



National Child Restraint Use Special Study

Summary

The National Child Restraint Use Special Study documents how car seats and booster seats are used in the field, drivers' attitudes and beliefs about car seats and booster seats and their confidence with installing them, and lower anchor connectors and tether strap installations. Misuse of car seats and booster seats can be derived from the study, which resulted in an estimated 46 percent combined rate of misuse for car seats and booster seats. Incorrect amount of recline, loose car seat installation, and improper lap belt position were the most observed misuses for rear-facing car seats, forward-facing car seats, and booster seats, respectively.

Background

From June to August of 2011 the National Highway Traffic Safety Administration conducted the National Child Restraint Use Special Study (NCRUSS). This survey was nationally representative, with data collected at 24 randomly selected geographic areas in the United States. The survey data includes observations of the restraint systems of child passengers from birth to age 8, conducted by certified child passenger safety technicians, as well as associated interview data given by the drivers of these child passengers. In total, 4,167 complete observations (child restraint inspections with driver interviews) were gathered by the research staff. A detailed report has been published that provides results of the survey, including descriptive percentages, an analysis of misuse of car seats and booster seats, and data on lower anchor connectors and tether strap installations.¹ This research note provides a brief summary of this survey highlighting the overall misuse as well as the most observed misuse per car seat/booster seat type.

"Misuse" of car seats and booster seats is defined as a characteristic of installing the car seat/booster seat to the vehicle, or of restraining the child in a car seat/booster seat, that may reduce the protection of the car seat/booster seat in the event of a crash. Not every divergence from a "perfect" installation was considered "misuse" for this

study. An individual car seat or booster seat can have multiple misuses; misuses are not mutually exclusive. The overall misuse rate is based on the number of car seats or booster seats having at least one defined misuse present and not on the total number of misuses seen in all of the seats. A car seat or booster seat with more than one defined misuse would still only be counted as one seat for the overall misuse rate. The overall misuse is estimated to be 46 percent. The table below provides the overall misuse estimates by car seat and booster seat type.

Estimated Overall Misuse Percentage by Car Seat and Booster Seat Type

	Misuse
Total	46%
Rear-facing infant car seat	49%
Rear-facing convertible	44%
Forward-facing car seat	61%
All car seats	59%
Highback booster	16%
Backless booster	24%
All booster seats	20%

As mentioned earlier, a car seat or booster seat may have one or multiple misuses. When looking at individual misuse, rather than overall misuse, each misuse is counted, even if it is in a seat with other misuses. Presented below are the most frequently observed misuses per car seat/booster seat type in the survey.²

1. Greenwell, N. K. (2015, May). Results of the National Child Restraint Use Special Study (NCRUSS). (Report No. DOT HS 812 142). Washington, DC: National Highway Traffic Safety Administration.
2. The misuses considered are not subjected to specific types of installation method of car seat/booster seat to vehicle.

■ **Rear-Facing Infant/Convertible Car Seat** – An infant car seat is designed for use only by newborns and small babies in a rear-facing position. A convertible car seat can convert from rear-facing for babies and smaller children to forward-facing for older and larger children. Both types had the same most common misuse:

- **Incorrect amount of recline in car seat (16% of rear-facing infant, 12% of rear-facing convertible):** Child is less than a year old and the car seat angle is less than 30 degrees.

Best Practice: The amount of recline in the rear-facing car seat should be between 30 and 45 degrees, regardless of age.

■ **Forward-Facing Car Seat** – A specially designed device that secures a child in a motor vehicle, meets Federal Safety Standards, and increases child safety in a crash. The car seat has a harness and tether that limits the child's forward movement during a crash.

- **Loose car seat installation (17%):** The car seat can be moved laterally more than 2 inches when pushed or pulled at the belt path.

Best Practice: The car seat should not move more than 1 inch laterally when pushed or pulled at the belt path.

■ **Highback/Backless Booster Seat** – Seat intended to be used as a transition to lap and shoulder belts by older children who have outgrown car seats. Booster seats are designed to raise the body position of the child upward

so the vehicle seat belt fits properly around the child's hip instead of across the child's abdomen. Highback booster seats provide neck and head support and are ideal for vehicles that don't have head rests or high seat backs. Backless booster seats do not provide head and neck support but are ideal for vehicles that have head rests. Both types had the same most common misuse:

- **Improper lap belt position (9% of highback, 12% of backless):** Lap belt placed across abdomen/ribcage.

Best Practice: The lap belt position should be placed across the hips/thighs of the child.

The interviews of drivers of child passengers in a car seat/booster seat showed a high rate of confidence; 73 percent of them said that they were "confident" or "very confident" that their car seat/booster seat was installed correctly and the child seated correctly. Forty-five percent of these drivers of children in a car seat/booster seat who responded confident or very confident exhibited at least one misuse. By car seat or booster seat, misuse rates of drivers who responded confident or very confident were 59 percent for car seats and 18 percent for booster seats. The driver interviews also showed that 15 percent of all drivers of child passengers in a car seat/booster seat did not read any instructions on how to properly install their child restraints. Highly confident drivers misusing a car seat/booster seat is a concern, since they might not seek out information on how to correctly restrain their child passengers. Best practice recommendations for child passengers can be found at www.safercar.gov/therightseat.

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