

Heatstroke Deaths of Children in Vehicles

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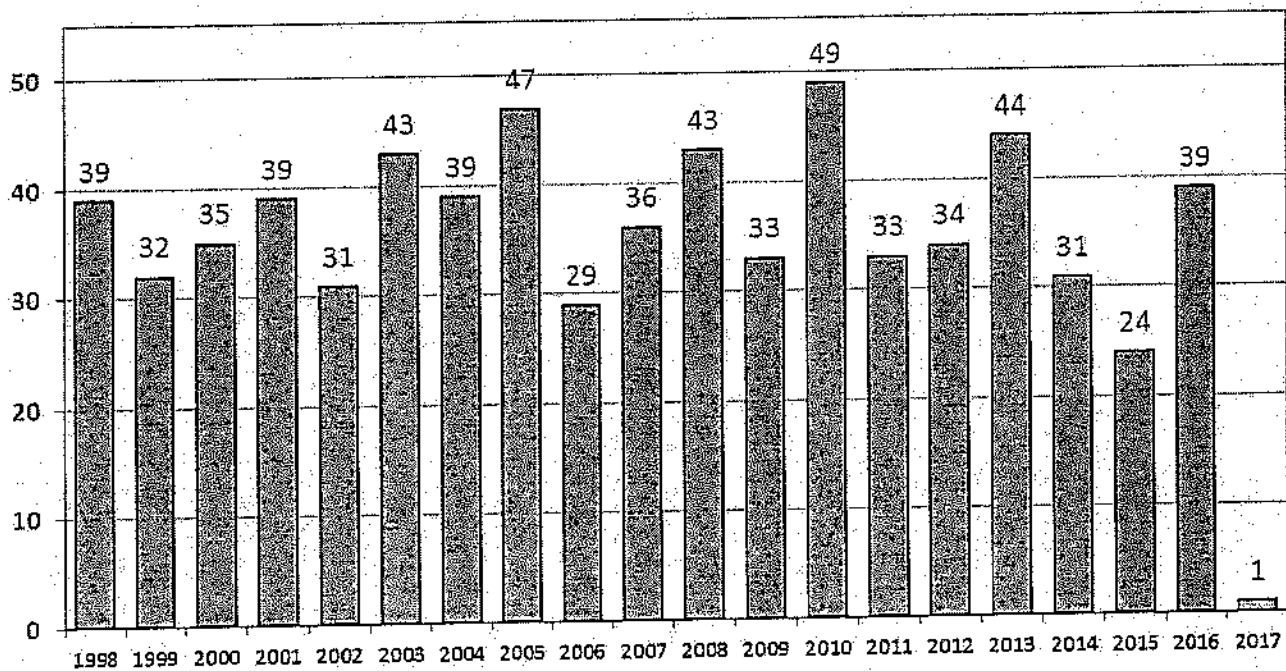
Infographic: [jpg](#), [pdf](#)

Fact Sheets: [English](#), [Español](#)

[Note: This study has now been published in Pediatrics. Click [here](#) to download]

- Total number of U.S. heatstroke deaths of children left in cars, 2017: 1
- Total number of U.S. heatstroke deaths of children left in cars, 2016: 39
- Total number of U.S. heatstroke deaths of children left in cars, 1998-present: 701
- Average number of U.S. child heatstroke fatalities per year since 1998: 37
- See [Monthly Statistics](#)
- See [Statistics by State](#)

U.S. Child Vehicular Heatstroke Deaths



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)

• [Demographics of Persons Responsible for Heatstroke Deaths of Children Forgotten in Vehicles](#)

AGES

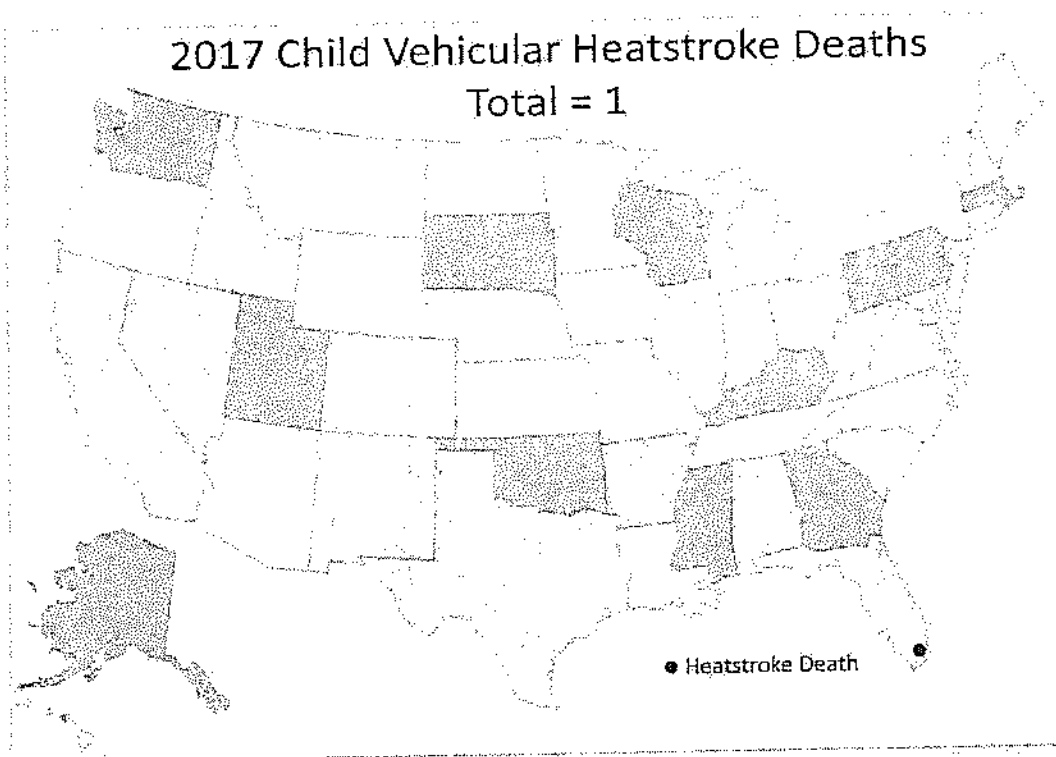
The children that have died from vehicular heatstroke in the United States (1998-2016) have ranged in age from 5 days to 14 years. More than half of the deaths are children under 2 years of age. Below are the percentage of total (700) deaths (and number of deaths).

U.S. National Nontraffic Child Fatalities by Type & Year from the KidsAndCars.org Database

| FATALITIES | <1994* | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | TOTAL | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|----|
| Backover | 47 | 10 | 7 | 11 | 17 | 24 | 28 | 53 | 70 | 106 | 84 | 108 | 82 | 102 | 76 | 86 | 65 | 78 | 70 | 60 | 71 | 50 | 59 | 1366 | |
| Heartstroke | 51 | 24 | 11 | 21 | 39 | 32 | 35 | 39 | 31 | 43 | 39 | 47 | 29 | 36 | 43 | 33 | 49 | 33 | 35 | 44 | 32 | 25 | 39 | 810 | |
| Frontover Vehicle in Motion | 6 | 3 | 0 | 4 | 5 | 9 | 7 | 7 | 8 | 10 | 27 | 46 | 67 | 56 | 66 | 71 | 76 | 56 | 49 | 60 | 64 | 64 | 42 | 803 | |
| Underage Driver | 17 | 0 | 9 | 1 | 9 | 9 | 12 | 10 | 14 | 18 | 19 | 17 | 13 | 22 | 7 | 11 | 10 | 11 | 12 | 14 | 5 | 6 | 8 | 254 | |
| Power Window | 2 | 1 | 0 | 2 | 1 | 4 | 6 | 7 | 0 | 2 | 8 | 5 | 17 | 14 | 13 | 34 | 22 | 14 | 24 | 7 | 17 | 10 | 4 | 214 | |
| Falls | 25 | 3 | 1 | 5 | 5 | 2 | 2 | 3 | 4 | 5 | 9 | 3 | 3 | 1 | 3 | 2 | 1 | 1 | 2 | 1 | 2 | 0 | 0 | 81 | |
| Fire | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 3 | 4 | 0 | 2 | 11 | 6 | 5 | 4 | 7 | 1 | 1 | 1 | 56 | |
| Drowning | 3 | 0 | 3 | 0 | 3 | 2 | 3 | 3 | 3 | 4 | 0 | 3 | 2 | 6 | 0 | 2 | 1 | 3 | 2 | 0 | 0 | 4 | 0 | 47 | |
| Carbon Monoxide | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 3 | 10 | 4 | 5 | 3 | 2 | 3 | 3 | 4 | 43 | |
| Left in car, Found Gun | 4 | 0 | 0 | 3 | 0 | 1 | 1 | 2 | 1 | 5 | 0 | 7 | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 40 | |
| Seat Belt Strang. | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 3 | 0 | 0 | 1 | 1 | 13 | |
| Hypothermia | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 3 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Backover or Frontover (Direction unknown) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | |
| Other | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 2 | 3 | 1 | 2 | 5 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 27 | |
| Other | 4 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 2 | 4 | 4 | 6 | 6 | 4 | 6 | 2 | 2 | 2 | 0 | 1 | 1 | 0 | 49 | |
| YEAR TOTALS | 87 | 40 | 32 | 50 | 81 | 84 | 97 | 130 | 134 | 197 | 189 | 242 | 221 | 242 | 214 | 266 | 235 | 207 | 204 | 196 | 195 | 165 | 166 | 3743 | |

Data Source: KidsAndCars.org Database as of January, 2017
 *Fatalities with unknown dates are included in the "<1994" column above

- < 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)



| # | Date | City | Temperature | Name | Age |
|---|-----------|--------------|-------------|----------------|------|
| 1 | 2/06/2017 | Pincrest, FL | 82° | Samuel Schnell | 1 yr |

Previous Years: [2016](#), [2015](#), [2014](#), [2013](#), [2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#), [1998-2002](#)

LEGAL

- 20 states have Unattended Child Laws that have specific language addressing leaving a child unattended in a vehicle.

- The remaining 30 states do not have laws specifically against leaving a child unattended in a vehicle.

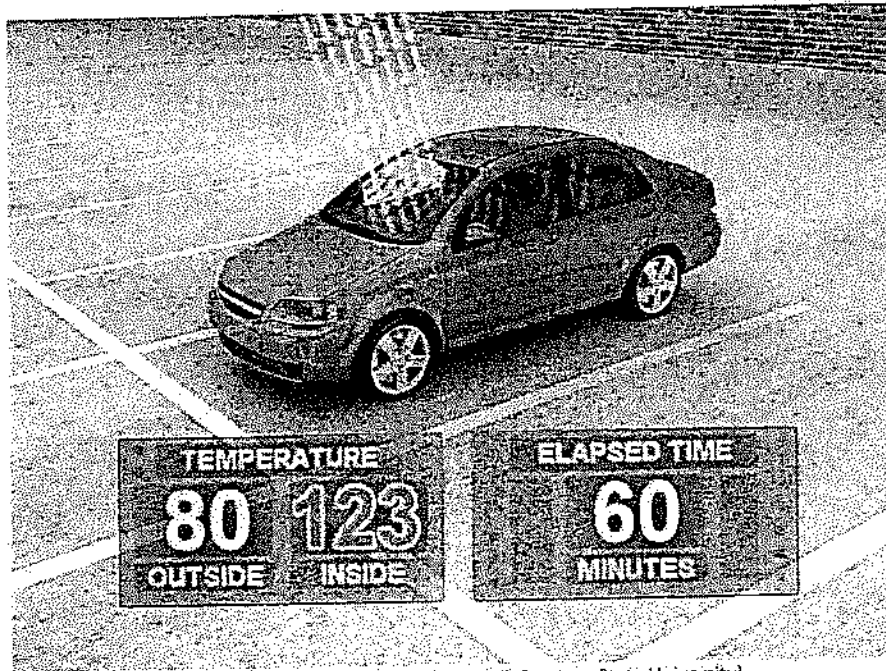
- Another 14 states have had previously proposed unattended child laws.

- There are 10 states with "Good Samaritan Laws" with specific language that protects persons who see a child in a car and take action to render assistance.

A 2005 Associated Press (AP) study found "Wide disparity exists in sentences for leaving kids to die in hot cars". It examined both the frequency of prosecutions and length of sentences in hyperthermia death.

- It found that charges were filed in 49% of all the deaths and 81% of those resulted in convictions.

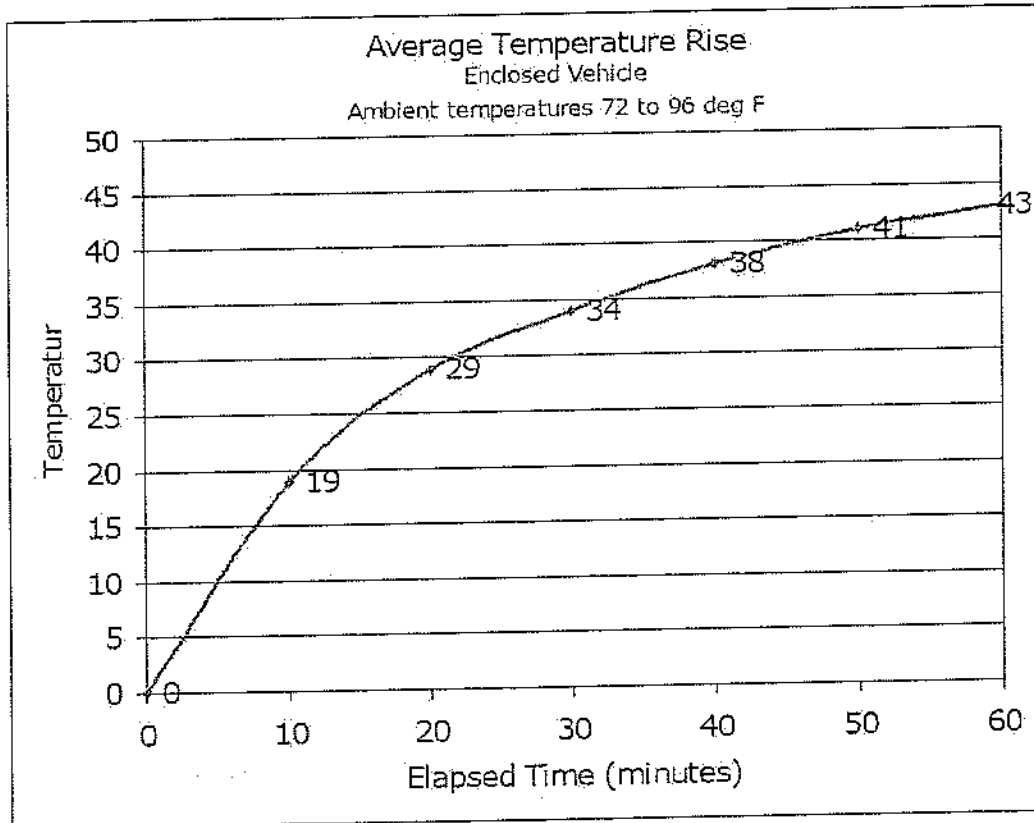
- In cases with paid caregivers (i.e., childcare workers, babysitters) 84% were charged and 96% convicted.



ANIMATION (Courtesy GM and Jan Null, San Jose State University)

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 (Click here to download)

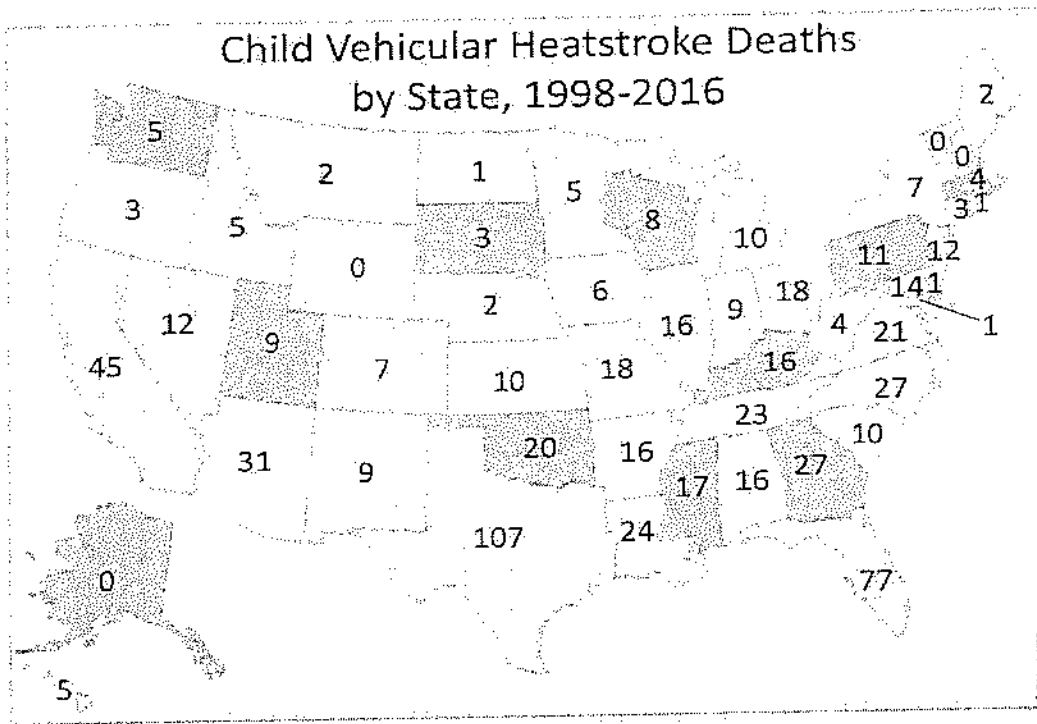


HEATING STUDY SUMMARY

Average elapsed time and temperature rise
 10 minutes ~ 19 deg F
 20 minutes ~ 29 deg F
 30 minutes ~ 34 deg F

Heatstroke Deaths of Children in Vehicles by State

Updated through 2016



| State | 1998-2016 Deaths | Per Capita (1 Million) | |
|----------------|---------------------|------------------------|------------|
| | | < 18 yr | Worst Rank |
| Texas | 107 | 20.7 | 9 |
| Florida | 77 | 24.1 | 6 |
| California | 45 | 5.6 | 36 |
| Arizona | 31 | 25.9 | 3 |
| North Carolina | 27 | 15.5 | 15 |
| Georgia | 27 | 14.2 | 18 |
| Louisiana | 24 | 22.9 | 7 |
| Tennessee | 23 | 18.6 | 11 |
| Virginia | 21 | 13.5 | 21 |
| Oklahoma | 20 | 25.1 | 5 |
| Missouri | 18 | 13.9 | 19 |
| Ohio | 18 | 6.8 | 30 |
| Mississippi | 17 | 25.9 | 4 |
| Arkansas | 16 | 26.6 | 1 |
| Kentucky | 16 | 17.8 | 12 |
| Alabama | 16 | 16.2 | 13 |
| Illinois | 16 | 5.5 | 37 |
| Maryland | 14 | 11.7 | 22 |
| Nevada | 12 | 26.6 | 2 |
| New Jersey | 12 | 6.4 | 32 |
| Pennsylvania | 11 | 4.1 | 41 |
| Kansas | 10 | 15.2 | 16 |
| South Carolina | 10 | 11.4 | 23 |

| | | | |
|----------------------|----|------|----|
| Michigan | 10 | 4.3 | 40 |
| New Mexico | 9 | 20.2 | 10 |
| Utah | 9 | 13.6 | 20 |
| Indiana | 9 | 6.3 | 34 |
| Wisconsin | 8 | 6.3 | 33 |
| Colorado | 7 | 7.0 | 29 |
| New York | 7 | 1.7 | 47 |
| Iowa | 6 | 8.7 | 27 |
| Hawaii | 5 | 20.9 | 8 |
| Idaho | 5 | 14.6 | 17 |
| Minnesota | 5 | 4.1 | 42 |
| Washington | 5 | 3.6 | 45 |
| West Virginia | 4 | 11.0 | 24 |
| Massachusetts | 4 | 2.9 | 46 |
| South Dakota | 3 | 16.1 | 14 |
| Oregon | 3 | 3.9 | 43 |
| Connecticut | 3 | 3.9 | 44 |
| Montana | 2 | 9.4 | 26 |
| Maine | 2 | 7.1 | 28 |
| Nebraska | 2 | 4.8 | 38 |
| District of Columbia | 1 | 9.9 | 25 |
| North Dakota | 1 | 6.6 | 31 |
| Delaware | 1 | 5.8 | 35 |
| Rhode Island | 1 | 4.4 | 39 |
| Alaska | 0 | 0.0 | 48 |
| New Hampshire | 0 | 0.0 | 49 |
| Vermont | 0 | 0.0 | 50 |
| Wyoming | 0 | 0.0 | 51 |

Return to [Hyperthermia Deaths of Children in Vehicles](#)

Questions, comments or suggestions. Email jan.null@sjsu.edu
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