



# Protecting Children Around Cars: Preventing Injuries and Saving Lives





## Background

The safety of children is a top priority for parents and caregivers. However, despite our best intentions, there are many potential risks and hazards associated with children and vehicles. Every year, thousands of children are injured or killed in car-related incidents, many of which could have been prevented with the right knowledge and precautions. As experts in pediatric safety, it is our duty to educate parents and caregivers about the risks associated with children and vehicles, and to provide evidence-based strategies for preventing these risks.

In this whitepaper, we will examine seven potential risks associated with children and vehicles, including accidentally reversing on a child, kids getting injured with car windows, kids being locked in the car, heatstroke in parked cars, improper use of car seats and seat belts, children playing around parked cars, and distracted driving with children in the car. For each risk, we will explore the common scenarios and contributing factors, and suggest practical strategies for preventing these incidents from occurring.

We will also provide an overview of child development stages and associated risks, as well as statistics on child injuries and deaths around cars, to give context to the importance of this issue. Finally, we will conclude with a call to action for parents and caregivers, emphasizing the importance of taking proactive steps to protect children around cars and highlighting the need for continued research and education in this area.

Our hope is that this whitepaper will serve as a valuable resource for pediatricians and parents alike, providing the information and guidance necessary to prevent injuries and save lives. By working together, we can ensure that every child is safe and protected around vehicles.

According to the National Highway Traffic Safety Administration (NHTSA), an average of 39 children die every year from being left in hot cars, and another 2,500 are injured or killed in non-traffic incidents involving vehicles. These incidents include children being accidentally run over, getting trapped in the trunk, being strangled by power windows, and more.

Children are particularly vulnerable to these types of incidents due to their smaller size, limited ability to communicate, and lack of judgment and experience. The risks vary depending on the child's age and developmental stage. For example, infants and toddlers are at higher risk of being accidentally left in a hot car or struck by a vehicle while in a carrier or stroller, while older children are more likely to be injured by playing in or around parked cars or not wearing a seatbelt properly.

<sup>1</sup> National Highway Traffic Safety Administration. (2019). Children in and around vehicles. Retrieved from <https://www.nhtsa.gov/children-in-and-around-vehicles>

To prevent these incidents, it is crucial to understand the factors that contribute to them. Common contributing factors include parental distraction, forgetfulness, lack of awareness or knowledge, and failure to follow safety guidelines or regulations. In addition, environmental factors such as weather conditions, parking locations, and traffic patterns can also play a role.

Given the seriousness of these risks and their potential impact on families and communities, it is essential to raise awareness and promote effective prevention strategies. This paper will provide an overview of the most common risks and injuries associated with children and vehicles, along with evidence-based strategies for parents and caregivers to prevent them. By understanding the risks and adopting safe habits and routines, parents can protect their children and help prevent tragic accidents.



## Risk 1: Accidentally reversing on a child

Motor vehicles can pose a significant risk to young children, particularly when reversing. According to the National Highway Traffic Safety Administration (NHTSA), an average of 50 children are injured every week in the United States due to accidents involving vehicles in reverse. The majority of these accidents occur in residential driveways or parking lots, and young children (between the ages of one and two) are at the highest risk of injury (NHTSA, 2019).

There are several risk factors that contribute to these types of accidents. One of the primary factors is limited visibility. When reversing, drivers have a limited view of their surroundings and may not be able to see young children who are in their path. Other factors that contribute to these accidents include driver distraction, driver fatigue, and the use of drugs or alcohol.

Preventing accidents involving children and vehicles in reverse requires a multi-faceted approach. One strategy is to use physical barriers to prevent children from entering areas where vehicles are likely to be reversing. For example, a fence or gate can be installed around a driveway or parking lot to create a physical barrier that prevents children from entering the area. Another strategy is to use visual cues, such as bright-colored cones or flags, to alert drivers to the presence of children in the area. Creating habits and routines, such as always checking for children before reversing, can also help reduce the risk of accidents.

It's important to note that parental vigilance and focus are critical in preventing accidents involving children and vehicles. Parents and caregivers should always keep a close eye on young children and make sure they are in a safe location away from moving vehicles. Children should be taught about the dangers of playing near vehicles and should be reminded to stay

<sup>2</sup> Moorhead, T. (2016). Preventing accidents when backing up. *Occupational Health & Safety*, 85(7), 32-34.

<sup>3</sup> National Highway Traffic Safety Administration. (2019). Backover Prevention. Retrieved from

<https://www.nhtsa.gov/road-safety/pedestrian-safety/backover-prevention>

away from areas where vehicles are reversing. By taking these steps, parents and caregivers can help reduce the risk of accidents and keep their children safe.

Include more actionable tips from the NHTSA website such as - always walk around vehicle before backing up, keep toys and bikes out of the driveway, roll down window before backing up so you can hear what's happening outside your vehicle, install a backup camera if your vehicle doesn't have one (available after market, don't need to wait for a new car).

The website <https://www.kidsandcars.org/backovers/facts> states that in 70% of backovers, the parent or caregiver is the driver. If that can be verified elsewhere, it would be an impactful fact to include.



## Risk 2: Heatstroke in parked cars

Heatstroke is a serious and life-threatening condition that occurs when a person's body temperature rises above the normal range due to prolonged exposure to high temperatures or physical exertion. Children are particularly vulnerable to heatstroke because their bodies heat up three to five times faster than adults, and their ability to regulate body temperature is not fully developed until adolescence.

Heatstroke in parked cars is a particularly dangerous and preventable form of heatstroke. The temperature inside a parked car can rise rapidly, even on relatively mild days, and can reach lethal levels within minutes. According to data from the National Highway Traffic Safety Administration (NHTSA), an average of 38 children die each year in the United States from heatstroke after being left in a car.

Several factors can contribute to the risk of heatstroke in parked cars, including:

- Age: Children under the age of four are at the highest risk of heatstroke in parked cars.
- Time of day: The majority of heatstroke deaths in parked cars occur in the afternoon.
- Vehicle type: Dark-colored cars and those with tinted windows can heat up more quickly than lighter-colored cars or those without tinted windows.

<sup>4</sup> Centers for Disease Control and Prevention. (2021a). Heat and heat disorders. [https://www.cdc.gov/disasters/extremeheat/heat\\_guide.html](https://www.cdc.gov/disasters/extremeheat/heat_guide.html)

<sup>5</sup> National Highway Traffic Safety Administration. (2021). Child heatstroke deaths in vehicles. <https://www.nhtsa.gov/road-safety/child-heatstroke-deaths-vehicles>

<sup>6</sup> Centers for Disease Control and Prevention. (2021b). Heatstroke and children in vehicles. [https://www.cdc.gov/disasters/extremeheat/heat\\_and](https://www.cdc.gov/disasters/extremeheat/heat_and)

<sup>7</sup> National Highway Traffic Safety Administration. (2021). Child heatstroke deaths in vehicles. <https://www.nhtsa.gov/road-safety/child-heatstroke-deaths-vehicles>

<sup>8</sup> Centers for Disease Control and Prevention. (2021b). Heatstroke and children in vehicles. [https://www.cdc.gov/disasters/extremeheat/heat\\_and](https://www.cdc.gov/disasters/extremeheat/heat_and)

- Location: Heatstroke deaths in parked cars can occur in any geographic location, but are more common in warmer regions.

Preventing heatstroke in parked cars requires a combination of education, technology, and policy. The following strategies can be effective in reducing the risk of heatstroke in parked cars:

Educating parents about the risks of leaving children in parked cars: Parents should be aware of the dangers of leaving children unattended in parked cars, even for a short period of time. They should also be aware that unintentionally leaving a child in a car can happen to even the most caring, diligent parent. They should also be aware of the signs of heatstroke and what to do if they suspect their child is experiencing heatstroke.

Parents can reduce the risk of accidentally leaving a child in a parked car by developing a habit of checking the back seat of the car every time they leave the vehicle. They can also place a reminder, such as a bag or a toy, in the front seat to remind them to check the back seat before locking the car.

We should include our bag in the back message here to facilitate the habit of always checking the back seat.

Several technologies are available that can help prevent heatstroke in parked cars. For example, some car seat manufacturers offer products that use sensors to alert parents if a child is left in the car seat after the vehicle is turned off. Some newer car models also come equipped with features that can detect the presence of a child in the back seat and sound an alarm if the child is not removed before the vehicle is turned off.

Preventing heatstroke in parked cars is essential to protecting children from a preventable and deadly condition. By understanding the risk factors and strategies for prevention, parents and caregivers can take steps to keep children safe from heatstroke in parked cars.





### Risk 3: Children injured by car windows

Children are at risk of injury from car windows, which can cause serious harm or even death. According to a study conducted by the Center for Injury Research and Policy at Nationwide Children's Hospital, an average of 20 children per day are treated in U.S. emergency departments for injuries sustained from car windows.

<sup>9</sup> National Highway Traffic Safety Administration. (2021). Child heatstroke deaths in vehicles.

<https://www.nhtsa.gov/road-safety/child-heatstroke-deaths-vehicles>

<sup>10</sup> Safe Kids Worldwide. (n.d.). Preventing child heatstroke deaths. <https://www.safekids.org/preventing-child-heatstroke-deaths>

<sup>11</sup> National Highway Traffic Safety Administration [NHTSA]. (2021). Heatstroke. <https://www.nhtsa.gov/heatstroke>

<sup>12</sup> Centers for Disease Control and Prevention. (2018). Children's safety network. Retrieved from

<https://www.childrenssafetynetwork.org/infographics/20-children-day-treated-us-emergency-departments-injuries-sustained-car-windows>

Several factors can contribute to the risk of injury from car windows, including:

- Power windows: Power windows, which can be controlled with a switch or button, can pose a greater risk of injury than manual windows. This is because power windows can close with greater force and speed, and can continue to close even if an object, such as a child's finger, is in the way.
- Lack of supervision: Children left unsupervised in a car can play with the windows and accidentally cause injury to themselves or others.
- Failure to use window locks: If window locks are not engaged, children can inadvertently open windows and fall out or become trapped in the window.

Preventing injuries from car windows requires a combination of education and technology. The following strategies can be effective in reducing the risk of injuries from car windows:

- Educating parents about the risks: Parents should be made aware of the potential risks associated with car windows, and instructed to never leave a child unsupervised in a car with the windows down or unlocked.
- Using window locks: Engaging the window lock feature in a car can prevent children from accidentally opening windows or becoming trapped in them.
- Installing window guards: Installing window guards on cars can prevent children from falling out of windows.

Preventing injuries from car windows is essential to protecting children from harm. By understanding the risk factors and strategies for prevention, parents and caregivers can take steps to keep children safe around car windows.



## Risk 4: Improper Use of Car Seats & Seatbelts

Car seats and seat belts are essential safety devices designed to protect children in the event of a car crash. However, when these devices are not used properly, they can actually increase the

<sup>13</sup> American Academy of Pediatrics. (2017). Child passenger safety. Retrieved from <https://www.aap.org/en-us/about-the-aap/aap-press-room/news-features-and-safety-tips/Pages/Child-Passenger-Safety.aspx>

<sup>14</sup> National Highway Traffic Safety Administration. (2016). Child safety. Retrieved from <https://www.nhtsa.gov/equipment/car-seats-and-booster-seats#car-seat-finder>

<sup>15</sup> Safe Kids Worldwide. (n.d.). Car window safety. Retrieved from <https://www.safekids.org/tip/car-window-safety>

<sup>16</sup> American Academy of Pediatrics. (2017). Child passenger safety. Retrieved from <https://www.aap.org/en-us/about-the-aap/aap-press-room/news-features-and-safety-tips/Pages/Child-Passenger-Safety.aspx>

<sup>17</sup> Safe Kids Worldwide. (n.d.). Car window safety. Retrieved from <https://www.safekids.org/tip/car-window-safety>

<sup>18</sup> National Highway Traffic Safety Administration. (2016). Child safety. Retrieved from <https://www.nhtsa.gov/equipment/car-seats-and-booster-seats#car-seat-finder>

risk of injury to children. According to a study by the National Highway Traffic Safety Administration (NHTSA), nearly 60% of car seats are not used or installed correctly, and 20% of children between the ages of 4 and 8 who were killed in car crashes in 2019 were not restrained at all.

Some common mistakes parents and caregivers make when using car seats and seat belts include

- Choosing the wrong type of car seat for the child's age and weight
- Installing the car seat incorrectly, such as not using the right angle or not securing it tightly enough
- Placing the car seat in the wrong location in the car, such as the front seat or in front of an active airbag
- Failing to buckle the child into the car seat or seat belt properly, such as leaving straps too loose or not using the appropriate harness slots for the child's size and age

To reduce the risk of injury to children in car crashes, it is important to use car seats and seat belts correctly. The following strategies can help ensure proper use:

- Choose the right type of car seat for the child's age, weight, and height, and make sure the car seat meets federal safety standards
- Install the car seat correctly, following the manufacturer's instructions and using the appropriate angle and tightness
- Place the car seat in the back seat of the car, and never in front of an active airbag
- Buckle the child into the car seat or seat belt properly, using the appropriate harness slots and making sure the straps are snug and secure

Proper use of car seats and seat belts is critical for protecting children from injury in car crashes. Parents and caregivers should take the time to learn how to use these devices correctly, and follow the recommended guidelines for choosing, installing, and using car seats and seat belts.

<sup>19</sup> American Academy of Pediatrics [AAP]. (2018). Car safety seats: Information for families for 2018. <https://www.healthychildren.org/English/safety-prevention/on-the-go/Pages/Car-Safety-Seats-Information-for-Families.aspx>

<sup>20</sup> National Highway Traffic Safety Administration [NHTSA]. (2017). Traffic safety facts: Child restraint use in 2015-2016 – Overall results (DOT HS 812 443). <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812443>

<sup>21</sup> NHTSA. (2021). Traffic safety facts: Children (DOT HS 813 062). <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813062>

<sup>22</sup> AAP. (2018)

<sup>23</sup> NHTSA. (2015). Car seat recommendations for children. <https://www.nhtsa.gov/car-seats-and-booster-seats/car-seat-recommendations-children>

<sup>24</sup> AAP. (2018).

<sup>25</sup> NHTSA. (2015).

<sup>26</sup> AAP. (2018).

<sup>27</sup> NHTSA. (2015).

Parents should be encouraged to get their car seat installation checked before a new child is born and when they are changing car seats due to the child growing. Link: <https://cert.safekids.org/get-car-seat-checked>



## Risk 5: Children playing around parked cars

Children playing around parked cars pose a serious risk of injury or death. According to the National Safety Council (NSC), an average of 209 fatalities and 15,000 injuries occur each year in the United States as a result of "backover" incidents, in which a car backs over a person, often a child who is not visible to the driver. Children playing near parked cars may also be injured by cars that are pulling into or out of parking spots, or by opening car doors that strike them.

A variety of factors can increase the risk of injuries to children playing around parked cars. Lack of supervision is one of the most prevalent: children who are unsupervised are more likely to engage in risky behavior, such as playing in the street or around parked cars. Blocked visibility can also contribute, as cars parked in areas with obstructed views or in dimly lit areas can make it difficult for drivers to see children playing nearby.

Preventing injuries to children playing around parked cars requires a combination of education, technology, and policy. To reduce the risk of injuries, close supervision is encouraged, and parents and caregivers should ensure that children play in areas that are safe and visible to drivers. Consideration of parking policies should also come into play, as policies that require cars to park in designated areas and prohibit parking in areas with obstructed views or in dimly lit areas can help reduce the risk of injuries to children playing near parked cars.

Preventing injuries to children playing around parked cars requires a multi-faceted approach that includes education, technology, and policy. By understanding the risk factors and strategies for prevention, parents, caregivers, and policymakers can take steps to keep children safe from harm.

## Risk 6: Distracted Driving with Children in the Car

It would be great if we could add some data about how common children are killed or injured due to distracted driving. It's a common habit, and we need compelling data to stop it.

<sup>28</sup> National Safety Council. (2021). Backover fatalities. <https://www.nsc.org/home-safety/safety-topics/child-safety/backover-fatalities>

<sup>29</sup> Safe Kids Worldwide. (n.d.). Supervision. [https://www.safekids.org/safetytips/field\\_risks/supervision](https://www.safekids.org/safetytips/field_risks/supervision)

<sup>30</sup> National Highway Traffic Safety Administration. (2021). Backover prevention. <https://www.nhtsa.gov/backover-prevention>

<sup>31</sup> Safe Kids Worldwide. (n.d.). Supervision. [https://www.safekids.org/safetytips/field\\_risks/supervision](https://www.safekids.org/safetytips/field_risks/supervision)

<sup>32</sup> American Academy of Pediatrics. (2021). Child pedestrian safety. <https://www.healthychildren.org/English/s>

Distracted driving is a significant hazard on the roadways, and it becomes even more dangerous when children are in the car. The National Highway Traffic Safety Administration (NHTSA) defines distracted driving as any activity that diverts attention away from driving, including texting, using a cell phone, eating and drinking, talking to passengers, and adjusting the radio or navigation system. These distractions can be particularly hazardous when children are in the car, as they require more attention and can be unpredictable.

Studies have shown that drivers with children in the car are twice as likely to be distracted compared to drivers without children. A survey conducted by Safe Kids Worldwide found that 9 out of 10 parents reported engaging in distracting behaviors while driving with their children in the car. Furthermore, 1 in 3 parents admitted to using their phone without a hands-free device while driving with their children.

Distracted driving with children in the car poses several risks. First, it increases the likelihood of car crashes. When drivers are distracted, their reaction times are slower, and they are more likely to make errors while driving. With children in the car, distractions can become even more dangerous, as drivers may be more likely to take their eyes off the road or hands off the wheel to tend to their children.



Second, in car crashes involving children, the severity of the injuries sustained is often higher when the driver is distracted. This is because distracted drivers are less likely to take evasive action or slow down before a crash, resulting in higher impact speeds and more severe injuries.

Finally, consider the emotional trauma of a child who has been in a car crash. Being involved in a car crash can be traumatic for anyone, but it can be particularly difficult for children. Children who are involved in car crashes may experience anxiety, depression, and post-traumatic stress disorder (PTSD). Distracted driving with children in the car increases the likelihood of car crashes, which can lead to emotional trauma for both the children and the driver.

## Conclusion:

In this paper, we have discussed several safety risks for children in and around cars. These risks include heatstroke, being left alone in the car, injuries from car windows, being locked in the car, improper use of car seats and seat belts, and playing around parked cars. Additionally, we have discussed the dangers of distracted driving with children in the car.

<sup>33</sup> "Distracted Driving: What You Need to Know." Safe Kids Worldwide, <https://www.safekids.org/distracted-driving-what-you-need-know>.

<sup>34</sup> "The Dangers of Distracted Driving." Safe Kids Worldwide, <https://www.safekids.org/distracted-driving>.

<sup>35</sup> "Traffic Safety Facts: Distracted Driving 2018." National Highway Traffic Safety Administration, <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812926>.

<sup>36</sup> "The Dangers of Distracted Driving." Safe Kids Worldwide, <https://www.safekids.org/distracted-driving>.

<sup>37</sup> "Talking with Kids about Safe Driving." Centers for Disease Control and Prevention, <https://www.cdc.gov/features/passengersafety/index.html>.

It is important to note that many of these risks can be prevented through education, awareness, and proper safety measures. Parents and caregivers should be educated on the potential risks and how to prevent them. Proper safety measures, such as using car seats and seat belts correctly, should always be used to protect children while in a car.

As parents and caregivers, it is our responsibility to ensure the safety of our children. To prevent these risks, we must take action and implement safety measures. Here are some recommendations for parents and caregivers:

- Never leave a child alone in a car, even for a short amount of time.
- Always use car seats and seat belts correctly and in accordance with the manufacturer's instructions.
- Keep car windows closed when children are in the car.
- Always supervise children when they are playing around parked cars.
- Avoid driving while distracted, especially when children are in the car.
- It is important to remember that these safety measures are not just suggestions - they are necessary to protect children from harm. By following these recommendations, we can reduce the number of injuries and deaths related to children and cars.

But while much has been done to improve child safety in and around cars, there is still more work to be done. There are myriad directions that future research and prevention efforts might take over the coming years.

We look forward to efforts towards developing new technologies to prevent heatstroke and alert parents when a child is left alone in a car; educating parents and caregivers on the importance of using car seats and seat belts correctly; raising awareness about the dangers of distracted driving, especially with children in the car; and developing new safety measures to prevent injuries from car windows, such as automatic window locking systems.

Children are our most precious cargo, and it is our responsibility to keep them safe in and around cars. By taking action and implementing safety measures, we can prevent many of the risks discussed in this paper. However, it is also important to continue research and prevention efforts to improve child safety and prevent future tragedies. We must all work together to ensure the safety and well-being of our children.