

# Introduction to Car Seats & Booster Seats

## OBJECTIVES

- Identify NHTSA's Federal Motor Vehicle Safety Standard 213.
- Explain NHTSA's car seat and booster seat recommendations.
- Name car seat and booster seat parts and functions.
- Determine how to select the appropriate car seat or booster seat.
- Identify car seats for children with special needs.

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## NHTSA's FEDERAL MOTOR VEHICLE SAFETY STANDARD 213

NHTSA's Federal Motor Vehicle Safety Standard (FMVSS) 213 provides child restraint performance standards for children up to 80 pounds. Vehicle and car seat/booster seat manufacturers are required to self-certify their products as meeting NHTSA's FMVSS 213.

- These are performance standards and **NOT** design standards.
- Performance standards mandate how the product should perform in a crash while the manufacturer determines design.

The seat must meet federal crash performance standards.

- FMVSS 213 requires that child restraint systems must pass a 30 miles per hour frontal sled test that simulates a crash. NHTSA randomly tests these products to verify they meet the performance standards set forth.
- Some specifics include:
  - Padding requirements around the head of car seats for use by children weighing 22 pounds or less.
  - Meeting flammability standards.
  - Buckle release pressure.
- Permanent, visible labels on the restraint must include:
  - Verification that it conforms to federal standards
  - Basic instructions for correct installation and use
  - Name and address of manufacturer/distributor
  - Date of manufacture
- LATCH on car seats must have two parts:
  - Tether connectors to reduce forward movement or excursion (not required on rear-facing-only seats)
  - Lower anchors connectors to replace seat belts for installation

Manufacturers are required to provide a registration card with the car seat or booster seat and notify consumers of product recalls.

The publication *FMVSS 213: Highlights of the Regulation for Child Restraint Systems* provides more information and can be found on the NCPSB website at [www.cpsboard.org](http://www.cpsboard.org).

## NHTSA'S CAR SEAT AND BOOSTER SEAT RECOMMENDATIONS

Car seats and booster seats should be chosen based on the child's age and size as well as fit of the seat in the vehicle. Children should be kept in car seats and booster seats for as long as the child fits within the manufacturer's height and weight requirements.

**Birth to 12 Months:** A child under the age of 1 should **ALWAYS** ride in a rear-facing car seat. There are different types of rear-facing car seats: rear-facing-only, convertible, and 3-in-1.



*Rear-facing car seat*

**1 to 3 Years:** Children should ride in rear-facing car seats **AS LONG AS POSSIBLE**. It is the best way to keep them safe. The child should remain in a rear-facing car seat until he or she reaches the top height or weight limit allowed by the car seat manufacturer.



*Forward-facing car seat*

**4 to 7 Years:** Children should be kept in a forward-facing car seat with a harness until they reach the top height or weight limit allowed by the car seat manufacturer.



*Booster seat*

**8 to 12 Years:** Children should be kept in booster seats until big enough to properly fit in a seat belt.

NHTSA's Ease-of-Use Rating is a 5-star ratings system that allows caregivers to determine how easy certain car seat and booster seat features are to use before they buy a seat.

Go to <http://www.safercar.gov/parents/carseats> to download NHTSA's car seat and booster seat recommendations flyer.



*Seat belt*

A **conventional** car seat is one that is readily available to the public, usually from a retailer. The conventional types include: rear-facing seat with or without a base, a convertible seat that can be used rear-facing for toddlers and forward facing for older children, forward-facing only seats, combination seats, high-back, and backless booster seats.

**NOTE:** Safe transportation for many children with health or behavioral needs can be provided with a conventional or special needs car seat. Many children with special needs may be able to ride rear-facing to older ages if they are small and fit in the seat longer.

**CAR SEAT AND BOOSTER SEAT PARTS AND FUNCTIONS**

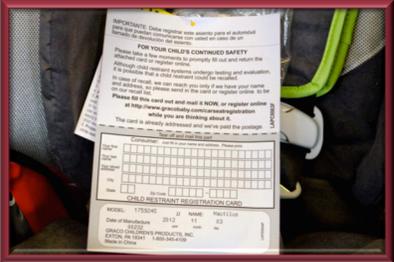
**Car Seat and Booster Seat Labels and Registration Cards**

All child restraint manufacturers must provide a label on the car seat or booster seat with their contact information. Caregivers are encouraged to register the seat with the manufacturer either online or by mailing in the registration card.



*Car seat label*

- Manufacturers use this information to contact owners about safety issues, including recalls, and are **NOT** allowed to use owner data for other purposes.
- If a caregiver has not sent in a registration form, he or she can submit NHTSA’s *Car Seat Registration Form* or a registration form online through the manufacturer website. Encourage caregivers to register their car seat.
- A car seat or booster seat that is missing its label may be dangerous to use, as recalls cannot be determined. NHTSA’s *Recall List* includes information on every recalled seat and is updated on an as-needed basis (when new recalls are announced). Recall lists and checklists should be used for every seat check. They can be accessed on a smart phone to ensure up-to-date accuracy.



*Car seat registration card*

**Car Seat and Booster Seat Testing and Recalls**

While NHTSA does not certify car seats or booster seats before they go to market, they do confirm their standards are being met by randomly testing certain products on the market.

- NHTSA also tests products reported by the public or manufacturer to have a potential problem. If a problem is identified, the product may be recalled.
- A recall may be initiated through compliance testing or through defect monitoring. A seat that has a recall may be crashworthy and useable until the repair has been made. Follow the manufacturer’s recall instructions.
- Manufacturers can identify a need for a recall before involving the government if they are aware of the problem. This information is made available by NHTSA on the *Recall List*.
- Manufacturers may issue a recall and a correction kit if a problem is found with a seat. Many times the consumer can correct the recall at home.

**Car Seat and Booster Seat Parts and Functions**

- Buckle:** Where harness system connects and locks
- Harness:** Straps that keep the child in the car seat and spreads out crash forces. Two harness types meet FMVSS 213 requirements.
  - **5-Point:** Harness has five points of contact that includes one over each shoulder, one on each side of the pelvis, and one between the legs with all five coming together at a common buckle
  - **3-Point:** Harness has three points of contact that includes two shoulder straps coming together at one buckle in the shell or on a crotch strap

**NOTE:** This is **NOT** to be confused with 3-point (lap-and-shoulder) vehicle belt.
- Retainer Clip:** Plastic buckle or clasp that holds shoulder straps together over the child’s chest and is positioned at child’s armpit level

## CAR SEAT AND BOOSTER SEAT PARTS AND FUNCTIONS (CONTINUED)

- ☑ **Harness Adjuster:** Part used to tighten or loosen the harness
- ☑ **Harness Slots:** Parts of car seat where the harnesses go through the seat shell
- ☑ **Labels:** Information affixed to car seat or booster seat required by federal standards
- ☑ **Shell/Frame:** Molded plastic and/or metal structure of car seat or booster seat
- ☑ **Seat Padding:** Covers the shell and/or frame
- ☑ **Level Indicator:** Part of car seat that helps identify correct rear-facing installation angles
- ☑ **Padding:** Additional padding or inserts some manufacturers provide that have been crash tested with the seat



*Parts of a seat*

- ☑ **Belt Path:** Place on car seat where seat belt or lower anchor connector is placed to secure car seat in vehicle
- ☑ **Recline Adjuster:** Allows car seats to be reclined for rear-facing and semi-reclined or upright for forward-facing use
- ☑ **Splitter Plate:** Metal plate that connects two ends of the shoulder harnesses to a single piece of webbing used for adjustment
- ☑ **Lock-Off:** Built-in belt-locking feature on car seat that works with certain types of seat belts based on the same concept as a locking clip



*Belt path, recline adjuster, and splitter plate*

**CAR SEAT AND BOOSTER SEAT PARTS AND FUNCTIONS (CONTINUED)**

- ☑ **Locking Clip:** Holds a car seat in the proper position during normal driving when no other locking mechanism is available.
- ☑ **Tether Connector:** Piece of belt webbing with a hook connector that anchors the top of a car seat or booster seat to the vehicle. Keeps restraint from tipping forward on impact and can provide extra protection. Most frequently used on forward-facing seats. As always, check the manufacturer instructions.
- ☑ **Lower Anchor Connectors:** Connectors used in place of vehicle seat belt to secure car seat or booster seat. Can be flexible or rigid.

- ☑ **Detachable Base:** Separate car seat base that can be installed in the vehicle. Restraint (car seat) portion can be removed from the base and used as a carrier or, in some cases, turned around, and placed back in the base for the forward-facing mode.



*Detachable base and adjustment foot*

- ☑ **Adjustment Foot:** Part of detachable base that raises or lowers to allow a rear-facing car seat to be installed at the correct recline angle



*Carry handle and padding*

- ☑ **Carry Handle:** Plastic handle attached to rear-facing-only car seat that can be used to carry car seat with child in it when removed from the vehicle

- ☑ **Foot Prop/Load Leg:** Pole or leg that extends from base of a rear-facing car seat or from front of a forward-facing car seat. Used to prevent or reduce excessive forward and downward rotation in a crash.



*Foot prop/load leg and anti-rebound bar*

- ☑ **Anti-Rebound Bar:** Hard bar on some rear-facing car seats that help to reduce movement of car seat towards rear of the vehicle seat (rebound) in a crash

- ☑ **Instruction Book and Storage Location:** Both required

## HOW TO SELECT THE APPROPRIATE CAR SEAT OR BOOSTER SEAT

The best seat is one that:

- Fits the child’s age, size, and developmental levels.
- Fits the vehicle.
- The caregiver will use correctly each time.

***NEVER offer any personal opinions about specific car seat or booster seat products.***

Caregivers also choose seats based on convenience factors.

Seat Factors	Caregiver Questions
Number and position of harness strap slots	<i>Is there room for my child to grow?</i>
Automatic or 1-step harness adjustment mechanisms	<i>Is it easy to tighten and loosen the harness straps?</i>
Rear-facing-only car seat versus rear-facing convertible car seat	<i>Is it more economical for my family to purchase a convertible or 3-in-1 car seat?</i>
Detachable base options on rear-facing-only seats	<i>Is it more convenient for my family when extra bases can be purchased for every person driving my child?</i>

**NOTE:** Behaviorally immature children may need to stay in a more restrictive restraint for a longer period of time than they might need based on size.

### Used Car Seats and Booster Seats

Sometimes the caregiver has selected a used car seat or booster seat. In these cases, the CPS Technician should get a complete history of the seat and find out if it was involved in a crash.

It is the CPS Technician’s responsibility to work with the owner of the seat to review it – **NOT** to “certify” it as safe. It is the owner’s responsibility to be sure all parts are present and in good working condition.

- The Juvenile Products Manufacturer Association (JPMA) suggests replacing seats after six years if the manufacturer does not state an expiration date on the seat or in the owner’s manual. The reasons for this limit includes:
  - Possible deterioration of the plastic shell and other parts.
  - Possible loss/breakage of parts.
  - The fact that older seats will often **NOT** meet current government safety standards.
- Expiration dates vary by manufacturer. Check the manual for your specific seat.

***NEVER modify a car seat or booster seat to make it fit. Minor modifications can change the way a seat performs in a crash.***

### TIPS FOR CLEANING AND MAINTAINING CAR SEATS AND BOOSTER SEATS

- Caregivers should follow the manufacturer instructions for cleaning.
- If necessary, harnesses must be air-dried. Machine drying is too hot for the harness straps and will decrease their effectiveness.
- Use only mild soap and water and rinse with clean water.
- **NEVER** use any chemicals such as starch, bleach, or spray-on fabric care/wrinkle guard products.
- **NEVER** iron the harness.
- **NEVER** lubricate the buckle.

**Car Seats and Booster Seats that Have Been in a Crash**

Car seats and booster seats are, in most cases, made to withstand one minor crash. Seat replacement, however, is **NOT ALWAYS** required. Always review NHTSA criteria for assessing crash severity and car seat or booster seat replacement.

- ☑ No cracks or deformities (dented or bulging surfaces) can be seen by looking at the seat.
- ☑ The vehicle with the seat installed can be driven from the scene.
- ☑ The vehicle door nearest the seat is undamaged.
- ☑ There were no occupant injuries.
- ☑ Air bags did not open.

Check with the seat manufacturer for guidelines on when the product should be replaced.

**Car Seat and Booster Seat Selection Errors**

Caregivers make the following common car seat and booster seat selection errors:

- A car seat or booster seat that the child is too small for or has outgrown
- A household carrier (or other device that does **NOT** meet FMVSS 213) as a car seat
- A car seat or booster seat beyond its usable life or expiration date
- A second-hand car seat or booster seat that is missing instructions and parts and/or has an unknown history
- A car seat or booster seat that has been involved in a moderate or severe crash
- An unrepaired, recalled car seat or booster seat (**NOTE:** Especially dangerous if recall is related to crash-worthiness)

**TIPS FOR DISCUSSING CAR SEATS**

- Some caregivers who may have been given household carriers resembling a car seat may not know the difference.
- A used car seat lacking a known history/original owner may be fine, but there is no guarantee that it was not involved in a crash, has been recalled, may lack parts, or have other damage.

**CAR SEATS FOR CHILDREN WITH SPECIAL HEALTHCARE OR MEDICAL NEEDS**

Transportation of children with adaptive restraints and special equipment is becoming more common in our increasingly mobile society. Special consideration is required for a child with:

- A low birth weight or born prematurely
- Cerebral Palsy
- Breathing problems
- A cast
- Behavior issues

The approach and criteria for selecting the best car seat remain the same as with any child.

- ☑ The first option is to use a conventional car seat if it meets the child’s needs. Conventional car seats are easier to find and use and are less expensive.
- ☑ Appropriate car seat selection should be made in collaboration with the child’s medical team.
- ☑ Whenever possible, consult a CPS Technician who has had Safe Travel for All Children training. Safe Travel for All Children is a two-day enhancement curriculum for CPS Technicians that addresses serving children with special needs.

## CAR SEATS FOR CHILDREN WITH SPECIAL NEEDS (CONTINUED)

A special needs car seat is usually prescribed by a therapist and approved by a physician. It may need to be ordered from a medical supply company. All or part of the cost may be paid for by the child's health insurance.

- These seats may have higher weight limits for the internal harness or other special features to help position the child.
- Many medical conditions such as Cerebral Palsy or prematurity may make using a conventional car seat difficult. Positioning may be affected by their muscle tone, breathing problems, or other life-threatening situations.
- Specialty vests allow older children to ride lying flat when medically required.



*Special needs car seat*

Some conditions resulting in special transportation needs may not be long-term or chronic. Children may have short-term or acute conditions such as a broken leg.

- Hip casts can affect children's ability to sit up. Special restraints may be necessary.
- Larger children in hip spica casts or full body casts who are unable to sit up might need modified vests.
- Caregivers should **NEVER** transport a child with special healthcare/medical needs on a reclined vehicle seat.

*CPS Technicians must be able to recognize the general areas where children may require specially adapted restraint systems, as well as the community, regional, or national resources that are available to help meet their needs.*

### SPECIAL NEEDS RESOURCES ON THE NCPSB WEBSITE

- AAP Policy Statement, *Safe Transportation of Premature and Low Birth Weight Infants*
- AAP Policy Statement, *Safe Transportation of Newborns at Hospital Discharge*
- James Whitcomb Riley Hospital for Children *Discharge Protocol Essentials*
- AAP Policy Statement, *Transporting Children with Special Health Care Needs*
- <http://www.aap.org> or [www.preventinjury.org](http://www.preventinjury.org) for additional information.

## Child's Behavior Considerations

Caregivers will often request your advice regarding actions they can take when driving a child with problem behavior.

- The behavior may be caused by a child's medical condition, such as autism or attention deficit hyperactivity disorder (ADHD). These behaviors may distract the driver making proper restraint use for everyone in the vehicle even more important.
- When the child's behavior associated with a medical condition places him/her or others at risk because of car seat issues during travel, caregivers should be referred to the child's physician or a behavioral specialist **AND** to a CPS Technician with special training in safe transportation of children with special needs. They can then discuss the problem and possible options.
- Caregivers can be also referred to the child's school or doctor for help with behavioral issues.
- Some children with behavior issues may benefit from a car seat with a higher weight harness, a non-conventional seat, or vest.

Sometimes a child's behavior may be related to a developmental stage. They may not only resist a car seat but also temporarily resist going to bed at night or refuse certain foods.

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*"While many children with special needs can be safely transported in conventional car seats, some require additional support. It is important to know the contacts in your community who have had training in special needs transportation and can help locate the best resource for a child who requires a non-conventional child restraint to be safely transported in vehicles."*

**Marilyn J. Bull, MD, FAAP**  
**Morris Green Professor of Pediatrics**  
**Riley Hospital for Children at Indiana University Health**

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## Resources for Car Seats for Special Needs

Examples of resources and training for car seats and special needs across the nation are listed below.

- National Center for the Safe Transportation of Children with Special Healthcare Needs, based at Automotive Safety Program, Riley Hospital for Children, 800-755-0912 or [www.preventinjury.org](http://www.preventinjury.org). A database of CPS Technicians who have completed the "Safe Travel for All Children: Transporting Children with Special Healthcare Needs" is noted on their Safe Kids Worldwide Technician profile at <http://cert.safekids.org>
- CPS Special Needs Listserv "SPECIALNEEDSTRANSPORT-L," to subscribe, email [jdhavey@iupui.edu](mailto:jdhavey@iupui.edu)
- CPS in Healthcare email: [CPSforHealthcare-subscribe@yahoogroups.com](mailto:CPSforHealthcare-subscribe@yahoogroups.com)
- Safe Ride News Fact Sheets at [www.saferidenews.com](http://www.saferidenews.com) or 1-800-403-1424. National Center for the Safe Transportation of Children with Special Healthcare Needs, 800-755-0912 or [www.preventinjury.org](http://www.preventinjury.org). Includes a database of CPS Technicians who have completed the "Safe Travel for All Children: Transporting Children with Special Healthcare Needs" noted on their Safe Kids Worldwide technician profile.



## Explain Best Practices About Car Seats and Booster Seats to Caregivers

There are key questions to answer related to car seats and booster seats. Explain and demonstrate best practices to caregivers.

### Key Questions

- What is the age and weight of the child?
- Should the child be rear-facing or forward-facing?
- Does the child have any special needs?
- What type of seat is it?
- Which type of seat should the child be using?
- Is it a used seat?
- Has the seat ever been in a crash?
- Are all seat parts and pieces in good working order?
- Are there any missing parts or labels?
- Who else rides in the vehicle?

### Best Practices

1. What is the best car seat or booster seat for a child?

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2. How long should children ride in rear-facing car seats?

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3. Why might a car seat or booster seat that is missing its product information label be dangerous to use?

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4. Should a car seat or booster seat be replaced after a crash?

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5. What are some situations or conditions that may require the selection of specialized adaptive car seats?

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