Motor Vehicle Occupant Safety Fact Sheet

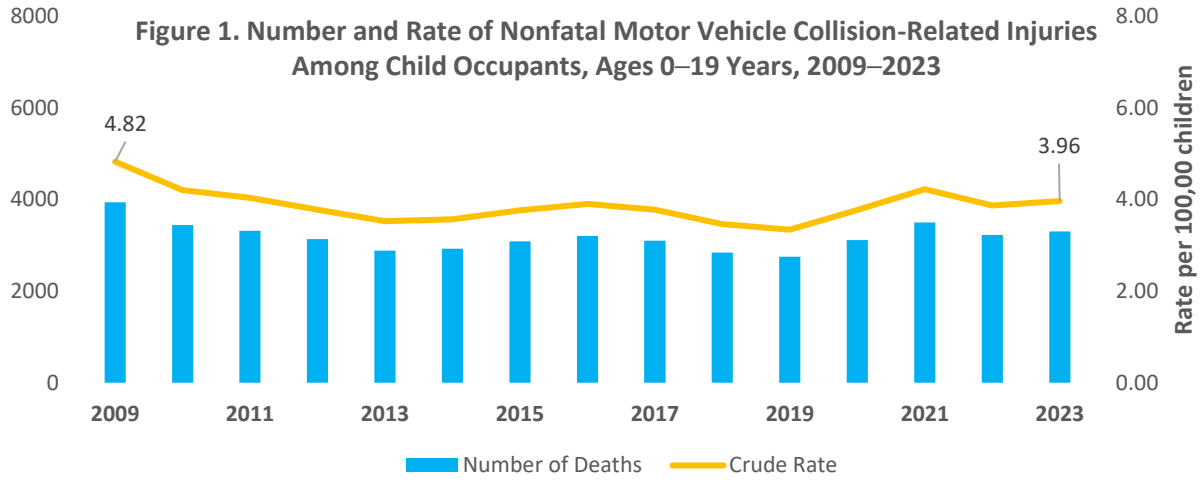
LAST UPDATED August 2025

In 2023, 3,302 children between the ages of 0 and 19 years died as occupants in motor vehicle collisions and nearly 355,399 more were nonfatally injured. [1]

This fact sheet focuses on children between the ages of 0 and 19 years who suffered fatal and nonfatal injuries as occupants in motor vehicle collisions (MVCs) between 2009 and 2023. Also included are data on not-in-traffic incidents involving pediatric vehicular heatstroke deaths and fatal and nonfatal backover-related injuries.

Fatal Injuries

- In 2023, 3,302 children died as occupants in MVCs at a rate of 3.96 per 100,000 children (Figure 1).[1,2]
- Between 2009 and 2023, the rate of MVC-related fatal injuries among child occupants decreased by 18 percent (4.82 and 3.96 per 100,000 children, respectively).[1,2]



- In addition to child occupants killed in MVCs, children also died due to pediatric vehicular heatstroke (PVH) when they were either left in a vehicle or gained access to a vehicle on their own, allowing a child's temperature to rise to deadly levels quickly.
    - In 2023, 29 children ranging in age from 0 to 14 years died as a result of PVH or suspected PVH.[3]

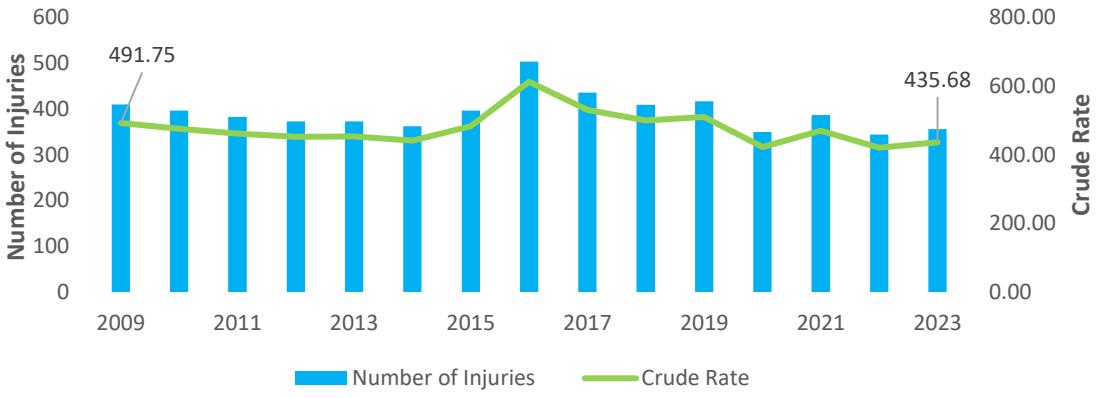
- Between 2009 and 2023, 585 children — or 39 per year — have died as a result of PVH.[3] Of those, 55 percent were children unknowingly left in vehicles, 26 percent were children who gained access to vehicles on their own and 14 percent were children knowingly left in vehicles.[3]
- Children under the age of 4 years account for 88 percent of PVH deaths, with children under 2 years of age accounting for 55 percent. [3]

- On average, 2 children die each week as a result of backover incidents. These incidents typically occur when a vehicle is backing out of a driveway or parking space and an unattended child is struck after not being seen by the driver. Children under the age of 5 years old are at the greatest risk of being killed or seriously injured as a result of backover incidents.[4] In over 70 percent of cases, the driver was a parent or close relative.[4]

Nonfatal Injuries

- An estimated 355,399 child occupants were nonfatally injured in MVCs in 2023, at a rate of 435.68 per 100,000 children (Figure 2).[2,5]

Figure 2. Number and Rate of Nonfatal Motor Vehicle Collision-Related Injuries Among Child Occupants, Ages 0–19 Years, 2009–2023



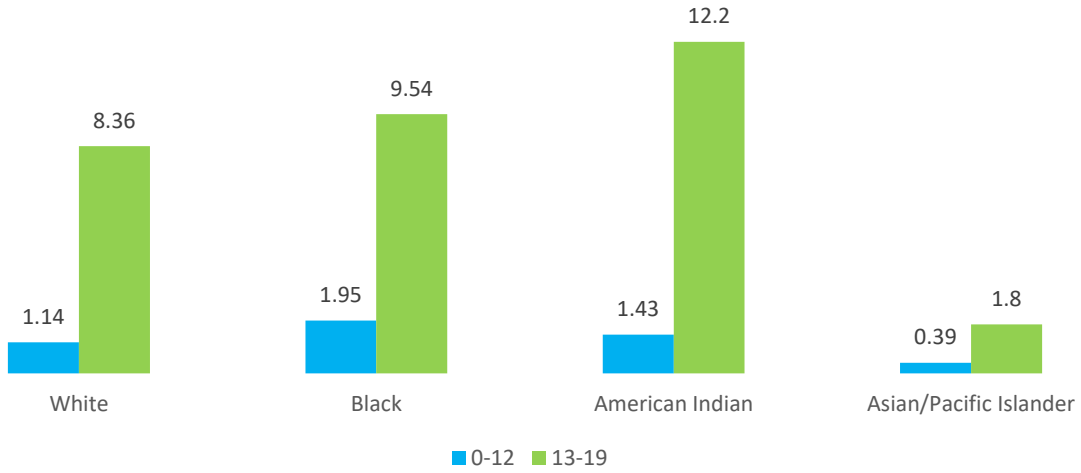
- Between 2009 and 2023, the rate of nonfatal MVC-related injuries among child occupants decreased by 11 percent (491.75 and 435.68 per 100,000 children, respectively).[1,2]

- On average, about 48 children suffer nonfatal injuries each week as a result of backover incidents.[4]

Risk Factors

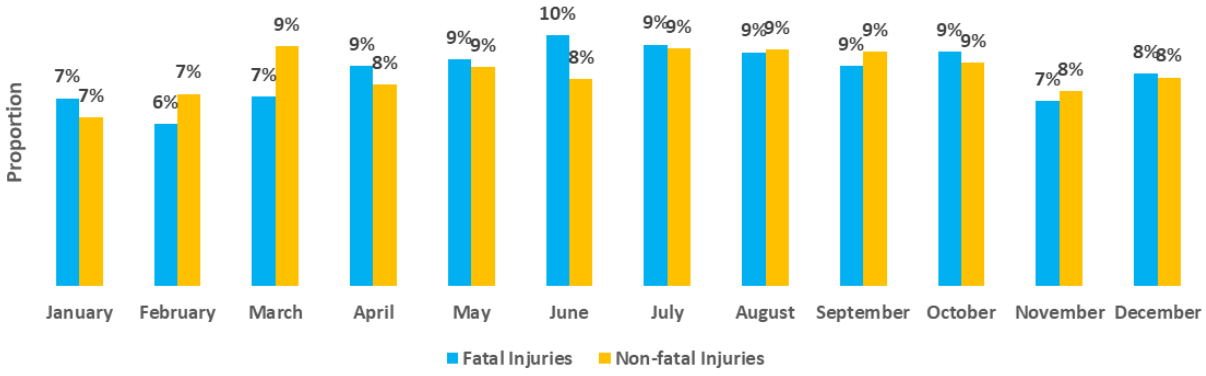
- **Age:** In 2023, children ages 15 to 19 years accounted for 77 percent of nonfatal MVC-related injuries among child occupants. Child occupants in this age group died at nearly 9 times the rate of children ages 0 to 14 (11.47 vs. 1.29 per 100,000 children, respectively).[1,2] Children ages 0 to 4 years accounted for 7 percent and those ages 5 to 9 years for 6 percent of nonfatal MVC-related injuries among child occupants. Children ages 10 to 14 years accounted for 10 percent.[1]
- **Gender:** In 2023, 65 percent of child occupants fatally injured in MVCs were male, while among nonfatal MVC-related occupant injuries, 51.6 percent were male and 48.4 percent were female.[1]
- **Race:** In 2023, the rates of fatal MVC-related injuries among child occupants were highest among American Indian/Alaska Native children (1.43 per 100,000 among ages 0–12 and 12.2 per 100,000 among ages 13–19) and lowest among Asian and Pacific Islander children (0.39 and 1.8 per 100,000, respectively).[1] [2] The risk of fatal injury varied by age (Figure 3). Among children under age 13 years, the risk was highest among Black/African American and American Indian/Alaska Native children, who were about 1.7 and 1.3 times more likely, respectively, to die than White children of the same age. Among children ages 13 to 19 years, the risk was highest among American Indian/Alaska Native and Black teens, who were about 6.8 and 5.3 times more likely, respectively, to die than Asian/Pacific Islanders. It is also noteworthy that within each racial group, teens had substantially higher rates than younger children, with White teens about 7.3 times more likely to die as an occupant in an MVC than younger White children.

Figure 3. Rates of Fatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Race and Age Group, 2023



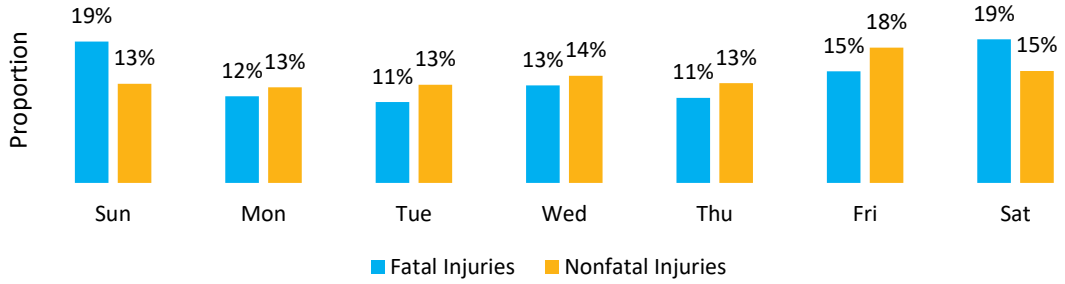
- **Month:** Month: Fatal MVC-related injuries among child occupants were more frequent between May and July (30 percent), while nonfatal MVC-related injuries among child occupants were more frequent between May and July (26 percent) and August and October (26 percent).

Figure 4. Distribution of Fatal and Nonfatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Month, Ages 0-19 Years, 2023



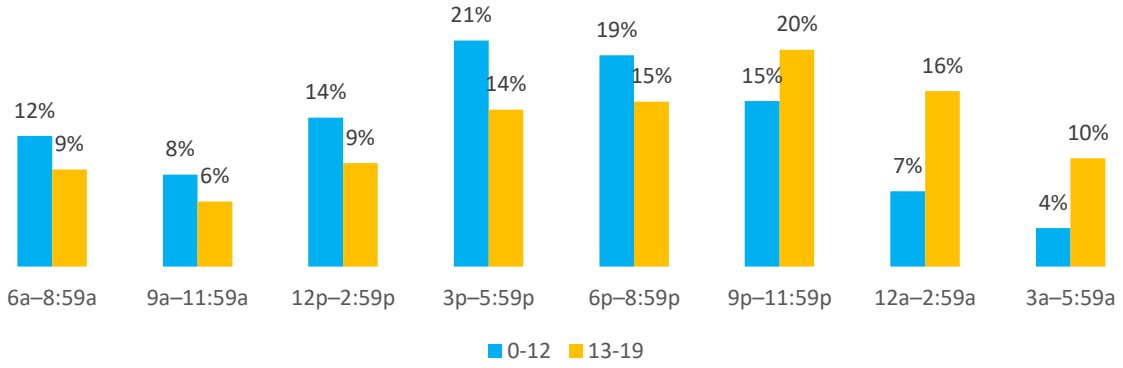
- **Day of the Week:** In 2023, fatal MVC-related injuries among child occupants occurred most often on weekends, with both Saturday and Sunday each accounting for 19 percent of fatalities. Nonfatal injuries were most frequent on Fridays (18 percent), followed by Saturdays (15 percent) and Wednesdays (14 percent) (Figure 5).[1]

Figure 5. Distribution of Fatal and Nonfatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Day of Week, Ages 0–19 Years, 2023



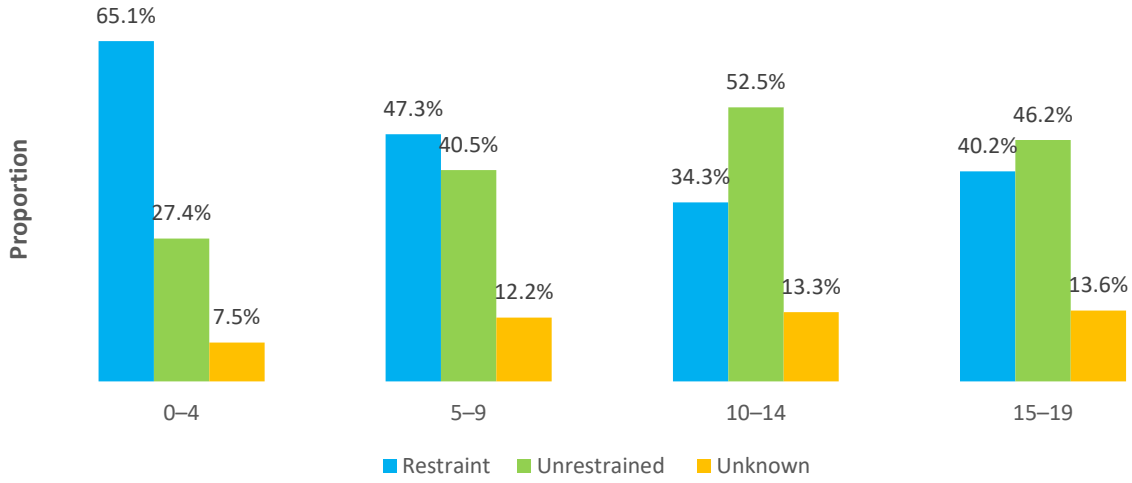
Time of Day: Patterns in fatal MVC-related injuries differed notably by age group (Figure 5). Among children ages 0 to 12 years, fatalities peaked in the late afternoon, with the highest proportion occurring between 3 PM and 5:59 PM (21 percent), followed closely by 6 PM to 8:59 PM (19 percent) and 9 PM to 11:59 PM (15 percent). In contrast, among teens ages 13 to 19 years, fatalities peaked much later in the day, with the highest proportion occurring between 9 PM and 11:59 PM (20 percent), followed by 12 AM to 2:59 AM (16 percent) and 6 PM to 8:59 PM (15 percent).

Figure 6. Distribution of Fatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Time of Day and Age Group, Ages 0–19 Years, 2023



- **Restraint Use:** Among fatal MVC-related injuries among child occupants for which restraint use was known, 43.9 percent were unrestrained. Restraint use varied by age, ranging from a high of 65.1 percent among children ages 0 to 4 years (27.4 percent unrestrained) to a low of 34.3 percent among children ages 10 to 14 years (52.5 percent unrestrained). Teens ages 15 to 19 years also had low restraint use (40.2 percent restrained, 46.2 percent unrestrained) (Figure 7). [1]

Figure 7. Distribution of Fatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Restraint Use and Age Group, 2023



- **Occupant Type and Position:** Children ages 15 to 19 years fatally injured as occupants in MVCs in 2023 were most often in the front seat (94 percent). Similarly high proportions of front-seat occupancy were observed among children ages 0 to 4 years (93 percent) and 5 to 9 years (92 percent), while slightly lower proportions were seen among those ages 10 to 14 years (89 percent).[1]
- **Roadway Surface Conditions:** Most (82 percent) MVCs in which a child occupant was fatally injured in 2023 occurred on dry roads. Of the remainder, 13 percent occurred on wet roads, 3 percent in snow/ice/frost/slush conditions and 5 percent involved other or unspecified roadway surface conditions.[1]
- **Intersection:** In 2023, 25 percent of fatal and 58 percent of nonfatal injuries among child occupants occurred at roadway intersections.
- **Geographic Location:** The rates of fatal MVC-related injuries among child occupants varied considerably between states for 2022–2023 (Table 1). Among the states with stable rates for this period, rates were highest in **Wyoming** (12.02 per 100,000 children), **Mississippi** (9.15), and **Montana** (9.32), and lowest in **Massachusetts** (1.84), **New York** (1.78), and **New Jersey** (1.48). More than half (51 percent) of the fatal MVC-related injuries among child occupants in 2023 occurred on urban roads.[1]

Table 1. Number and Rate per 100,000 Children of Fatal MVC-Related Injuries Among Child Occupants by State, U.S., Ages 0–19 Years, 2022–2023[1,2]

State	Number	Rate	State	Number	Rate	State	Number	Rate	State	Number	Rate
AK	10	2.59*	ID	47	4.44	MT	49	9.32	RI	11	2.30*
AL	150	5.91	IL	213	3.49	NE	46	4.29	SC	153	5.97
AR	97	6.17	IN	155	4.37	NV	60	3.95	SD	23	4.68
AZ	198	5.54	KS	101	6.47	NH	11	1.91*	TN	227	6.53
CA	537	2.81	KY	120	5.32	NJ	66	1.48	TX	778	4.64
CO	143	5.20	LA	138	5.81	NM	68	6.63	UT	70	3.35
CT	44	2.66	MA	57	1.84	NY	160	1.78	VT	13	4.81*
DC	---	---	MD	65	2.14	NC	259	4.93	VA	128	3.03
DE	32	6.71	ME	27	4.76	ND	18	4.30*	WA	125	3.41
FL	462	4.74	MI	136	2.86	OH	202	3.50	WV	42	5.29
GA	245	4.32	MN	73	2.52	OK	141	6.55	WI	108	3.83
HI	---	---	MO	208	6.77	OR	78	4.16	WY	35	12.02
IA	79	4.79	MS	140	9.15	PA	164	2.73			

**Rates based on small numbers (≤20 fatal injuries) may be unstable and should be interpreted with caution.*

--- State-level counts and rates based on fewer than 10 deaths have been suppressed.

Cost of Fatal and Nonfatal Injuries[*,†]

- It is estimated that the combined cost of fatal and nonfatal MVC-related occupant injuries among children ages 0–19 years in the U.S. in 2023 totaled $92.55 billion.
- Fatal MVC-related occupant injuries in this age group in 2023 totaled $47.59 billion, the vast majority of which (>99 percent) is attributed to the value of statistical life. [6]

[*] Cost of injury data calculated using most recent year of data available within the CDC's Web-based Injury Statistics Query and Reporting System (WISQARS) Cost of Injury Reports application for fatal and nonfatal injuries, which only includes nonfatal injuries that were serious enough to require an ER visit. Total combined medical and work loss costs are likely underestimated, as WISQARS cost estimates do not include ER treatment costs for injured children who were hospitalized.

[†] The 2019 cost of injuries is more than 6 times as high as comparable estimate in 2013 because of the including the cost of diminished quality of life and mortality cost based on value of statistical life, which represents a value that is approximately 10 times as high as the value attributed to mortality based on foregone employment compensation, which was used in the previous estimate. Accessed December 16, 2021. https://www.cdc.gov/mmwr/volumes/70/wr/mm7048a1.htm

- Nonfatal MVC-related occupant injuries in 2023 totaled $44.96 billion. The majority of these costs (approximately 76 percent) were incurred for nonfatal injuries that resulted in hospitalization ($33.95 billion), while the remainder were for injuries treated and released from the emergency department ($11.01 billion). The 2023 cost estimate for nonfatal injuries includes combined medical care and work loss costs of $6.70 billion and quality of life loss costs of $38.28 billion.[6]

Table 2. Cost estimates associated with MVC-related occupant injuries among children ages 0 to 19 years in 2023.

Cost	Fatal	Nonfatal		Combined (row)
		ER Treated and Released	Hospitalization	
Medical	$32.23 million	$3.05 billion	$1.73 billion	**$4.81 billion**
Work Loss	--	$1.00 billion	$892.80 million	**$1.89 billion**
Quality of Life Loss	--	$6.96 billion	$31.32 billion	**$38.28 billion**
Value of Statistical Life	$47.55 billion	--	--	**$47.55 billion**
Combined (column)	**$47.59 billion**	**$11.01 billion**	**$33.95 billion**	**$92.55 billion**

For more information or questions on the information contained in this factsheet, please contact the SKW Research Department at: adauda@safekids.org

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