

Child Passenger Safety Resource Guide 2012



In recognition of Child Passenger Safety Week, September 16-22, 2012, CSN has updated our resource guide on child passenger safety. According to the National Highway Traffic Safety Administration, motor vehicle-related injuries are the leading cause of death for children from 3 to 14 years old.

To help state Maternal and Child Health and Injury and Violence Prevention programs address the important issue of child passenger safety, this guide contains data, research articles, updates on policy and legislation, evidence-based prevention strategies, tools for program planning, and a list of national organizations that address child passenger safety.

Organizations and Agencies

AAA Foundation for Traffic Safety

The AAA Foundation for Traffic Safety works to discover the causes of traffic crashes, prevent them, and minimize injuries when they do occur. They develop dozens of focused, high-impact educational materials for drivers, pedestrians, bicyclists and other road users. These educational materials are also helpful for government agencies when developing policies regarding traffic safety.

<http://www.aaafoundation.org>

Advocates for Highway and Auto Safety

Advocates for Highway and Auto Safety is an alliance of consumer, health and safety groups and insurance companies and agents working together to make America's roads safer. Advocates encourages the adoption of federal and state laws, policies and programs that save lives and reduce injuries. This website provides access to resources for crash survivors, reports on highway safety, state-by-state driving laws, and information on federal safety programs.

<http://www.saferoads.org>

- Organizations and Agencies
- Resources
- Booster Seats / Car Seats
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Association for the Advancement of Automotive Medicine

The Association for the Advancement of Automotive Medicine (AAAM) is a professional multidisciplinary organization dedicated entirely to motor vehicle crash injury prevention and control. This website provides access to information on public policies regarding blood alcohol concentration limit, booster seats, and more.

<http://www.aaam.org>

Governors Highway Safety Association (GHSA)

The Governors Highway Safety Association (GHSA) works to promote traffic safety as a national priority, expand and deliver member support services, develop new and strengthen existing partnerships, and ensure sufficient resources to support association services and priorities. This website offers information on highway safety issues as well as GHSA publications and resources.

<http://statehighwaysafety.org>

Insurance Institute for Highway Safety/Highway Loss Data Institute

The Insurance Institute for Highway Safety is an independent, nonprofit, scientific, and educational organization dedicated to reducing the losses – deaths, injuries, and property damage – from crashes on the nation’s highways.

The Highway Loss Data Institute supports this mission through scientific studies of insurance data representing the human and economic losses resulting from the ownership and operation of different types of vehicles and by publishing insurance loss results by vehicle make and model.

<http://www.highwaysafety.org>

Kids and Cars

KidsAndCars.org researches how often children are injured, abducted, disabled, or killed because they are left unattended in or around vehicles. This website provides data and statistics on non-traffic automobile fatalities, the dangers of leaving children in or around vehicles, and information for parents. It provides information on dangers such as backovers, frontovers, heat stroke, power windows, trunk entrapment, vehicles set in motion, and more.

<http://www.childrensafetynetwork.org/links/kids-and-cars>



National Highway Traffic Safety Administration (NHTSA)

The National Highway Traffic Safety Administration website provides access to information on driving safety, vehicle safety, research, and laws and regulations related to vehicles and driving.

<http://www.nhtsa.gov>

Safe Kids USA

Safe Kids USA is a nationwide network of organizations working to prevent unintentional childhood injury, the leading cause of death and disability for children ages 1 to 14. They work to educate families, provide safety devices to families in need and advocate for better laws to help keep children safe, healthy and out of the emergency room.

<http://www.safekids.org>

SafetyBeltSafe U.S.A.

SafetyBeltSafe U.S.A. works to reduce the number of serious and fatal traffic injuries suffered by children by promoting the correct, consistent use of safety seats and safety belts.

SafetyBeltSafe U.S.A. provides consultation to advocates, parents, business leaders, the media, and professionals working in the fields of health care, traffic safety, and education.

<http://www.carseat.org>

Resources

Parent Central

This website has information for parents on a variety of topics, including: car seats, seat belts, and bicycle, school bus, and pedestrian safety. The teen driving page includes sections on impaired and distracted driving. Other topics covered include the dangers of trunk entrapment, heat stroke, back-overs, seat belt entanglement, power windows, and vehicle roll-away. It was created by NHTSA with collaboration from AAP, Safe Kids USA, GHSA, NOYS, Children’s Hospital of Philadelphia, Chuggington, and the American Driver and Traffic Safety Education Association.

<http://www.safercar.gov/parents>

Safety In and Around Cars

Three Safe Kids Buckle Up programs—Spot the Tot, Never Leave Your Child Alone and Preventing Trunk Entrapment—teach that vehicles are not toys and children of any age should never be alone in or around them.

<http://www.safekids.org/our-work/programs/buckle-up/in-and-around-cars.html>

Safety Belt and Child Restraint Laws

This webpage from IIHS provides information on safety belt laws and child restraint laws, including state-by-state tables and interactive maps.

<http://www.iihs.org/laws/SafetyBeltUse.aspx>

Booster Seats / Car Seats

Car Seats: Information for Families for 2012 from AAP

This is an updated guide to car seats and car seat safety from the American Academy of Pediatrics.

<http://www.healthychildren.org/English/safety-prevention/on-the-go/Pages/Car-Safety-Seats-Information-for-Families.aspx>

“Choose the Right Seat” Campaign from Parent Central

Car crashes are the number one killer of children 1 to 12 years old in the United States. The best way to protect them in the car is to put them in the right seat, at the right time, and use it the right way. This webpage has information on car seat and booster seat basics, installation tips, how to secure your child, instructional videos, a pregnant woman’s guide to buckling up, and a toolkit which includes PSAs, posters, and other materials.

<http://www.safercar.gov/parents/TRS/toolkit.htm>



Carpooling and Booster Seats: A National Survey of Parents (2012)

Booster seat use improves seat belt fit and reduces risk of injury for children <57 inches tall. Booster seat use decreases between ages 4 and 8 years. Children observed riding with other children frequently do not use booster seats. In this national survey of parents, Pediatrics found that a majority of parents of 4- to 8-year-old children carpool, and when they carpool booster seat use is inconsistent. Social norms and self-efficacy appear to influence booster seat use when carpooling.

<http://pediatrics.aappublications.org/content/129/2/290.full.pdf>

Effects of Booster Seat Laws on Injury Risk among Children in Crashes (2011)

Booster seat laws that cover 7- and 8-year-olds reduce crash injuries, increase restraint use and increase the number of children placed in the backseat, finds a report released by the Insurance Institute for Highway Safety. Researchers examined data from five states with stricter laws governing child restraints and booster seats and found that the stricter laws reduced child injury of any severity by 5 percent and reduced fatal and incapacitating injuries by 17 percent. Children were 3 times more likely to be properly restrained following passage of the stricter laws, according to the study. Researchers warn that children who wear improperly fitted safety belts are at risk for “seat belt syndrome,” which can lead to hip and abdominal contusions, pelvic fractures, cervical and lumbar spine injuries, and internal organ injuries. Although all 50 states have child car seat restraint laws, they do not always match up with industry recommendations. In 2009, only 55 percent of 4- to 7-year-olds were appropriately restrained, according to a National Highway Traffic Safety Administration survey.

<http://www.iihs.org/research/topics/pdf/r1163.pdf>

Effects of Vehicle Seat and Belt Geometry on Belt Fit for Children with and without Belt Positioning Booster Seats (2012)

This study from Accident Analysis & Prevention was conducted to quantify the effects of belt-positioning boosters on lap and shoulder belt fit. Postures and belt fit were measured for forty-four boys and girls ages 5-12 in four highback boosters, one backless booster, and on a vehicle seat without a booster. Belt anchorage locations were varied over a wide range. Seat cushion angle, seat back angle, and seat cushion length were varied in the no-booster conditions.

<http://www.childrensafetynetwork.org/news/effects-vehicle-seat-and-belt-geometry-belt-fit-children-and-without-belt-positioning-booster-s>

A Look Inside American Family Vehicles: National Study of 79,000 Car Seats, 2009–2010 (2011)

Although proper use of child safety seats has improved in recent years, improper or non-use of top tethers remains an area of concern, according to research released Sept. 15 by Safe Kids USA. The top tether is a strap on the seat that hooks to an anchor in the vehicle to help reduce the forward movement of a child’s head in a crash. The study included data from 79,000 child safety seat inspections during a one-year period. Researchers found that less than one-third of the forward-facing seats inspected used the top tether. Among those that were using the top tether, only 59 percent were using it correctly. The study also found a need to educate parents on criteria for switching children from rear- to forward-facing car seats. Among study participants, 41 percent of children heavier than

20 pounds and 32 percent of children older than 1 year were still riding in rear-facing car seats.

<http://www.safekids.org/assets/docs/safety-basics/safety-tips-by-risk-area/sk-car-seat-report-2011.pdf>

Yale Study Sheds Light on Child Self-Unbuckling from Car Seats (2011)

It can be quite jarring for a parent or caregiver to look in the rearview mirror while driving and see their child roaming around the backseat free of their safety restraints. A study on child self-unbuckling by Yale School of Medicine researchers reveals that most children who first unbuckle were age three and under and that many children unbuckle while the vehicle is in motion-putting them at a 3.5-fold increased risk for serious injuries.

Article: <http://news.yale.edu/2011/05/01/little-fingers-big-trouble-yale-study-sheds-light-child-self-unbuckling>

Abstract: http://www.abstracts2view.com/pas/view.php?nu=PAS11L1_2077

[CSN Publication] Childhood Injury: Cost and Prevention Facts - Child Safety Seats: How Large are the Benefits and Who Should Pay?

This fact sheet summarizes a study of total cost savings of child safety seats. It also outlines incentives for involving insurers in the distribution of child safety seats.

http://www.childrensafetynetwork.org/sites/childrensafetynetwork.org/files/child_safety_seats_childhood_injury_cost_prevention.pdf

Backovers / Frontovers

Child Back-over Deaths Devastate Families across U.S. (2012)

This news article from USA Today discusses the prevalence of back-over deaths and installing rear-view cameras as a prevention technique. “An estimated four U.S. families each week bury a loved one – often a child – who was backed over by a vehicle and killed. Safety advocates say such tragedies can largely be prevented by imposing new car safety rules that were expected to be implemented this week, but postponed. Those rules would have mandated that every new car and truck under 10,000 pounds built after September 2014 include a rear-view camera system.”

<http://www.usatoday.com/news/nation/story/2012-03-02/backover-deaths-car-rear-view-camera/53335832/1>

Nonfatal Motor-vehicle-related Backover Injuries among Children – United States, 2001-2003 (2005)

This report from CDC’s Morbidity and Mortality Weekly Report (MMWR) analyzed data from the National Electronic Injury Surveillance System All Injury Program (NEISS-AIP) and summarizes the results of that analysis, which determined that, during 2001--2003, an estimated 7,475 children (2,492 per year) aged 1--14 years were treated for nonfatal MV backover injuries in U.S. hospital emergency departments (EDs). The report also highlights differences in type and severity of MV backover injuries by age and underscores the need for effective interventions.

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5406a2.htm>

Hyperthermia

[Toolkit] Where’s Baby? Look Before You Lock

This heatstroke prevention campaign from NHTSA reminds you never to leave a child alone in a car. This toolkit provides a pledge, sample news releases, fact sheets, letters to the editor, PSAs, posters, and more.

<http://www.safercar.gov/parents/heat-involved.htm>

Hyperthermia Deaths of Children in Vehicles

This webpage provides information and statistics on hyperthermia, including interactive maps which pinpoint individual hyperthermia deaths and match them with news articles, vehicle heating dynamics, safety recommendations, and more.

<http://ggweather.com/heat>

Never Leave your Child Alone in a Car

This resource from Safe Kids provides information on car-related heat stroke in children.

<http://www.safekids.org/safety-basics/safety-guide/kids-in-and-around-cars/never-leave-your-child-alone.html>

Guidelines for Developing Educational Materials to Address Children Unattended in Vehicles (2008)

“Guidelines for Developing Educational Materials to Address Children Unattended in Vehicles” was published by CSN’s parent company, Education Development Center. The document lays out a process to develop effective educational materials that take into account communication theory. This document is designed for organizations to help prevent children from being left unattended in vehicles and heat injuries that can result from this situation. As with the prevention of any injury, educational strategies work best when they are part of a sustained program addressing a source of injury and when they are combined with legislative and policy measures that facilitate changes in behavior.

While these guidelines are tailored to heat-related injuries, the principles can be applied more generally to address other dangers children face when unattended in vehicles.

<http://www.hhd.org/sites/hhd.org/files/Children%20Unattended%20in%20Vehicles.pdf>

Heat Related Deaths to Young Children in Parked Cars: An Analysis of 171 Fatalities in the United States, 1995-2002 (2005)

This study from Injury Prevention describes the circumstances surrounding heat related deaths to young children in passenger compartments of motor vehicles.

<http://bmj-injuryprev.highwire.org/content/11/1/33.abstract>

Vehicular Entrapment and Heat Stroke in Three Children: Is it a Form of Child Neglect? (2010)

In this article from Oman Medical Journal, the medical records of three children who were entrapped inside vehicles are reviewed and their outcome following the incidents were assessed in this report. The children developed heat stroke following the incidents and survived after several days in coma but with severe cognitive functions impairment.



Two of the children were left with attention deficit hyperactivity disorder, while the third had active epilepsy.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3191648>

[CSN Presentation] Heat-related Deaths to Young Children and Child Care (2005)

This 20-minute presentation examines deaths more than 500 children exposed to heat in vehicles in 1995 - 2005, including 369 deaths to children in the passenger compartment that were heat-related.

<http://www.childrensafetynetwork.org/sites/childrensafetynetwork.org/files/Heat%20related%20deaths%2020%20min.pdf>

Trunk Entrapment

Children Dying in Car Trunks: How Adequate are Child Death Databases? (2000)

The objective of this Injury Prevention article was to determine the frequency of and circumstances surrounding child deaths resulting from inadvertent entrapment in motor vehicle trunks in the US by querying child fatality review databases. However, the study found that it was not possible to ascertain the incidence of inadvertent entrapment of children in vehicle trunks because there is no consistency in the available databases and called for the creation of a national database of child fatalities based on standardized guidelines and definitions in order to design, implement, and evaluate interventions.

<http://injuryprevention.bmj.com/content/6/3/171.short>

The Power of Survivor Advocacy: Making Car Trunks Escapable (2000)

This case history from Injury Prevention examines the four year campaign to prevent entrapment in car trunks (or boot) through the routine installation of interior trunk releases. It traces how a life altering event began a cluster of activities leading to product redesign and regulation to prevent injury.

<http://injuryprevention.bmj.com/content/6/3/167.short>

Other Resources

Are There Racial Disparities in the Use of Restraints and Outcomes in Children after Motor Vehicle Crashes? (2012)

This study from the Journal of Pediatric Surgery determines whether racial/ethnic disparities exist with respect to restraint use and outcomes in pediatric motor vehicle crash passengers. A review of passengers (<16 years old) involved in motor vehicle crashes from the National Trauma Database from 2002 to 2006 was performed. Outcome measures were emergency surgery, morbidity, mortality, and length of stay.

<http://www.childrensafetynetwork.org/news/are-there-racial-disparities-use-restraints-and-outcomes-children-after-motor-vehicle-crashes-j>

Characteristics of Crashes Involving Injured Children in Side Impacts (2012)

The objective of this study from the International



Journal of Crashworthiness was to define the crash characteristics of near-side impact crashes in which children seated in the rear rows are injured. The crash characteristics included the direction of force, heading angle, horizontal impact location, vertical impact location, extent of deformation and intrusion at the child occupant's seating position. This review of the crashes revealed differences between the current side impact test procedures and the actual side impact crashes in which children were injured.

<http://www.tandfonline.com/doi/abs/10.1080/13588265.2011.593978>

Child Passenger Safety Practices in the U.S.: Disparities in Light of Updated Recommendations (2012)

This study from the American Journal of Preventative Medicine found that in every age group, minority children had lower rates of age-appropriate car safety restraint use than white children. As kids got older, child safety seat use decreased and the number of children not wearing seat belts increased. In vehicles where the driver was not wearing a seat belt, the odds were 23 times higher that child passengers would also not be wearing seat restraints.

http://www.ajpmonline.org/webfiles/images/journals/amepre/AMEPRE_3475-stamped.pdf

Developing Safer Passengers through a School-Based Injury Prevention Program (2012)

This 2012 study from Safety Science found that motor vehicle crashes are a leading cause of death among young people. There is scope for prevention approaches that focus on passengers' safety. Student participants of the prevention program Skills for Preventing Injury in Youth (SPIY) reported fewer passenger risks. SPIY students were also more likely to protect their friends from underage driving. School-based, passenger-focused strategies may reduce passenger risk and injury.

<http://www.sciencedirect.com/science/article/pii/S0925753512001117>

Grandparents Driving Grandchildren: An Evaluation of Child Passenger Safety and Injuries (2011)

This national study from Pediatrics finds that children are less likely to suffer an injury in a motor vehicle crash when a grandparent is behind the wheel. Researchers examined crash data involving nearly 218,000 children during a five-year period. Although grandparents were the drivers in 9.5 percent of crashes, those crashes were responsible for only 6.6 percent of injuries overall. However, children were less likely to be "optimally restrained" when a grandparent was driving, even though nearly all children were reported to be placed in child restraints. The adjusted risk of injury was half as high when the vehicle was driven by a grandparent, as compared to a parent. The authors hypothesize that grandparents are more likely to drive carefully when children are in the car, but point out that many grandparents don't adhere to current child-restraint guidelines.

<http://pediatrics.aappublications.org/content/early/2011/07/13/peds.2011-0046.full.pdf>

Head Impact Contact Points for Restrained Child Occupants (2012)

Head injuries are the most common injuries sustained by children in motor vehicle crashes regardless of age, restraint, and crash direction. For rear seat occupants, the interaction of the subject with the seat back and the vehicle side interior structures has been previously highlighted. In order to advance this knowledge to the development of countermeasures, a summary of vehicle components that contributed to these injuries is needed. Therefore, the objective of this study from Traffic Injury Prevention was to create a contact map of the vehicle interior for head and face injuries to rear-seated restrained children in front crashes.

<http://www.tandfonline.com/doi/abs/10.1080/15389588.2011.642834>

[CSN Publication] Youth Riding in Pickup Truck Cargo Areas (2005)

This factsheet examines injuries and deaths caused by riding in the cargo area of pickup trucks.

<http://www.childrensafetynetwork.org/sites/childrensafetynetwork.org/files/YouthRidinginPickup-TruckCargoAreas.pdf>

[CSN Publication] Child Passenger Safety: Analysis and Summaries of FY09 State MCH Plans for National Performance Measure #10 (2010)

This publication examines National Performance Measure 10: reducing motor vehicle-related deaths to children and explores state-by-state plans to do so.

http://www.childrensafetynetwork.org/sites/childrensafetynetwork.org/files/CPS_NPM10.pdf

[CSN Presentation] Savings from Child Occupant Protection (2004)

This presentation discusses the cost-effectiveness of child safety seat programs.

<http://www.childrensafetynetwork.org/sites/childrensafetynetwork.org/files/Savings%20from%20child%20occupant%20protection.pdf>

[CSN Infographic] Child Passenger Safety (2012)

This infographic highlights the data behind child traffic fatalities, impact of child safety restraints on preventing injuries, cost benefit of child passenger safety, and safety tips.

<http://childrensafetynetwork.org/publications/child-passenger-safety-infographic>

The organizations and publications in this guide are intended as resources to help you in your work and do not necessarily reflect the position of the Children's Safety Network.



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www.ChildrensSafetyNetwork.org

CSN is a resource center for MCH and injury prevention professionals in State and Territorial health departments who are committed to reducing injuries and violence among children and adolescents. CSN is supported by the Maternal and Child Health Bureau, Health Resources and Services Administration, Department of Health and Human Services.