

## SAFETY RECOMMENDATIONS

"Parents and other caregivers need to be educated that a vehicle is not a babysitter or play area ... but it can easily become tragedy"

**NEVER LEAVE A CHILD UNATTENDED IN A VEHICLE. NOT EVEN FOR A MINUTE !**

**IF YOU SEE A CHILD UNATTENDED IN A HOT VEHICLE CALL 9-1-1.**

Be sure that all occupants leave the vehicle when unloading. Don't overlook sleeping babies

Always lock your car and ensure children do not have access to keys or remote entry devices. Teach children that vehicles are never to be used as a play area.

**IF A CHILD IS MISSING, ALWAYS CHECK THE POOL FIRST, AND THEN THE CAR, INCLUDING THE TRUNK.**

Keep a stuffed animal in the carseat and when the child is put in the seat place the animal in the front with the driver. Or place your purse, briefcase or cell phone in the back seat as a reminder that you have your child in the car.

Make "look before you leave" a routine whenever you get out of the car.

Have a plan that your childcare provider will call you if your child does not show up for school.

## HEATSTROKE

On average 37 Children die from heat related deaths after being trapped inside vehicles.



Even the best of parents or caregivers can unknowingly leave a sleeping baby in a car and the end result can be injury or death.

39

Total number of U.S. heatstroke deaths of children left in cars, 2016.

24

Total number of U.S. heatstroke deaths of children left in cars, 2015.

700

Total number of U.S. heatstroke deaths of children left in cars, 1998-present.

37

Average number of U.S. child heatstroke fatalities per year since 1998.



Special thanks to [noheatstroke.org](http://noheatstroke.org) and the National Safety Council for their support of this research and website.

Warren County Sheriff's Office  
200 Skyline Vista Drive  
Front Royal, VA 22630  
Phone: 540.635.4128  
[www.warrencountysheriff.org](http://www.warrencountysheriff.org)

## Warren County Sheriff's Office

### Child Passenger Safety Heatstroke Awareness

Michael A. Arnold, Sheriff



### Information and Tips to prevent and understand heatstroke

Warren County Public Safety Building  
200 Skyline Vista Drive  
Front Royal, VA 22630  
Phone: 540.635.4128  
[www.warrencountysheriff.org](http://www.warrencountysheriff.org)

# Child Passenger Safety - Heatstroke

## Heatstroke Deaths of Children in Vehicles

by [Jan Null](#), CCM Department of Meteorology & Climate Science  
San Jose State University  
Updated January 30, 2016

### CIRCUMSTANCES

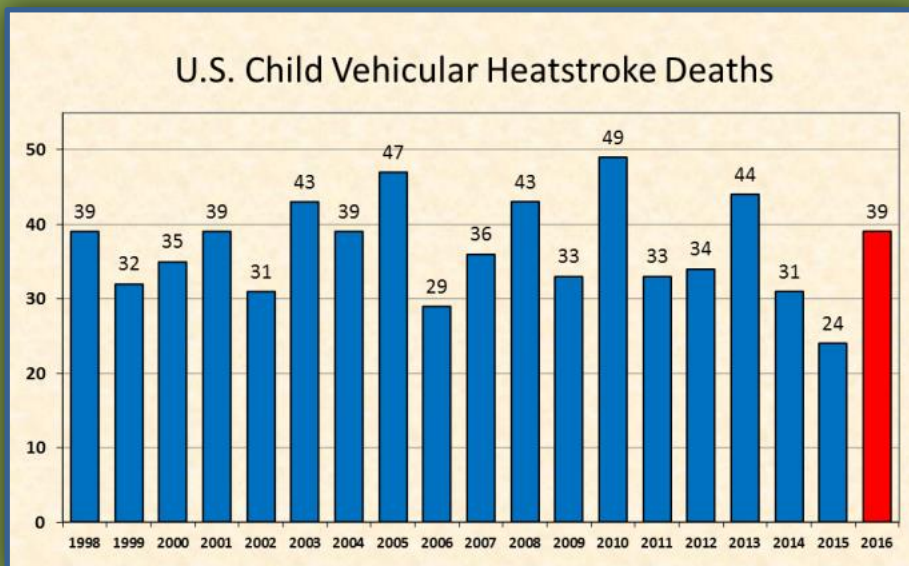
An examination of media reports about the 700 child vehicular heatstroke deaths for a 19-year period (1998 through 2017) shows the following circumstances:

- 54% - child "forgotten" by caregiver (376 Children)
- 28% - child playing in unattended vehicle (198)
- 17% - child intentionally left in vehicle by adult (120)
- 1% - circumstances unknown (6)

### AGES

The children that have died from vehicular heatstroke in the United States (1998-2016) have ranged in age from 5 days to 14 years. More than half of the deaths are children under 2 years of age. Below are the percentage of total (700) deaths (and number of deaths).

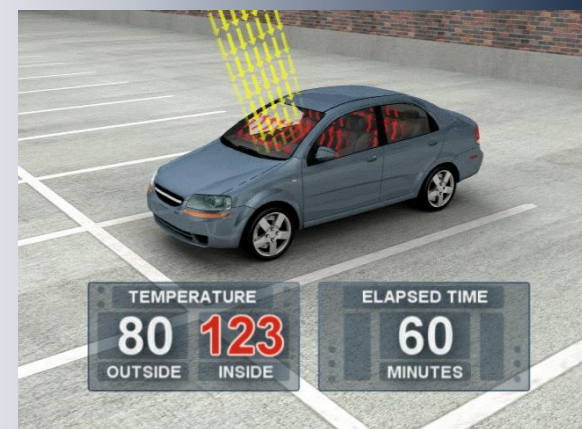
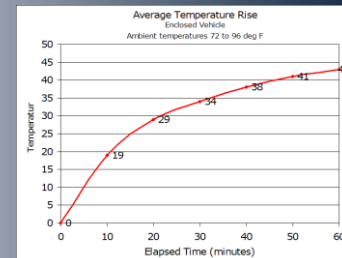
- < 1-year old = 32% (225)
- 1-year old = 22% (154)
- 2-years old = 20% (136)
- 3-years old = 13% (92)
- 4-years old = 6% (42)
- 5-years old = 3% (23)
- 6-years old = 1% (9)
- 7-years old = < 1% (3)
- 8-years old = < 1% (3)
- 9-years old = < 1% (2)
- 10-years old = < 1% (3)
- 11-years old = < 1% (2)
- 12-years old = < 1% (1)
- 13-years old = < 1% (1)
- 14-years old = < 1% (3)
- Unknown = < 1% (1)



### VEHICLE HEATING STUDY

Studied temperature rise in enclosed cars on 16 dates between May 16 and Aug 8, 2002. (see graph of 16 case days) Ambient temperature were between 72 and 96 degrees F. Dark Blue mid-size sedan with medium grey interior, also tested with windows "cracked".

Published in *Pediatrics* 2005



### VEHICLE HEATING DYNAMICS

The atmosphere and the windows of a car are relatively "transparent" to the sun's shortwave radiation (yellow in figure below) and are warmed little. However this shortwave energy does heat objects that it strikes. For example, a dark dashboard, steering wheel or seat temperatures often are in the range of 180 to over 200 degrees F. These objects (e.g., dashboard, steering wheel, childseat) heat the adjacent air by conduction and convection and also give off longwave radiation (red) which is very efficient at warming the air trapped inside a vehicle.

#### HEATING STUDY SUMMARY

Average elapsed time and temperature rise

10 minutes ~ 19 deg F	60 minutes ~ 43 deg F
20 minutes ~ 29 deg F	1 to 2 hours ~ 45-50 deg F
30 minutes ~ 34 deg F	2 to 4 hours ~ 50-55 deg F

Summary Table of Temperature vs. Elapsed Time

- ✓ **Two-thirds of the heating in the first 20 minutes**
- ✓ **"Cracking" the windows had little (i.e., < 3 deg.) effect**
- ✓ **Vehicle interior color probably biggest factor**
- ✓ **Objects Heated by the Sun Warm Vehicle's Air**