

Motor Vehicle Occupant Safety Fact Sheet

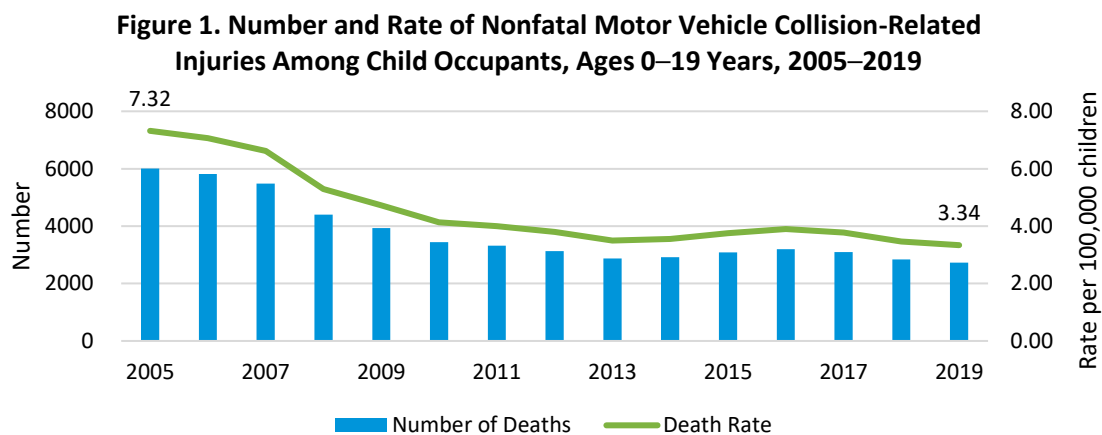
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In 2019, more than 2,700 children between the ages of 0 and 19 years died as occupants in motor vehicle collisions and nearly 416,400 more were nonfatally injured. ¹

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 2005 and 2019. Also included are data on not-in-traffic incidents involving pediatric vehicular heatstroke deaths and fatal and nonfatal backover-related injuries.

Fatal Injuries

- In 2019, 2,724 children died as occupants in MVCs at a rate of 3.34 per 100,000 children (Figure 1).^{1,2}
- Between 2005 and 2019, the rate of MVC-related fatal injuries among child occupants decreased by 54 percent (7.32 and 3.34 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 2020, 26 children ranging in age from 0 to 14 years died as a result of PVH or suspected PVH.³

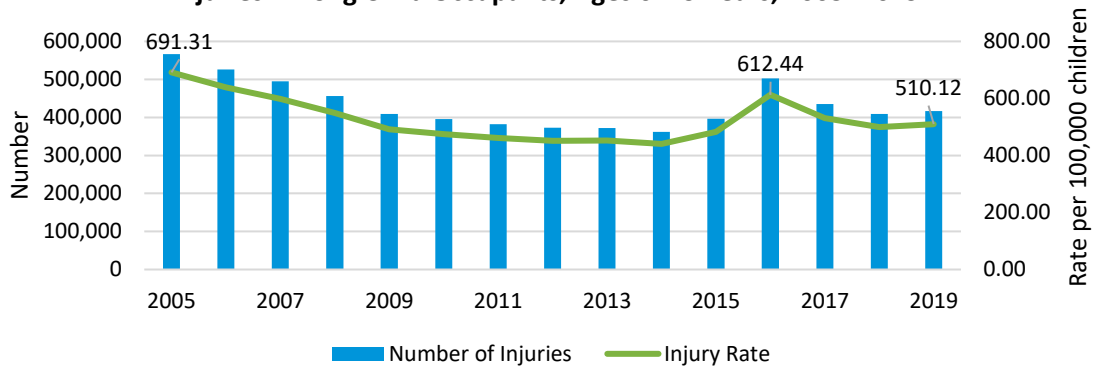


- Between 2001 and 2020, 782 children — or 39 per year — have died as a result of PVH.³ Of those, 55 percent were children unknowingly left in vehicles, 26 percent were children who gained access to vehicles on their own and 14 percent were children knowingly left in vehicles.³
- Children under the age 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 416,389 child occupants were nonfatally injured in MVCs in 2019, at a rate of 510.12 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, 2005–2019



- Between 2005 and 2019, the rate of nonfatal MVC-related injuries among child occupants decreased by 26 percent (691.31 and 510.12 per 100,000 children, respectively).^{1,2}
- On average, about 48 children suffer nonfatal injuries each week as a result of backover incidents.⁴



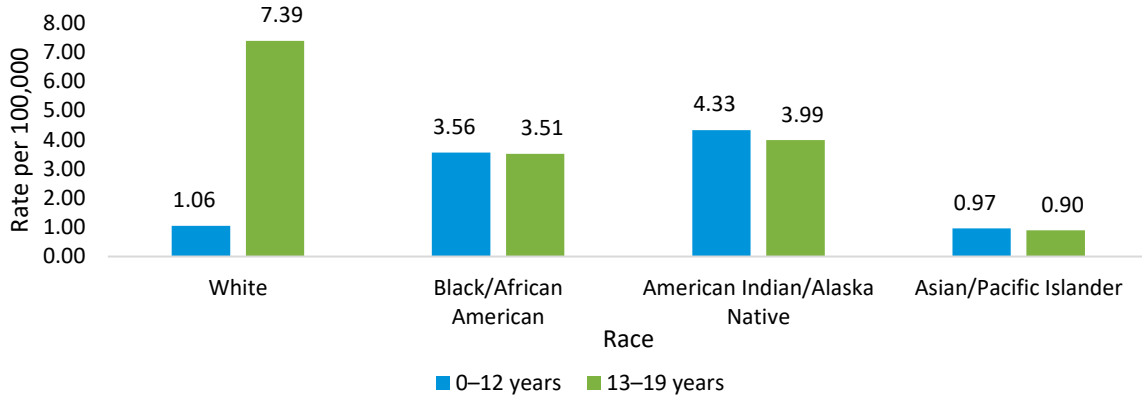
Risk Factors

- **Age:** In 2019, children ages 15 to 19 years accounted for 71 percent of nonfatal MVC-related injuries among child occupants. Child occupants in this age group died at nearly 7 times the rate of children ages 0 to 14 (9.15 vs. 1.32 per 100,000 children, respectively).^{1,2} Children ages 0 to 4 years and 5 to 9 years accounted for equal proportions of both fatal (9 percent each) and nonfatal (16 percent each) MVC-related injuries among child occupants in 2019, while children ages 10 to 14 years accounted for 11 percent of fatal and 15 percent of nonfatal injuries.¹
- **Gender:** In 2019, 62 percent of child occupants fatally injured in MVCs were male, while male and female children accounted for equal proportions of nonfatal MVC-related occupant injuries (50 percent each).¹
- **Race:** In 2018*, the rates of fatal MVC-related injuries among child occupants were highest among American Indian/Alaska Native children (4.11 per 100,000 children) and lowest among Asian and Pacific Islander children (0.93 per 100,000 children).^{1,2} The risk of fatal injury varied by age (Figure 3). d. Among children under age 13 years, the risk was highest among American Indian/Alaska Native and Black/African American children, who were about 4 and 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 White teens who were about 6 and 4 times more likely, respectively, to die than Asian/Pacific Islanders. It is also noteworthy that the risk within racial groups between the two age groups are similar except for White children where teens are 7 times more likely to die as an occupant in a MVC than younger White children.

* 2019 data on race unavailable at the time of publication.

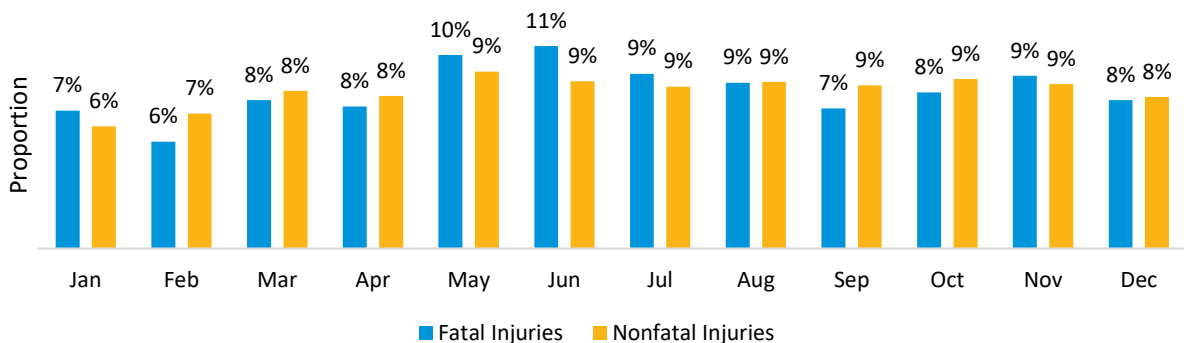


Figure 3. Rates of Fatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Race and Age Group, 2018



- **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).

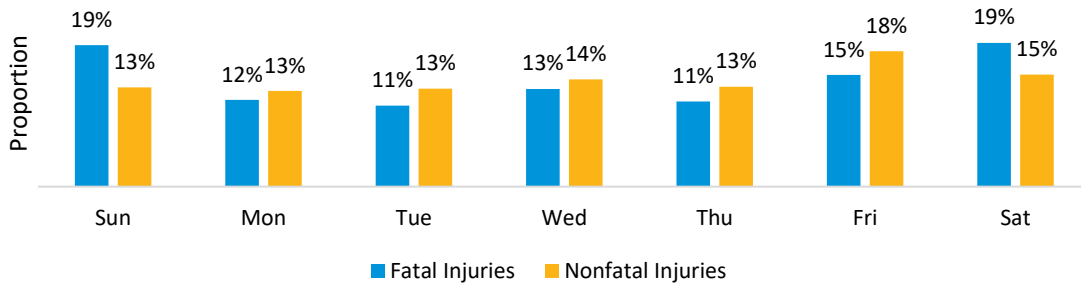
Figure 4. Distribution of Fatal and Nonfatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Month, Ages 0-19 Years, 2019



- **Day of the Week:** In 2019, more fatal MVC-related injuries among child occupants occurred on either a Friday (15 percent), Saturday (19 percent) or Sunday (19 percent) than on any other weekday (Figure 4). Slightly more nonfatal MVC-related injuries among child occupants in 2019 occurred on Fridays (18 percent) than other weekdays.¹

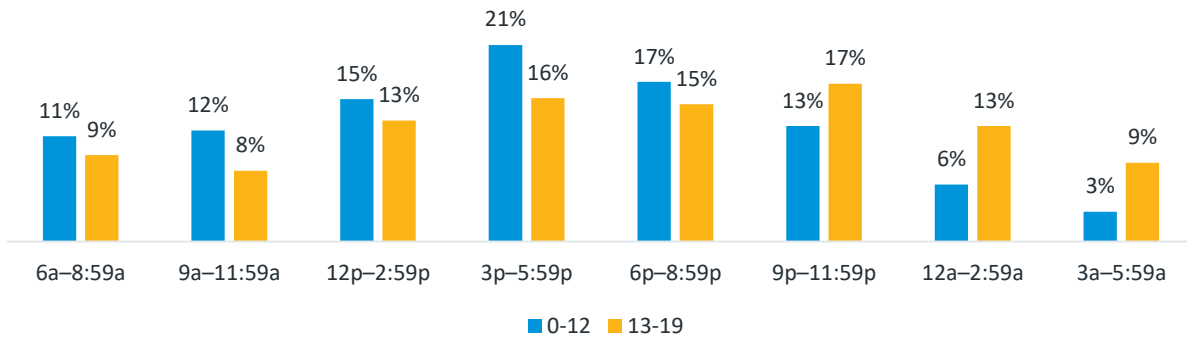


Figure 5. Distribution of Fatal and Nonfatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Day of Week, Ages 0–19 Years, 2019



Time of Day: Among both children ages 0 to 12 years and 13 to 19 years, the number of fatal injuries increased between the hours of 9 AM and 5:59 PM (Figure 5).¹ However, while deaths decrease throughout the remainder of the day among children ages 0 to 12, deaths among teens do not begin to decrease until after midnight.

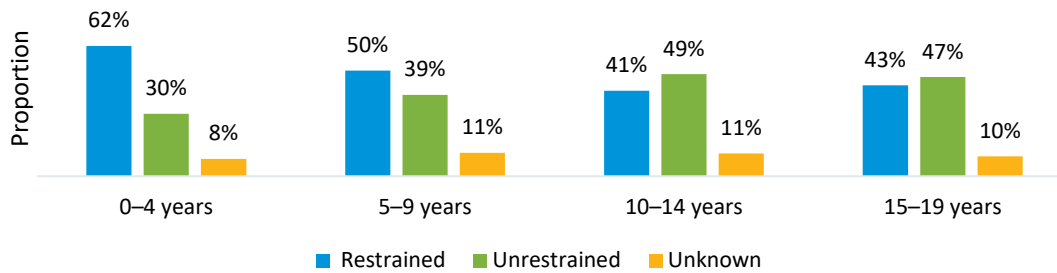
Figure 6. Distribution of Fatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Time of Day and Age Group, Ages 0–19 Years, 2019



- Restraint Use:** Among the 2,460 fatal MVC-related injuries among child occupants in 2019 for which restraint use is known, 45 percent were unrestrained. Restraint use varied by age and was lowest among children ages 10 to 14 years and 15 to 19 years (Figure 7).¹



Figure 7. Distribution of Fatal Motor Vehicle Collision-Related Injuries Among Child Occupants by Restraint Use and Age Group, 2019



- Occupant Type and Position:** Children ages 15 to 19 years fatally injured as occupants in MVCs in 2019 were most often (74 percent) passengers in the front seat. Younger children were much less likely to be in the front row when fatally injured (17 percent for children ages 10 to 14 years, 6 percent for ages 5 to 9 years and 3 percent for children under age 5 years).¹
- Teen Drivers:** About 59 percent of child occupants ages 15 to 19 years fatally or nonfatally injured in MVCs in 2019 were drivers.¹ Of fatally injured teen drivers, 41 percent were reported to be distracted, 37 percent were reported to be speeding and 2 percent were reported to be drowsy at the time of the crash.¹
- Roadway Surface Conditions:** Most (80 percent) MVCs in which a child occupant was fatally injured in 2019 occurred on dry roads. Of the remainder, 12 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 2019, 55 percent of fatal and 22 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 2018–2019 (Table 1). Among the states with stable rates for this period, rates were highest in **Wyoming, South Dakota** and **Montana** (9.09, 7.88 and 7.85 per 100,000 children, respectively) and the lowest in **Massachusetts, New York,** and **New Jersey** (1.05, 1.08, and 1.27 per 100,000 children, respectively). More than half (56 percent) of the fatal MVC-related injuries among child occupants in 2019 occurred on rural 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, 2018–2019^{1,2}

State	Number	Rate	State	Number	Rate	State	Number	Rate	State	Number	Rate
AK	15	3.77*	ID	41	4.15	MT	40	7.85	RI	---	---
AL	182	3.53	IL	115	1.82	NC	211	4.08	SC	145	5.82
AR	102	6.53	IN	157	4.48	ND	14	3.49*	SD	38	7.88
AZ	152	4.24	KS	92	5.86	NE	63	5.94	TN	192	5.73
CA	212	2.35	KY	108	4.81	NH	16	2.73*	TX	684	4.17
CO	109	3.86	LA	114	4.72	NJ	55	1.27	UT	52	2.53
CT	36	2.16	MA	33	1.05	NM	59	5.52	VA	119	2.84
DC	---	---	MD	78	2.61	NV	35	2.31	VT	13	4.79
DE	19	4.15*	ME	18	3.19*	NY	98	1.08	WA	67	1.82
FL	389	4.13	MI	134	2.77	OH	178	3.07	WI	80	2.80
GA	219	3.91	MN	64	2.11	OK	109	5.15	WV	42	5.19
HI	10	1.51*	MO	160	5.23	OR	82	4.23	WY	27	9.08
IA	65	3.97	MS	120	7.63	PA	134	2.24			

*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 2019 totaled at least \$45.27 billion.
- Fatal MVC-related occupant injuries in this age group in 2019 totaled at least \$13.38 billion, the vast majority of which (>99 percent) is attributed¹ to the value of statistical life.⁶
 - Nonfatal MVC-related occupant injuries in 2019 totaled at least \$31.89 billion. The majority of these costs (80 percent) were incurred for nonfatal injuries that resulted in emergency department (ED) treatment and release (\$25.67 billion) and the remainder of costs were

[†] 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>



incurred for hospital admissions (\$6.22 billion). The 2019 cost estimate for nonfatal injuries is made up of combined medical care and work loss cost of \$4.55 billion and life quality loss cost of \$27.34 billion.⁶

Table 2. Cost estimates associated with MVC-related occupant injuries among children ages 0 to 19 years in 2019.

Cost	Fatal	Nonfatal		Combined (row)
		ER Treated and Released	Hospitalization	
Medical	\$9.98 million	\$1.50 billion	\$1.73 billion	\$3.25 billion
Work Loss	--	\$761.91 million	\$560.75 million	\$1.32 billion
Quality of Life Loss	--	\$23.41 billion	\$3.93 billion	\$27.33 billion
Value of Statistical Life	\$13.37 billion	--	--	\$13.37 billion
Combined (column)	\$13.38 billion	\$25.67 billion	\$6.22 billion	\$45.27 billion

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

References

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