

Comparison Schools
4.7%

Project Schools
4.8%
Children in the project schools were 6.9 times more likely to use booster seats after the intervention. (95% CI 5.5, 8.7)

Combined Results
Booster Seat Use in Comparison vs. Project Schools
Children 4-7 Years of Age
Combined Results
Booster Seat Use in Comparison vs. Project Schools
Children 4-7 Years of Age

Increases persisted over the summer break and into the next school year.
Combined Results
Booster Seat Use by Year in Comparison vs. Project Schools
Children 4-7 Years of Age
Combined Results

Booster Seat Use by Year in Comparison vs. Project Schools

Children 4-7 Years of Age

Booster Seat Restraint Use Among Children 4‐7 Years of Age by Year and by Project vs. Comparison School, Pre vs. Post Intervention, Including Post2 Observations

Year 1 (Project)

Year 1 (Comparison)
Combined Results
Booster Seat Use by Year in Comparison vs. Project Schools
Children 4-7 Years of Age

Booster Seat Restraint Use Among Children 4‐7 Years of Age by Year and by Project vs. Comparison School
Pre vs. Post Intervention, Including Post2 Observations

Year 1 (Project)
Year 1 (Comparison)
Year 2 (Project)
Year 2 (Comparison)
Combined Results
Booster Seat Use by Year in Comparison vs. Project Schools
Children 4-7 Years of Age
Combined Results
Booster Seat Use by Year in Comparison vs. Project Schools
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Year 1 (Project)
Year 1 (Comparison)
Year 2 (Project)
Year 2 (Comparison)
Year 3 (Project)
Year 3 (Comparison)
Combined Results
Booster Seat Use by Year in Comparison vs. Project Schools
Children 4-7 Years of Age

Percent of Children Correctly Using Booster Seats

Pre Post 1 Post 2

Year 1 (Project)
Year 1 (Comparison)
Year 2 (Project)
Year 2 (Comparison)
Year 3 (Project)
Year 3 (Comparison)

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Combined Results
Booster Seat Use by Year in Comparison vs. Project Schools
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Booster Seat Use by Year in Comparison vs. Project Schools
Children 4-7 Years of Age

Percent of Children Correctly Using Booster Seats

Year 1 (Project)
Year 1 (Comparison)
Year 2 (Project)
Year 2 (Comparison)
Year 3 (Project)
Year 3 (Comparison)
Year 4 (Project)
Year 4 (Comparison)
Table 2: Multivariable Analysis - Combined Results
Booster Seat Use by Year in Comparison vs. Project Schools
Children 4-7 Years of Age

<table>
<thead>
<tr>
<th></th>
<th>Comparison Schools</th>
<th>Project Schools</th>
<th>Difference (95% CI)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correctly Using</td>
<td>Pre</td>
<td>Post</td>
<td>Change</td>
<td>Pre</td>
</tr>
<tr>
<td>Booster Seats</td>
<td>5.1</td>
<td>5.1</td>
<td>0.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>

→ Controlled for age, race, gender, and vehicle type
Conclusion
Conclusions

• The program has been effective in increasing booster seat use for children ages 4-7 in varied school settings among diverse, economically-disadvantaged populations.
• These increases persisted into the following school year when a majority of the students returned.
• The GKB model is a sustainable strategy that may be effective in producing long-term increases in booster seat use among school-age children in similar settings across the country.
• Despite project success, there is still more work to do.
Keys to Success

- Collaborative relationships
- Cultural context
- Sufficient dosage
- Focus on the parents, not on the kids
Merissa Yellman
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