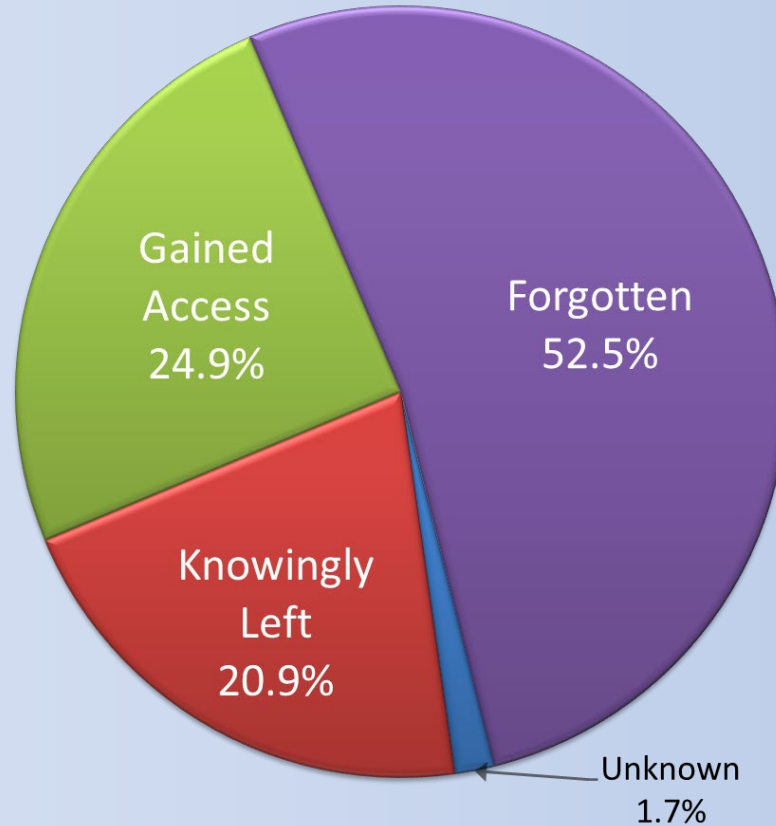


Pediatric Vehicular Heatstroke Deaths: By the Numbers (1998-2023)



Jan Null, CCM

Department of Meteorology and Climate Science

San Jose State University

January 2024

On average, 37 children die from heatstroke inside hot vehicles each year. During the period of 1998 through 2023 that's a total of 969 Pediatric Vehicular Heatstroke (PVH) deaths that have been documented in the United States.

Data Collection

The statistics presented here were primarily gathered with customized online news searches of electronic media using tools such as Google News; but are supplemented with a deep dive into archived sources. These include newspaper archives, correspondence with reporters, court records, law enforcement officials, district attorneys, medical examiner/coroner offices, and child death review teams. Occasionally, a death is brought to the attention of the author from a third party that has verifiable information never caught by local media, happened in a locale without electronic media or were suppressed by the families or local authorities. It is also clear, that there are other additional cases that go "under the radar" for some of the reasons above, thus the numbers presented here are conservative.

Using electronic news sources yields nearly twice as many reported heatstroke deaths of children in vehicles as more formal methodologies by official agencies using public records. For example, the latest (March 2015) National Highway Traffic Safety Administration (NHTSA) Not-in-Traffic Surveillance (NiTS): [Non-Crash Fatalities and Injuries report](#), based on death certificates from the special mortality files of the National Vital Statistics System (NVSS), estimated an annual average of only 19 fatalities of children (i.e., <14 years) due to heatstroke in vehicles. By tracking deaths via media reports, there were 112 deaths documented in that same 3-year period.

The data presented in this document is an amalgamation of material from the [Noheatstroke.org](http://noheatstroke.org) website and its underlying database of the over 969 PVH deaths which have occurred in the United State since 1998. **The data cutoff for inclusion in this document was January 15, 2024.** Permission is granted to use these materials, with full attribution as: "Source: Jan Null, CCM, Department of Meteorology and Climate Science, San Jose State University, <http://noheatstroke.org>". A live link back to <http://noheatstroke.org> is preferred as data on the site changes frequently and this ensures that end users can gain access to the most accurate and up-to-date information.

Please direct all correspondence to: jnull@noheatstroke.org

Contents - Pediatric Vehicular Heatstroke Deaths (1998-2022)

Fig. 1. Annual Distribution

Fig. 2. Monthly Distribution

Fig. 3. Monthly Timeline

Fig. 4. Running Total at the end Month

Fig. 5. Date and Location of First Death

Fig. 6. Circumstances Leading to PVH Deaths

Fig. 7a-c. Annual Distribution by Circumstances

Fig. 8. Day of the Week

Fig. 8a-c. Day of the Week by Circumstances

Fig. 9. Age Distribution

Fig. 9a-c. Age Distribution by Circumstances

Fig. 10. Relationship of Responsible Party

Fig. 10a - c. Responsible Person by Circumstances

Fig. 11. Location of the Vehicle

Fig. 12. Temperature Range

Fig. 13. PVH Deaths by State

Fig. 14. Distribution by State Map

Fig. 15. Per Capita State Distribution Map

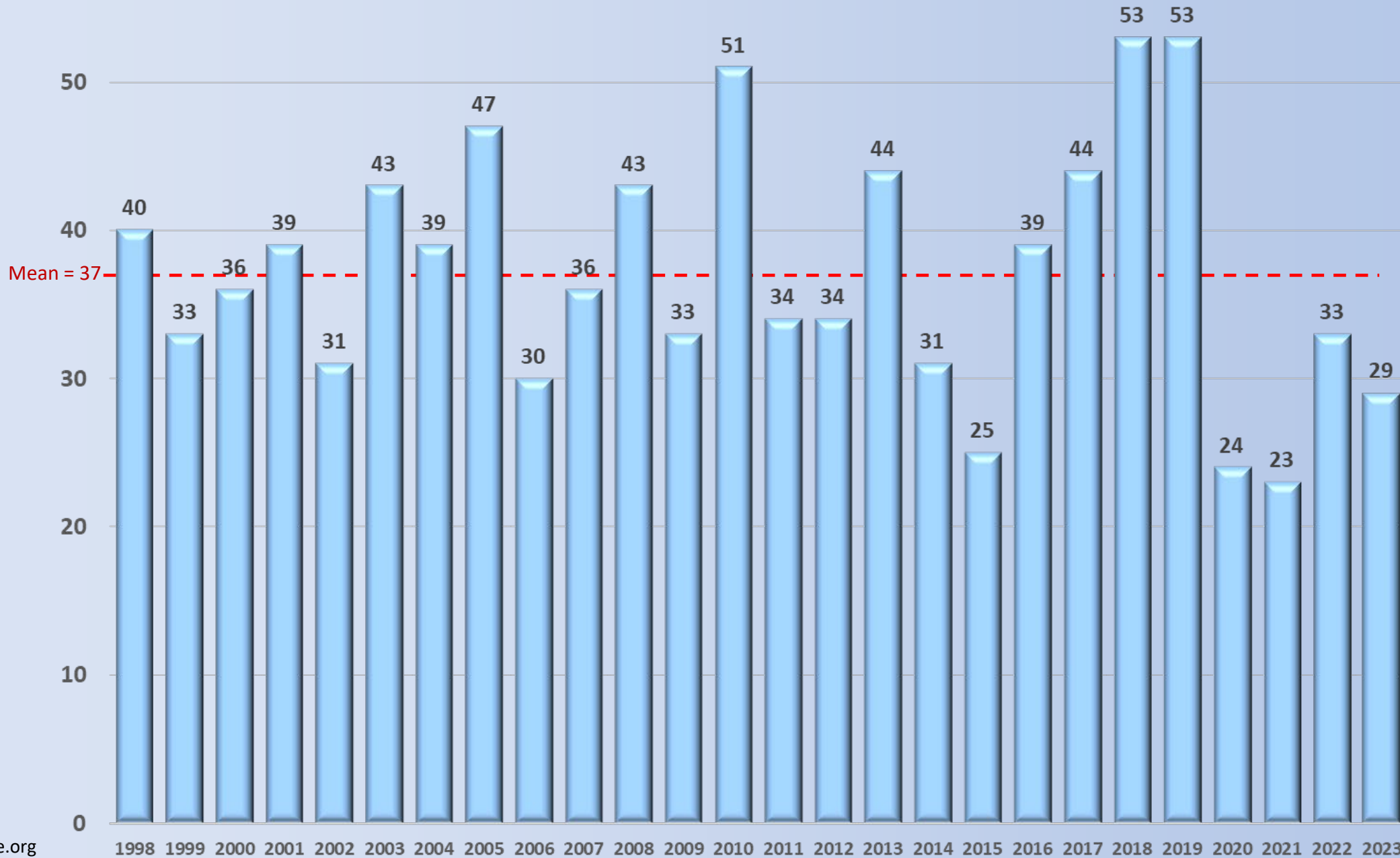
Fig. 16. State Percentage of PVH Deaths vs. National Averages

Fig. 17. States with Unattended Child in Vehicle Laws

Fig. 18. States with “Good Samaritan” Child in Vehicle Laws

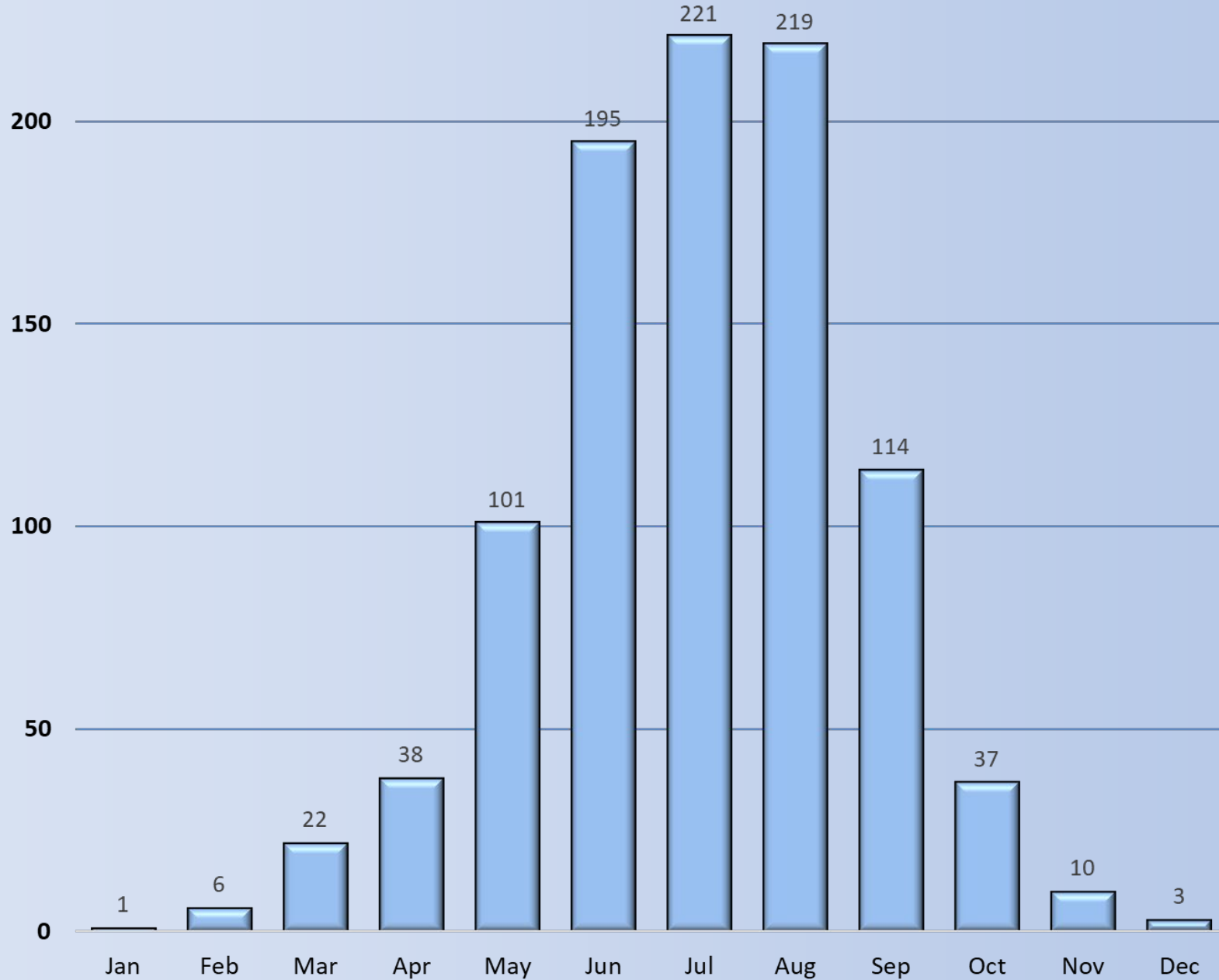
Pediatric Vehicular Heatstroke Deaths: Annual Distribution

Figure 1.



Pediatric Vehicular Heatstroke Deaths: Monthly Distribution

Figure 2.



Pediatric Vehicular Heatstroke Deaths: Monthly Totals

Figure 3.

| | Monthly Totals | | | | | | | | | | | | | |
|-------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------------|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Unk | Total |
| 1998 | | | | 2 | 4 | 9 | 10 | 11 | 3 | | | | 1 | 40 |
| 1999 | | | 1 | 1 | 2 | 8 | 16 | 4 | 1 | | | | | 33 |
| 2000 | | | 1 | | 8 | 6 | 7 | 10 | 3 | 1 | | | | 36 |
| 2001 | | | 2 | 1 | 4 | 8 | 10 | 10 | 2 | 1 | 1 | | | 39 |
| 2002 | | | 1 | | 1 | 7 | 10 | 7 | 4 | 2 | | | | 32 |
| 2003 | | | | 2 | 4 | 10 | 10 | 12 | 2 | 3 | | | | 43 |
| 2004 | | 1 | 2 | 5 | 4 | 4 | 9 | 7 | 6 | 1 | | | | 39 |
| 2005 | | | | | 3 | 9 | 12 | 11 | 10 | 2 | | | | 47 |
| 2006 | | | | 2 | 2 | 6 | 7 | 10 | | | 3 | | | 30 |
| 2007 | | | 2 | | 3 | 6 | 9 | 7 | 8 | 1 | | | | 36 |
| 2008 | | 1 | 2 | 2 | 2 | 6 | 11 | 12 | 3 | 4 | | | | 43 |
| 2009 | | | 1 | 2 | 3 | 11 | 7 | 6 | 2 | | | 1 | | 33 |
| 2010 | | | 1 | 3 | 6 | 10 | 8 | 15 | 7 | 1 | | | | 51 |
| 2011 | | | 2 | | 6 | 10 | 8 | 3 | 3 | 2 | | | | 34 |
| 2012 | | | | | 4 | 6 | 6 | 12 | 2 | | 3 | 1 | | 34 |
| 2013 | | | | | 8 | 9 | 9 | 8 | 9 | 1 | | | | 44 |
| 2014 | | | | 4 | 4 | 8 | 7 | 3 | 2 | 3 | | | | 31 |
| 2015 | | | | 1 | 1 | 6 | 3 | 8 | 5 | | 1 | | | 25 |
| 2016 | 1 | | 1 | 3 | 4 | 7 | 9 | 4 | 6 | 4 | | | | 39 |
| 2017 | | 2 | 2 | 3 | 3 | 10 | 13 | 7 | 2 | 2 | | | | 44 |
| 2018 | | 1 | 2 | 1 | 8 | 12 | 10 | 9 | 9 | | | | 1 | 53 |
| 2019 | | | | 3 | 7 | 8 | 8 | 14 | 7 | 5 | 1 | | | 53 |
| 2020 | | | | 1 | 1 | 4 | 8 | 6 | 3 | 1 | | 1 | | 25 |
| 2021 | | | | 1 | | 6 | 3 | 7 | 5 | 1 | | | | 23 |
| 2022 | | | | | 3 | 7 | 5 | 9 | 8 | | 1 | | | 33 |
| 2023 | | 1 | 2 | 1 | 6 | 2 | 6 | 7 | 2 | 2 | | | | 29 |
| | | | | | | | | | | | | | | Total 1998-2023 > 969 |
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Unk | Total |
| Avg. | <1 | <1 | 2 | 2 | 4 | 8 | 9 | 8 | 5 | 2 | <1 | <1 | <1 | 38 |
| Max. | 1 | 2 | 2 | 5 | 8 | 12 | 16 | 15 | 10 | 5 | 3 | 1 | 1 | 53 |
| Min. | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 23 | 23 |

Source:
NoHeatstroke.org

Cumulative Monthly PVH Deaths

| Running Totals through end of each month: | | | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Final |
| 1998 | 0 | 0 | 0 | 2 | 6 | 15 | 25 | 36 | 39 | 39 | 39 | 39 | 40 |
| 1999 | 0 | 0 | 1 | 2 | 4 | 12 | 28 | 32 | 33 | 33 | 33 | 33 | 33 |
| 2000 | 0 | 0 | 1 | 1 | 9 | 15 | 22 | 32 | 35 | 36 | 36 | 36 | 36 |
| 2001 | 0 | 0 | 2 | 3 | 7 | 15 | 25 | 35 | 37 | 38 | 39 | 39 | 39 |
| 2002 | 0 | 0 | 1 | 1 | 2 | 9 | 19 | 26 | 30 | 32 | 32 | 32 | 32 |
| 2003 | 0 | 0 | 0 | 2 | 6 | 16 | 26 | 38 | 40 | 43 | 43 | 43 | 43 |
| 2004 | 0 | 1 | 3 | 8 | 12 | 16 | 25 | 32 | 38 | 39 | 39 | 39 | 39 |
| 2005 | 0 | 0 | 0 | 0 | 3 | 12 | 24 | 35 | 45 | 47 | 47 | 47 | 47 |
| 2006 | 0 | 0 | 0 | 2 | 4 | 10 | 17 | 27 | 27 | 27 | 30 | 30 | 30 |
| 2007 | 0 | 0 | 2 | 2 | 5 | 11 | 20 | 27 | 35 | 36 | 36 | 36 | 36 |
| 2008 | 0 | 1 | 3 | 5 | 7 | 13 | 24 | 36 | 39 | 43 | 43 | 43 | 43 |
| 2009 | 0 | 0 | 1 | 3 | 6 | 17 | 24 | 30 | 32 | 32 | 32 | 33 | 33 |
| 2010 | 0 | 0 | 1 | 4 | 10 | 20 | 28 | 43 | 50 | 51 | 51 | 51 | 51 |
| 2011 | 0 | 0 | 2 | 2 | 8 | 18 | 26 | 29 | 32 | 34 | 34 | 34 | 34 |
| 2012 | 0 | 0 | 0 | 0 | 4 | 10 | 16 | 28 | 30 | 30 | 33 | 34 | 34 |
| 2013 | 0 | 0 | 0 | 0 | 8 | 17 | 26 | 34 | 43 | 44 | 44 | 44 | 44 |
| 2014 | 0 | 0 | 0 | 4 | 8 | 16 | 23 | 26 | 28 | 31 | 31 | 31 | 31 |
| 2015 | 0 | 0 | 0 | 1 | 2 | 8 | 11 | 19 | 24 | 24 | 25 | 25 | 25 |
| 2016 | 1 | 1 | 2 | 5 | 9 | 16 | 25 | 29 | 35 | 39 | 39 | 39 | 39 |
| 2017 | 0 | 2 | 4 | 7 | 10 | 20 | 33 | 40 | 42 | 44 | 44 | 44 | 44 |
| 2018 | 0 | 1 | 3 | 4 | 12 | 24 | 34 | 43 | 52 | 52 | 52 | 52 | 53 |
| 2019 | 0 | 0 | 0 | 3 | 10 | 18 | 26 | 40 | 47 | 52 | 53 | 53 | 53 |
| 2020 | 0 | 0 | 0 | 1 | 2 | 6 | 14 | 20 | 23 | 24 | 24 | 25 | 25 |
| 2021 | 0 | 0 | 0 | 1 | 1 | 7 | 10 | 17 | 22 | 23 | 23 | 23 | 23 |
| 2022 | 0 | 0 | 0 | 0 | 3 | 10 | 15 | 24 | 32 | 32 | 33 | 33 | 33 |
| 2023 | 0 | 1 | 3 | 4 | 10 | 12 | 18 | 25 | 27 | 29 | 29 | 29 | 29 |
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Final |
| Avg. | 0 | 0 | 1 | 3 | 6 | 14 | 22 | 31 | 35 | 37 | 37 | 37 | 37 |
| Max. | 1 | 2 | 4 | 8 | 12 | 24 | 34 | 43 | 52 | 52 | 53 | 53 | 53 |
| Min. | 0 | 0 | 0 | 0 | 1 | 6 | 10 | 17 | 22 | 23 | 23 | 23 | 23 |

Figure 4.

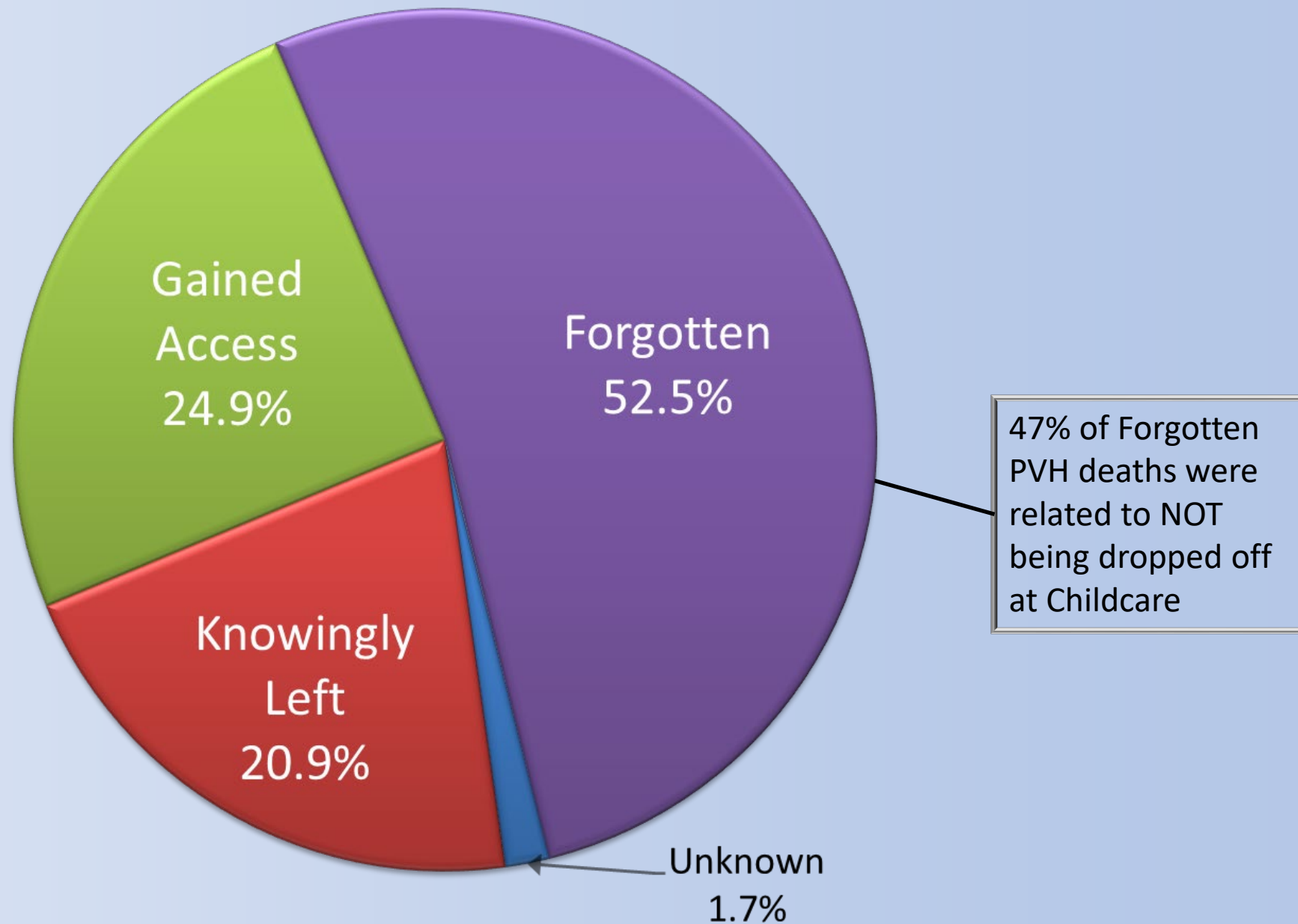
Pediatric Vehicular Heatstroke Deaths: First of Year

Figure 5.

| Date & Location of 1st Death | | |
|------------------------------|---------------|-------|
| Year | Date | State |
| 1998 | 24-Apr | AR |
| 1999 | 16-Mar | OH |
| 2000 | 6-Mar | FL |
| 2001 | 21-Mar | TX |
| 2002 | 14-Mar | OH |
| 2003 | 6-Apr | FL |
| 2004 | 5-Feb | HI |
| 2005 | 13-May | NJ |
| 2006 | 4-Apr | SC |
| 2007 | 17-Mar | HI |
| 2008 | 15-Feb | WI |
| 2009 | 9-Mar | NC |
| 2010 | 8-Mar | FL |
| 2011 | 8-Mar | TX |
| 2012 | 12-May | TX |
| 2013 | 10-May | TX |
| 2014 | 16-Apr | CA |
| 2015 | 20-Apr | AZ |
| 2016 | 12-Jan | GA |
| 2017 | 6-Feb | FL |
| 2018 | 28-Feb | FL |
| 2019 | 4-Apr | FL |
| 2020 | 25-Apr | TX |
| 2021 | 26-Apr | NC |
| 2022 | 3-May | GA |
| 2023 | 27-Feb | AL |
| Average | 25-Mar | |

Pediatric Vehicular Heatstroke Deaths: Circumstances (1998-2022)

Figure 6.



Pediatric Vehicular Heatstroke Deaths: Circumstances

“Forgotten” Cases

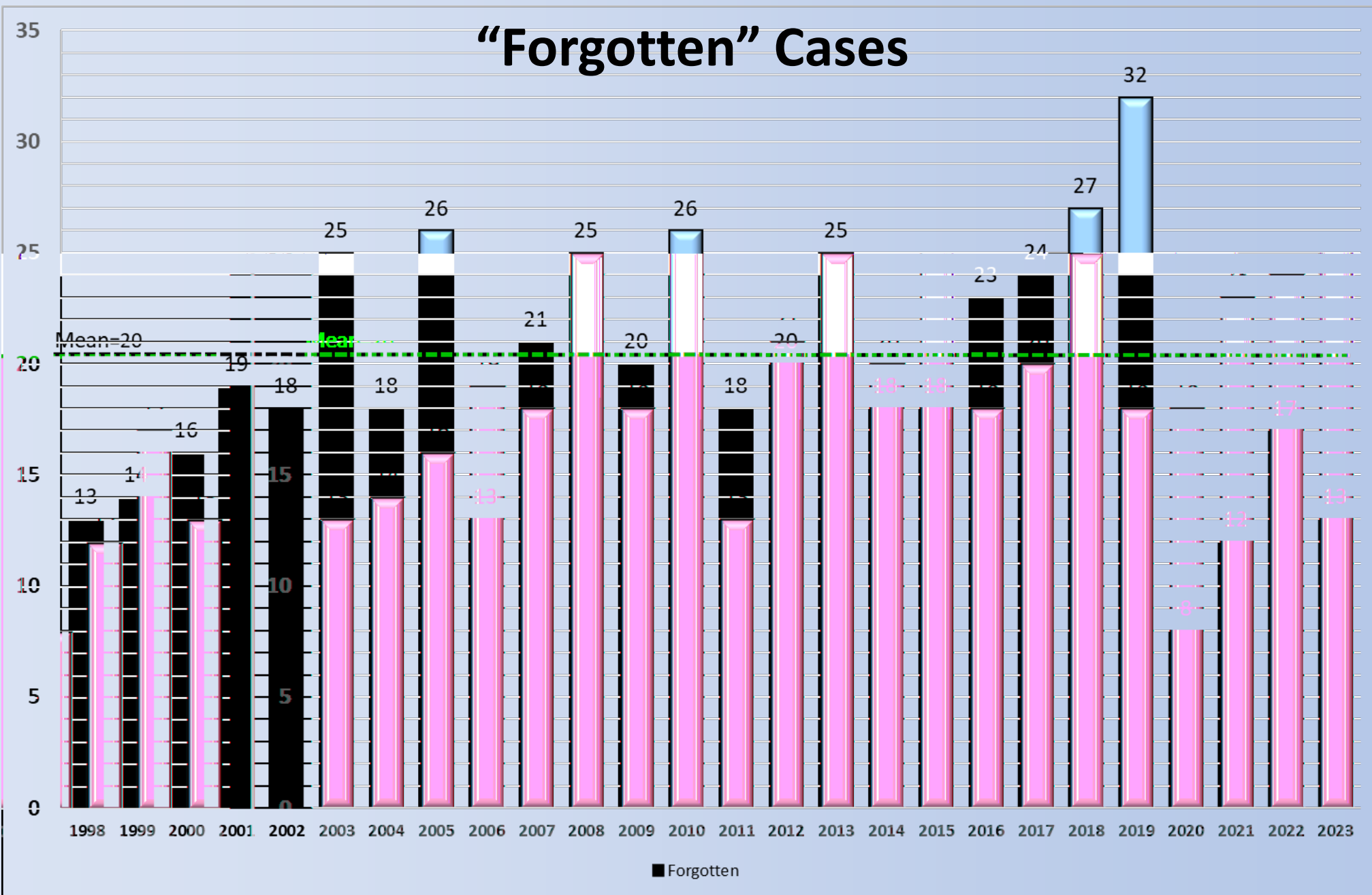


Figure 7a.

Source: NoHeatstroke.org

Pediatric Vehicular Heatstroke Deaths: Circumstances

“Gained Access” Cases

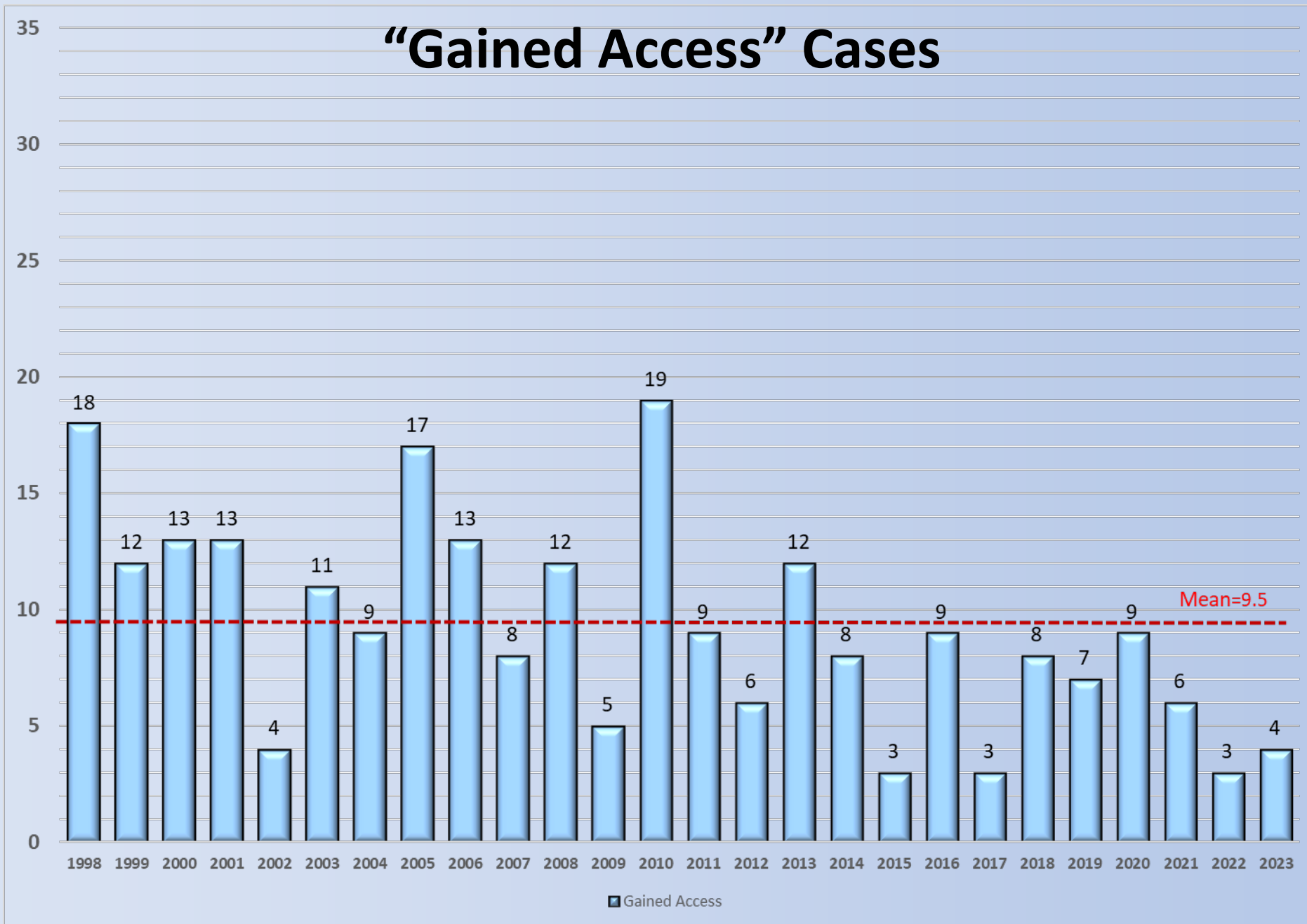


Figure 7b.

Pediatric Vehicular Heatstroke Deaths: Circumstances

“Knowingly Left” Cases

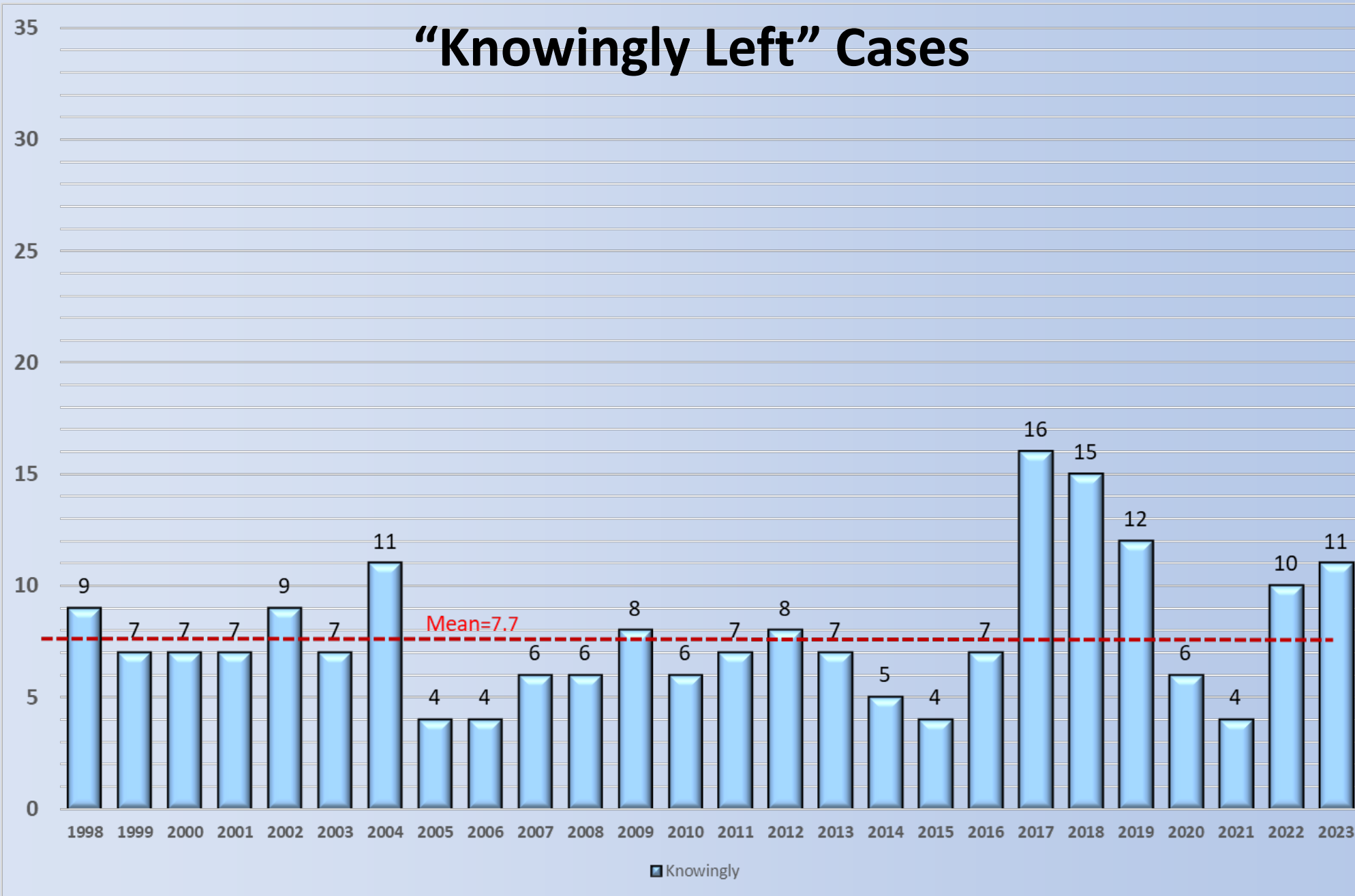
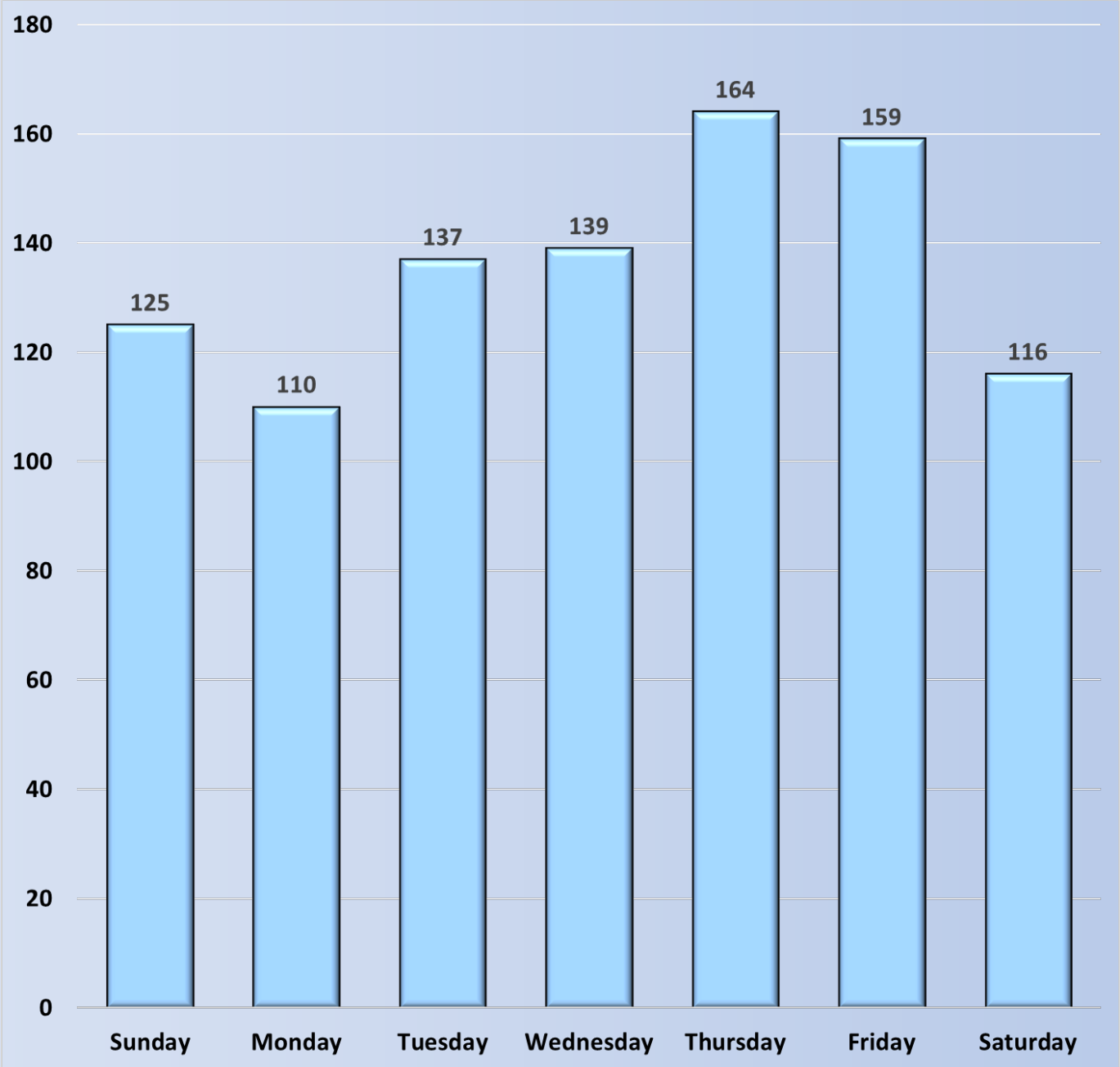


Figure 7c.

Pediatric Vehicular Heatstroke Deaths: Day of the Week

Figure 8.



Source:
NoHeatstroke.org

Pediatric Vehicular Heatstroke Deaths: Day of the Week

“Forgotten”

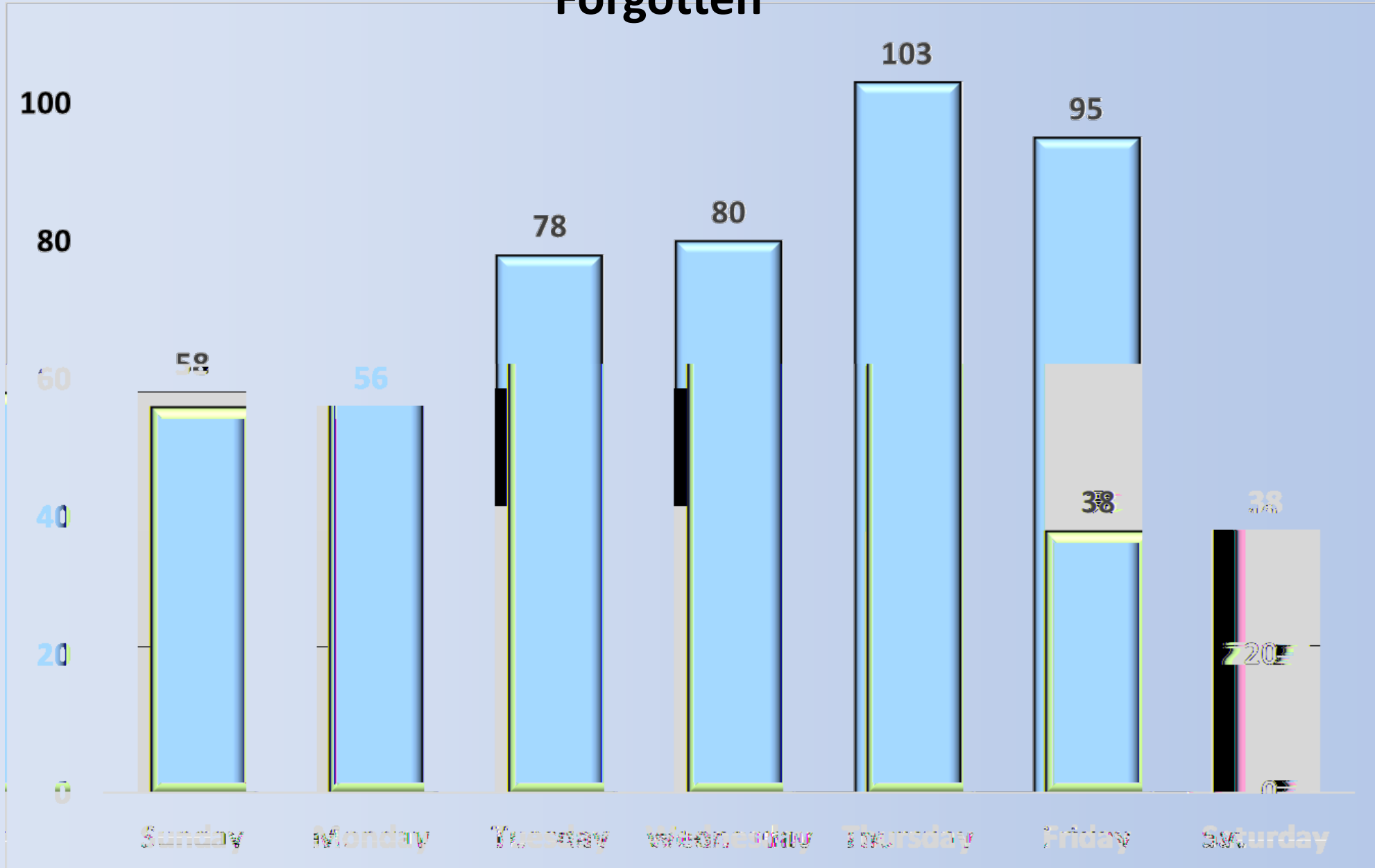


Figure 8a.

Pediatric Vehicular Heatstroke Deaths: Day of the Week

“Gained Access”

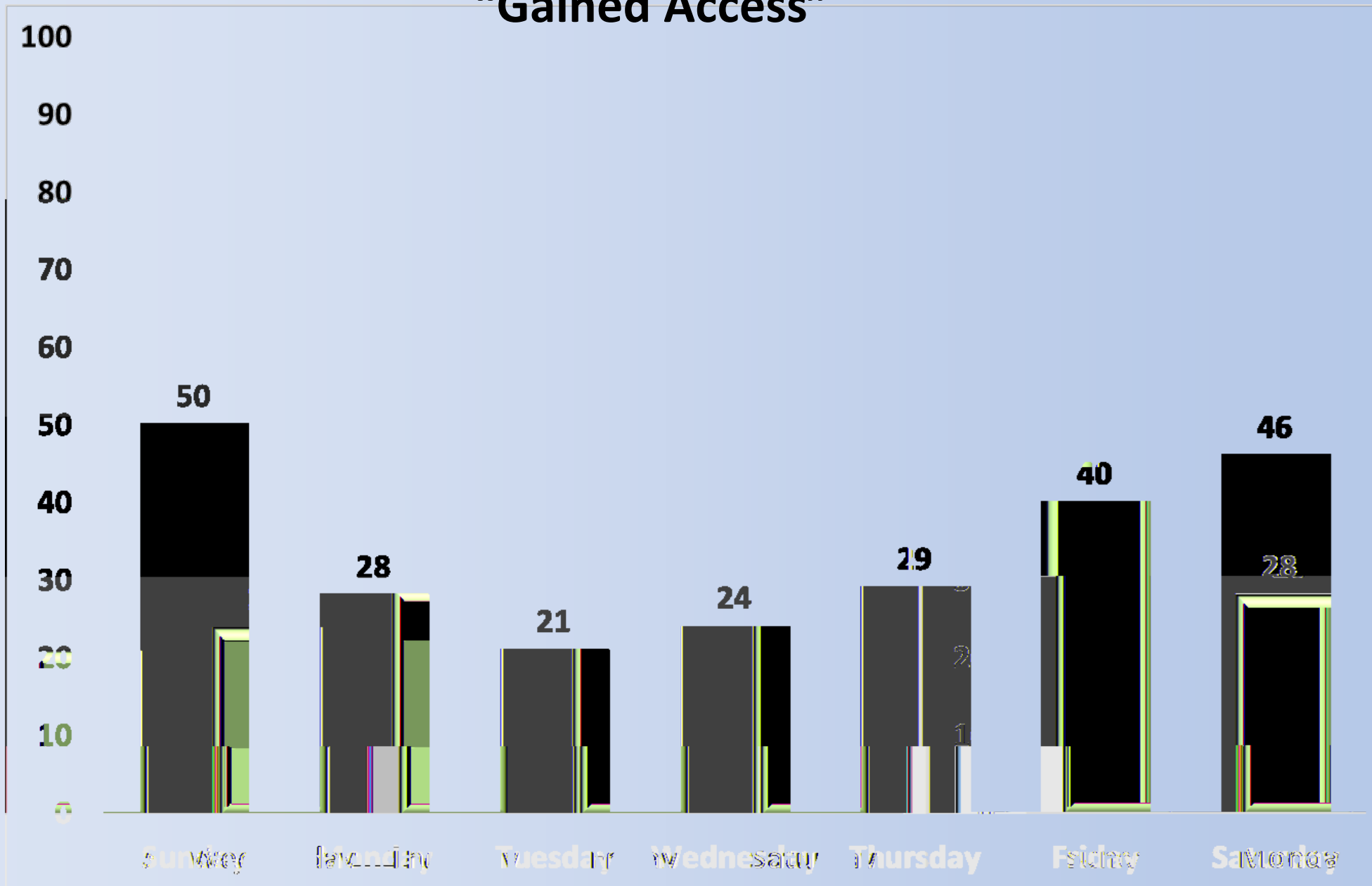


Figure 8b.

Pediatric Vehicular Heatstroke Deaths: Day of the Week

“Knowingly Left”

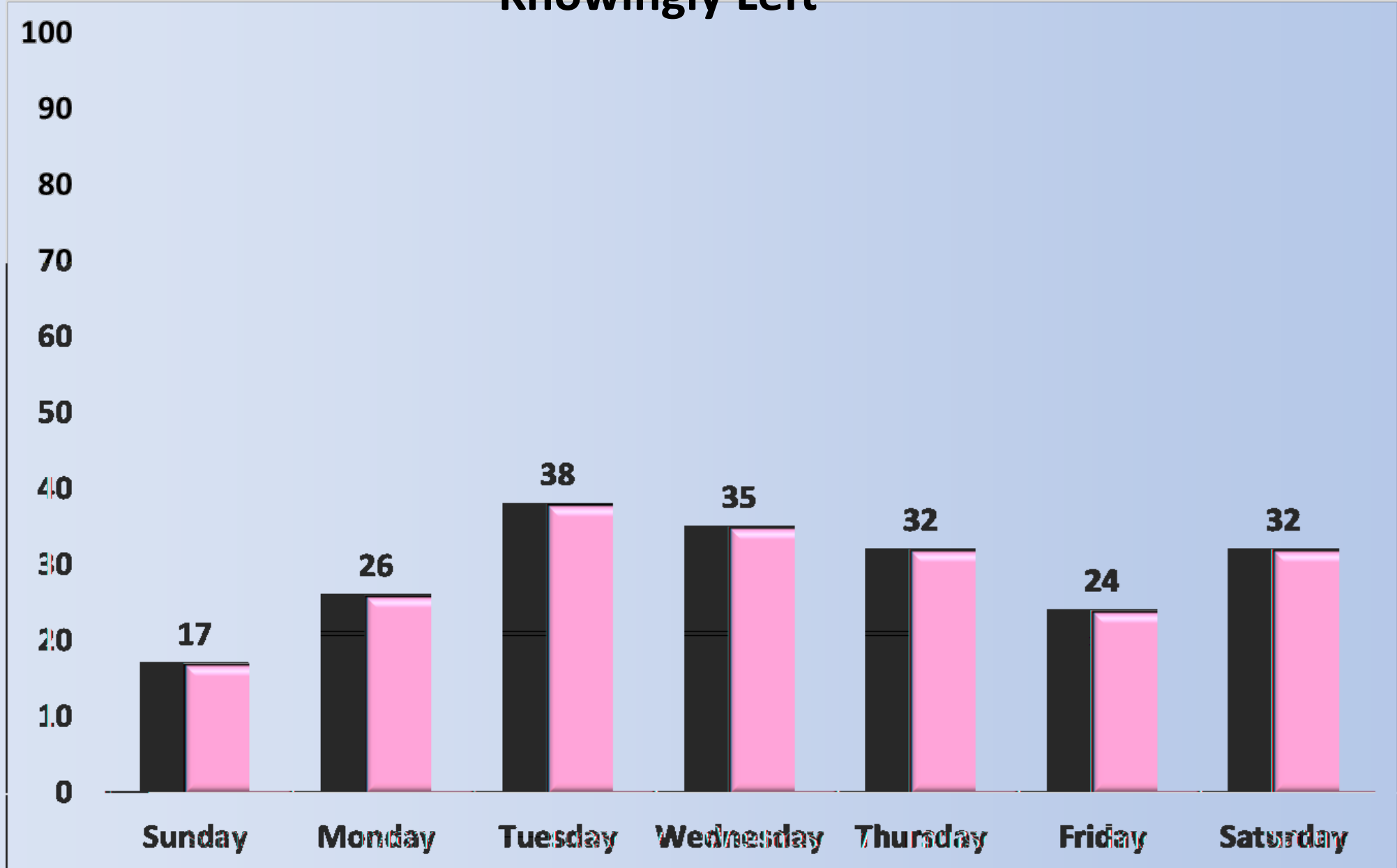
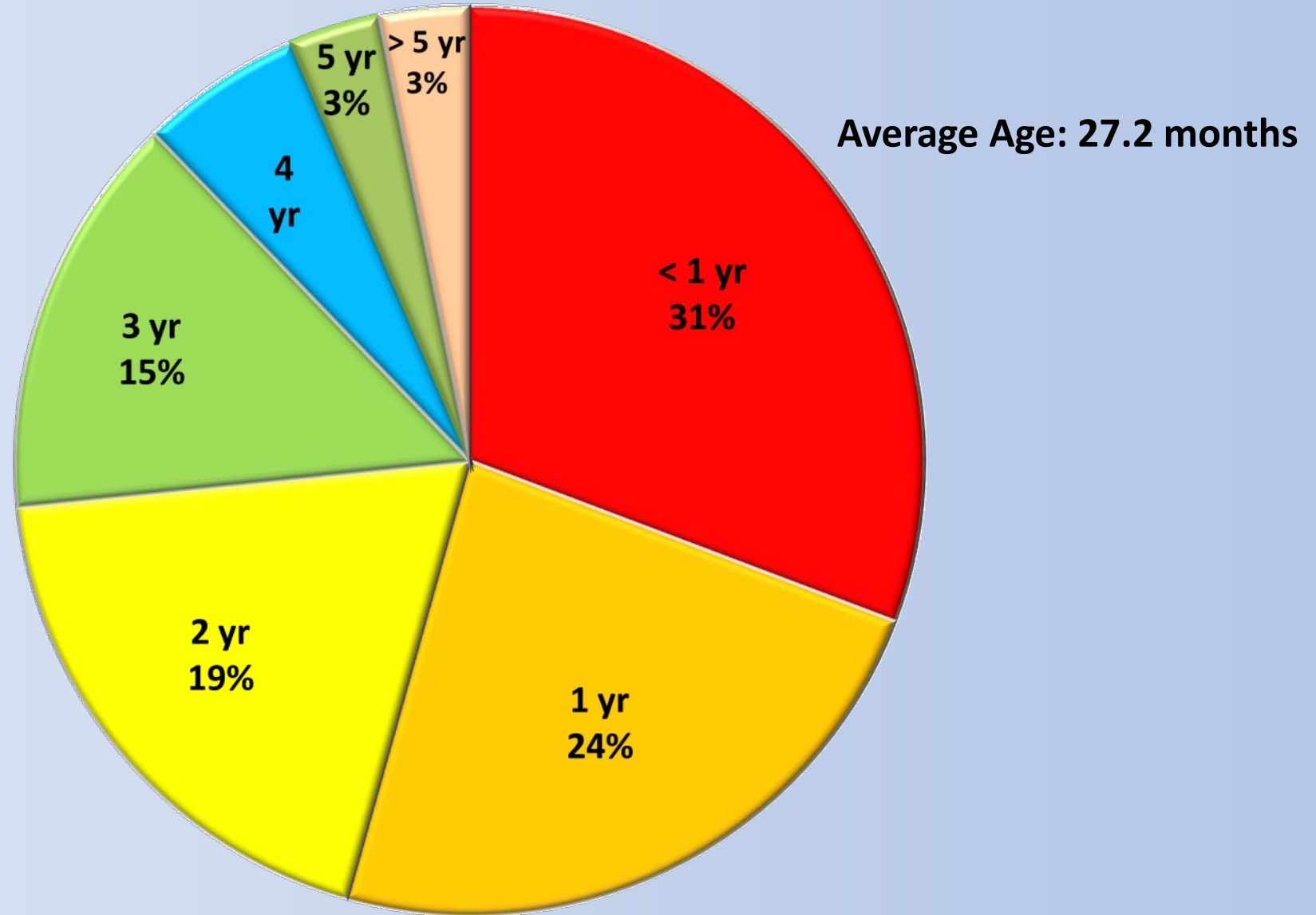


Figure 8c.

Pediatric Vehicular Heatstroke Deaths: Age

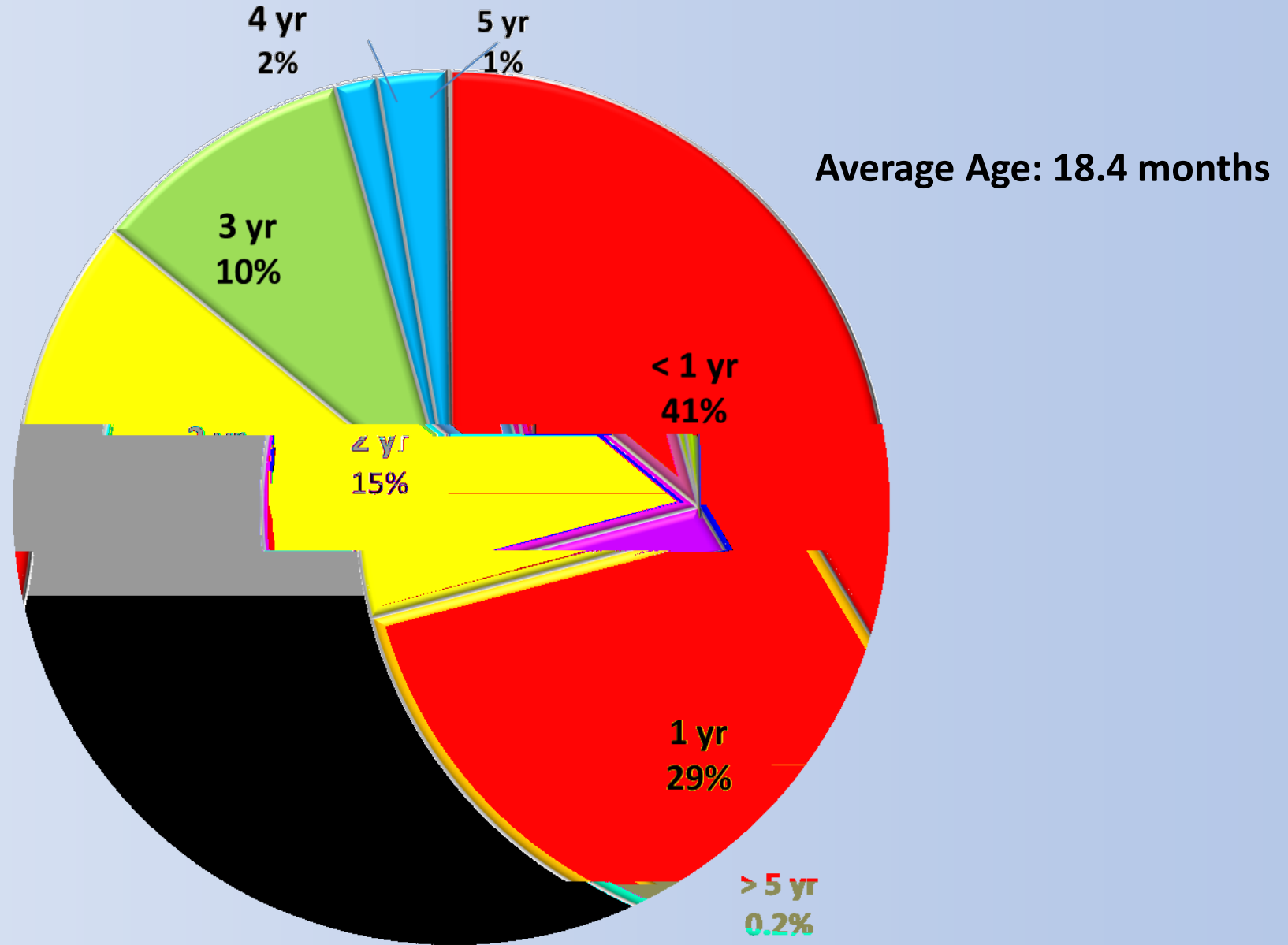
Figure 9.



Pediatric Vehicular Heatstroke Deaths: Age

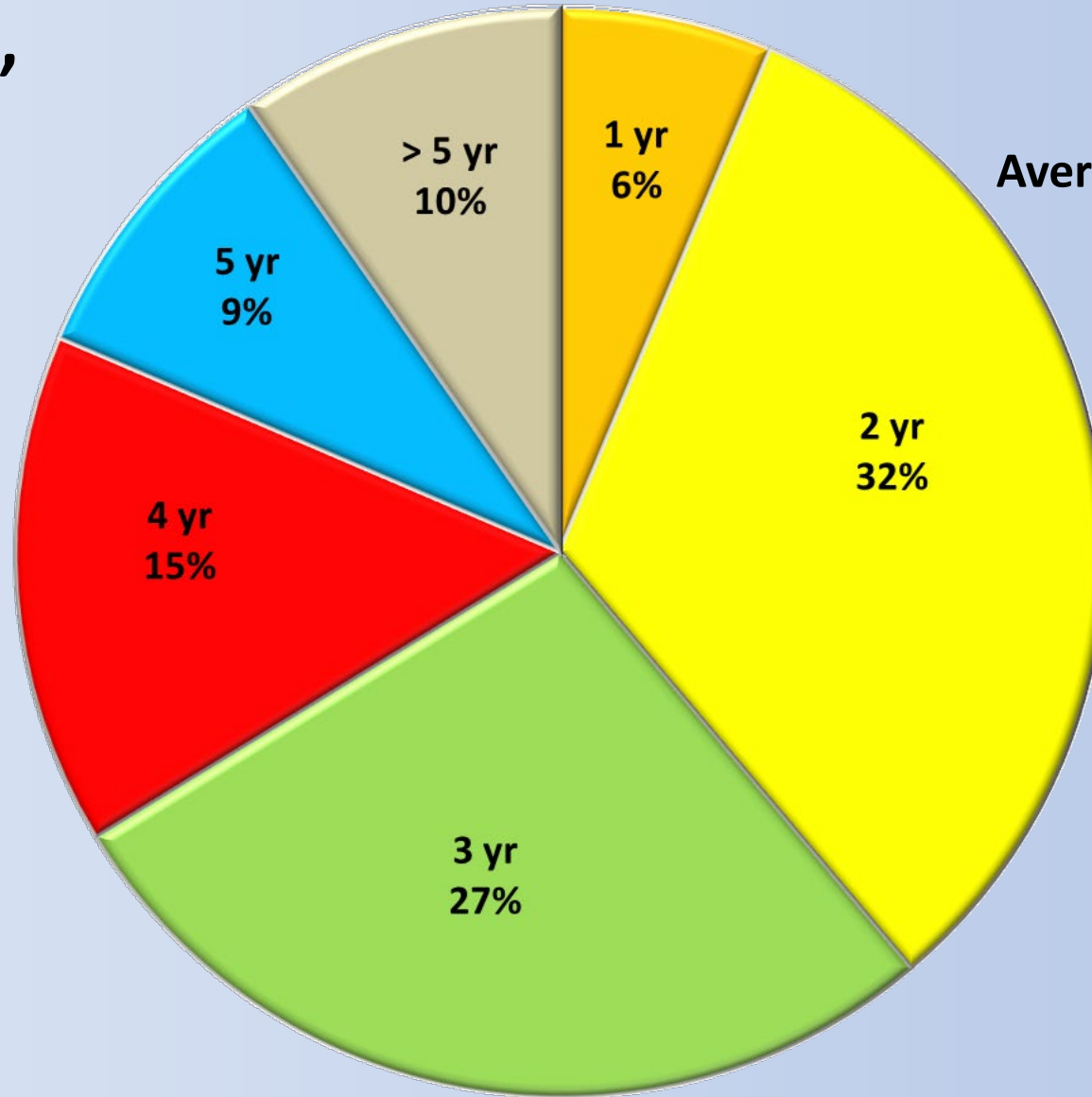
Figure 9a.

“Forgotten”



Pediatric Vehicular Heatstroke Deaths: Age

“Gained Access”



Average Age: 47.0 months

Figure 9b.

Pediatric Vehicular Heatstroke Deaths: Age

“Knowingly Left”

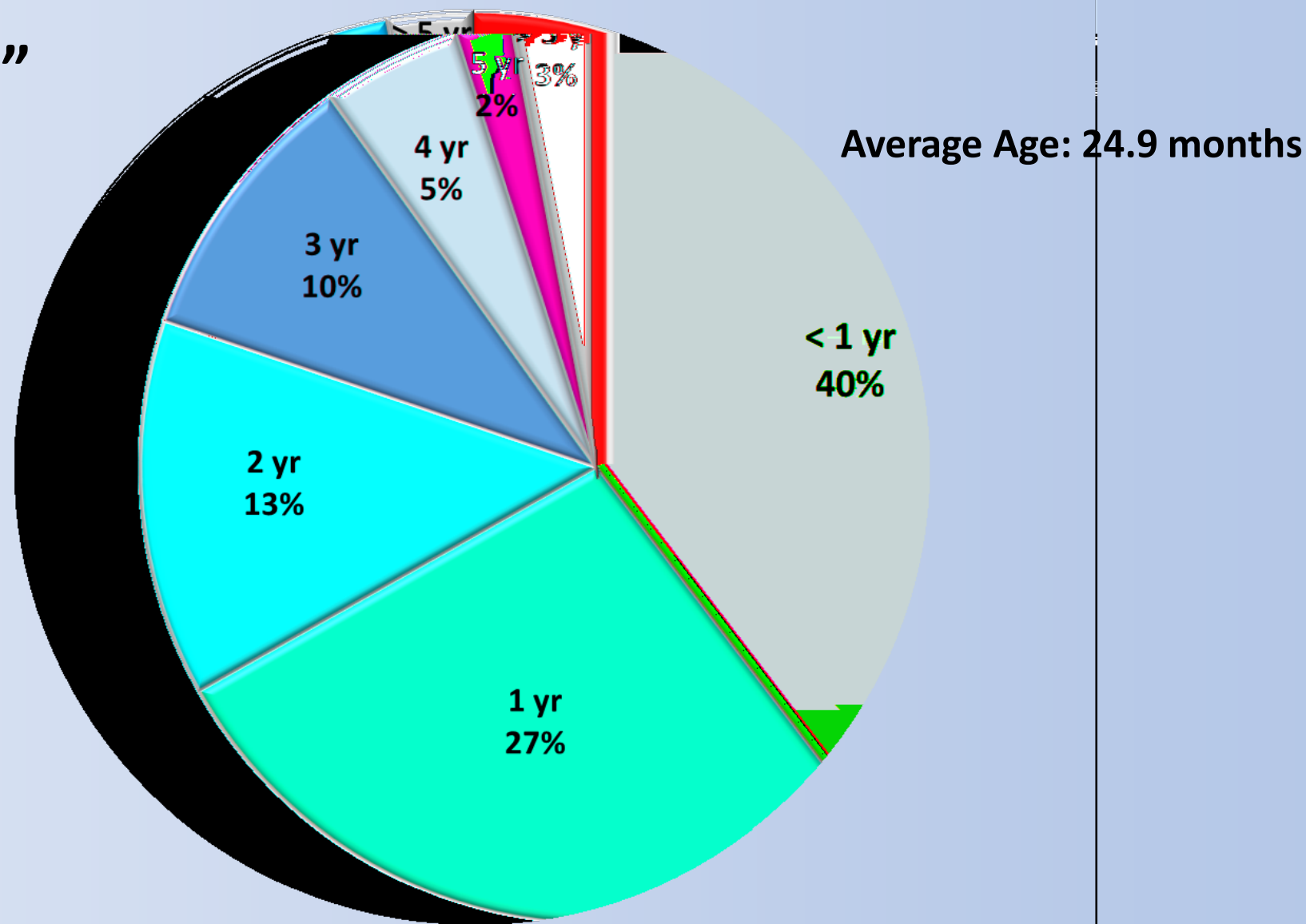
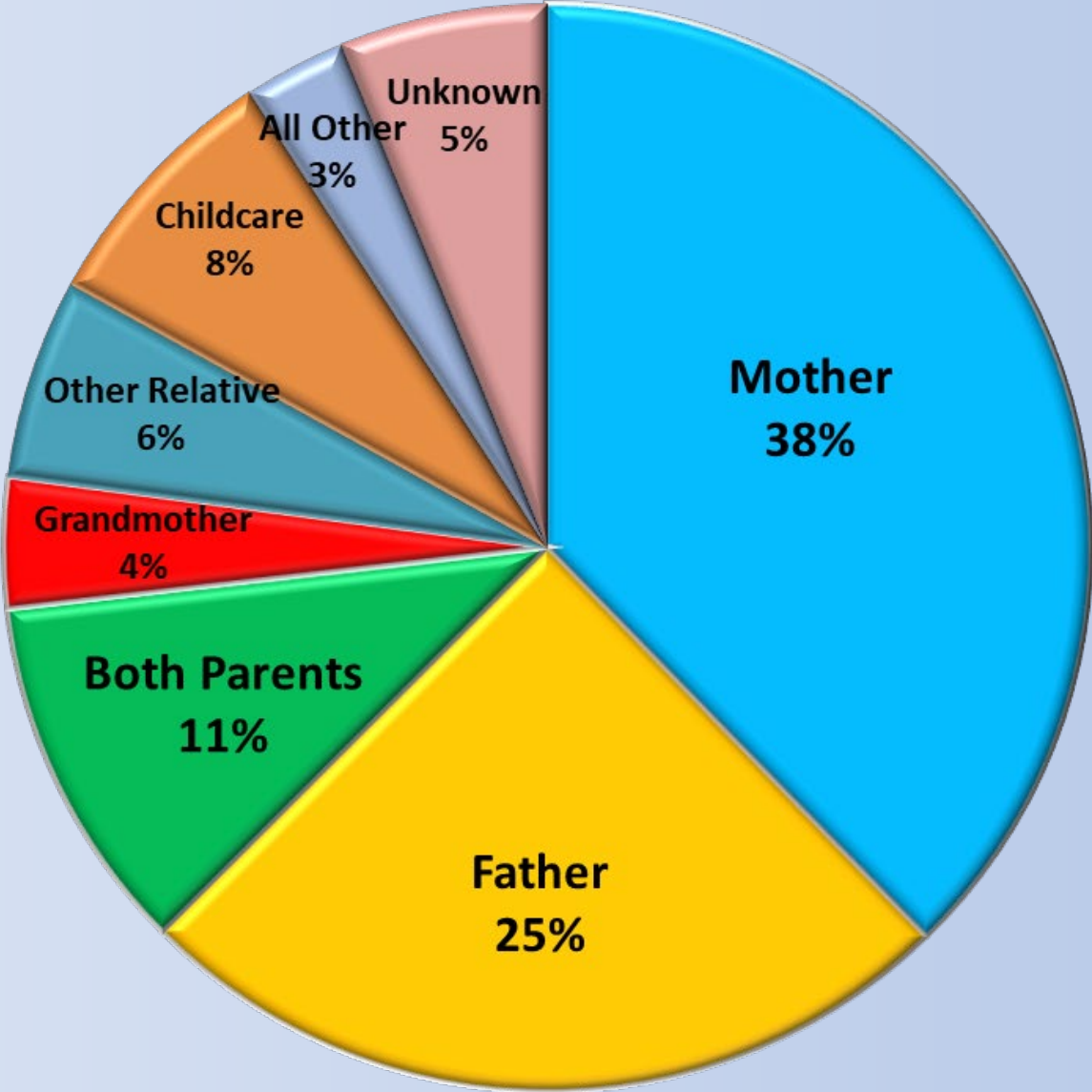


Figure 9c.

Responsible Person for Pediatric Vehicular Heatstroke Deaths

Figure 10.



Source:
NoHeatstroke.org

Responsible Person for Pediatric Vehicular Heatstroke Deaths:

“Forgotten”

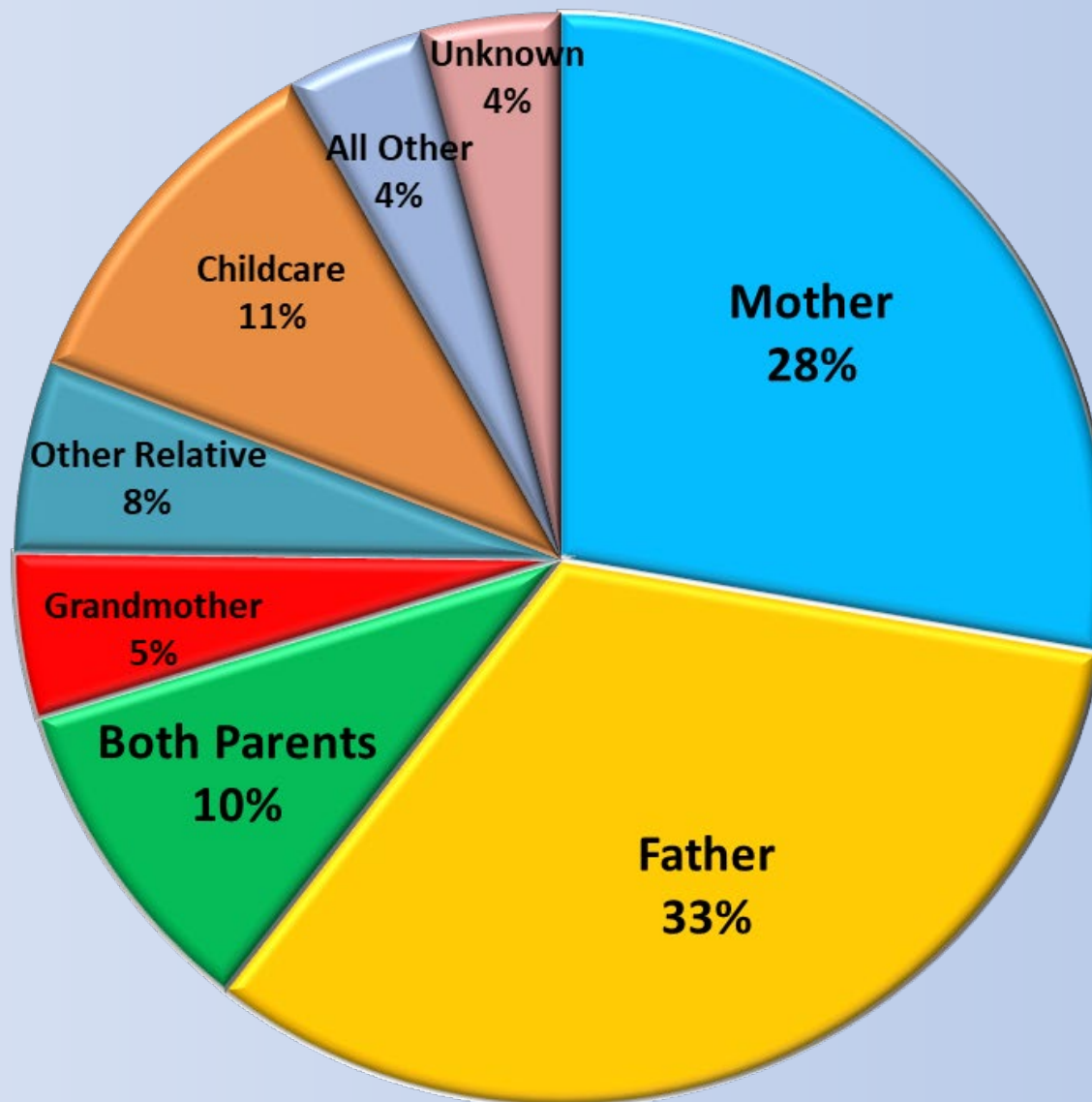


Figure 10a.

Responsible Person for Pediatric Vehicular Heatstroke Deaths:

“Gained Access”

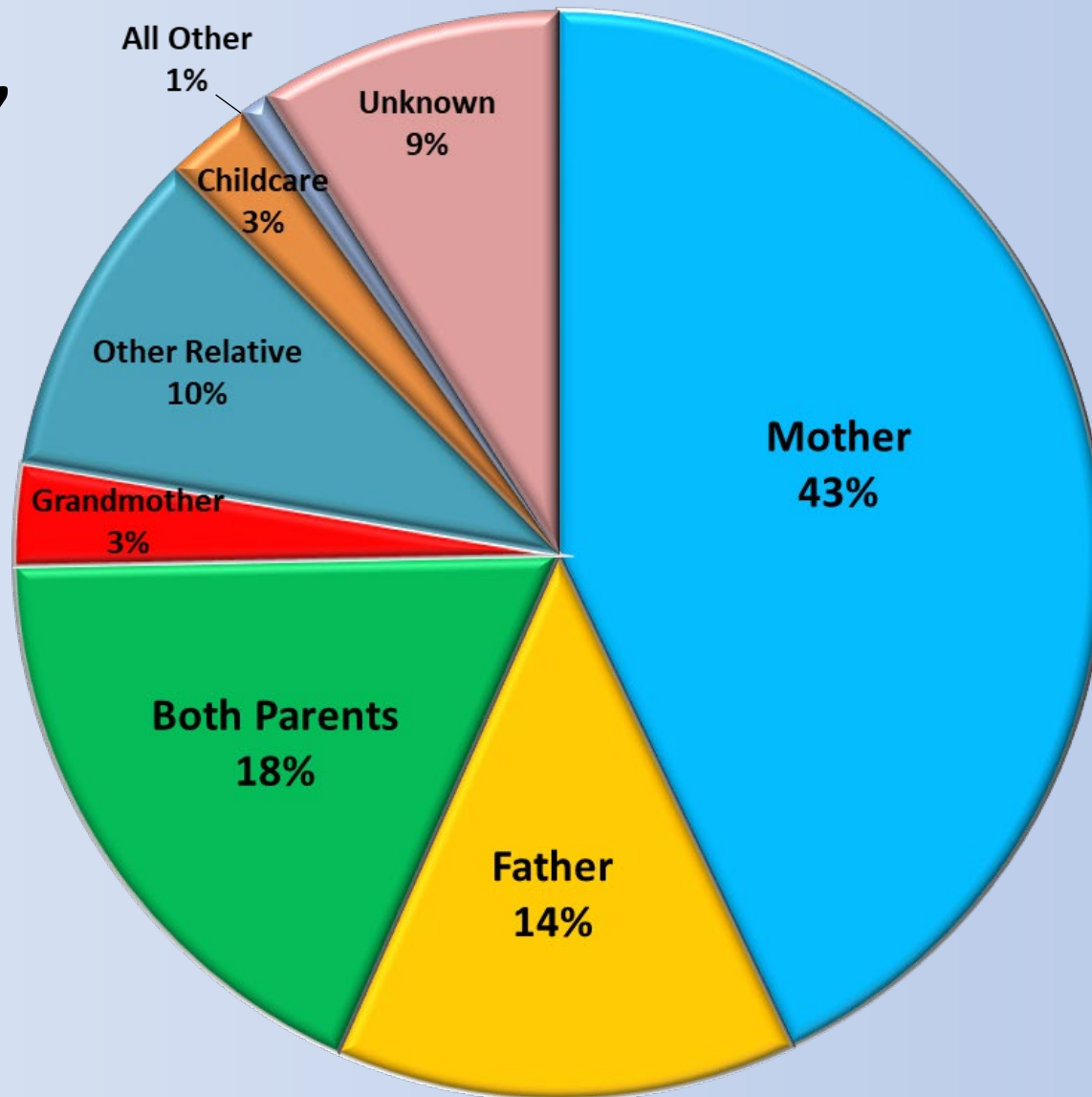


Figure 10b.

Responsible Person for Pediatric Vehicular Heatstroke Deaths:

“Knowingly Left”

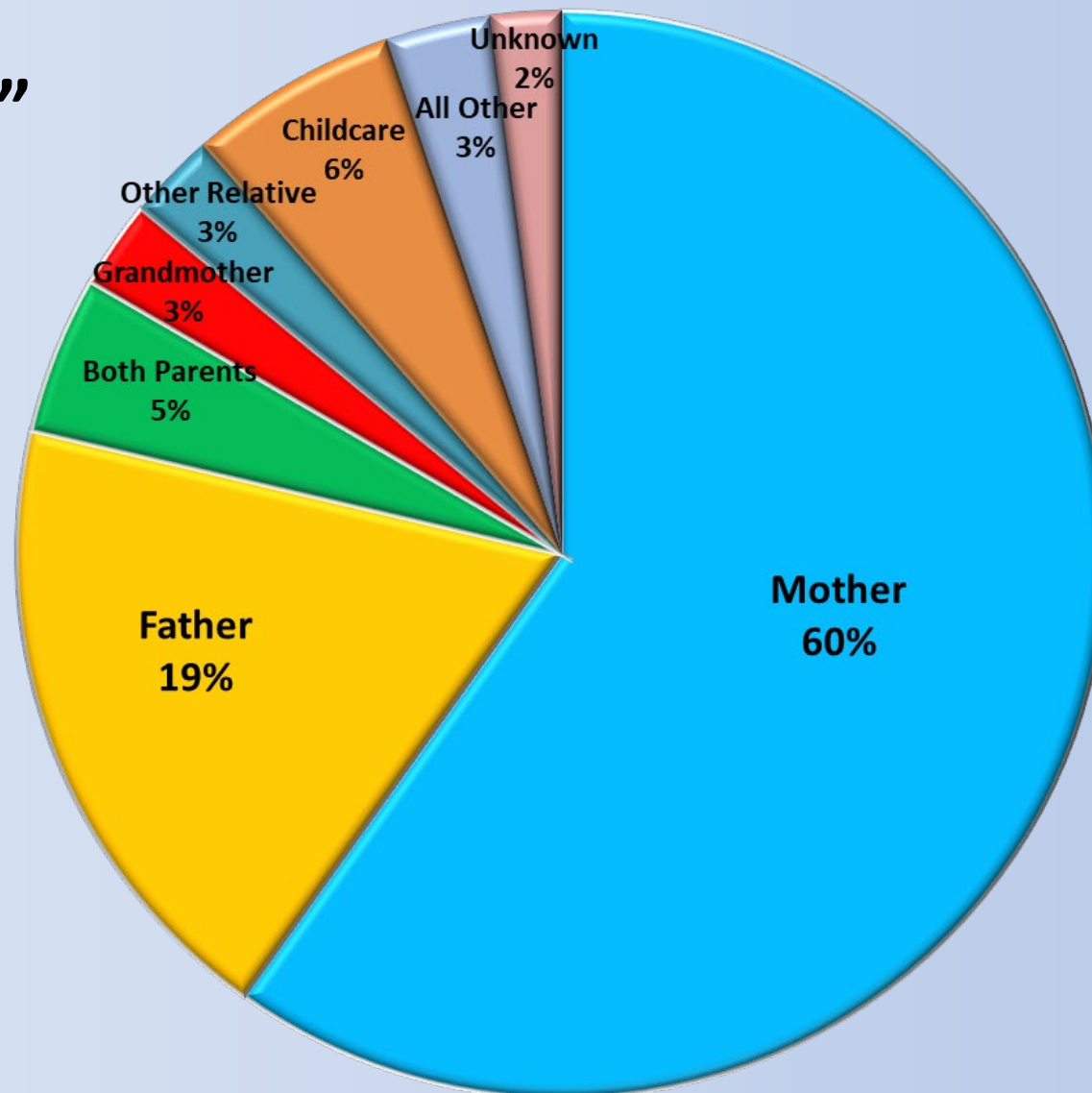


Figure 10c.

Location of Pediatric Vehicular Heatstroke Deaths

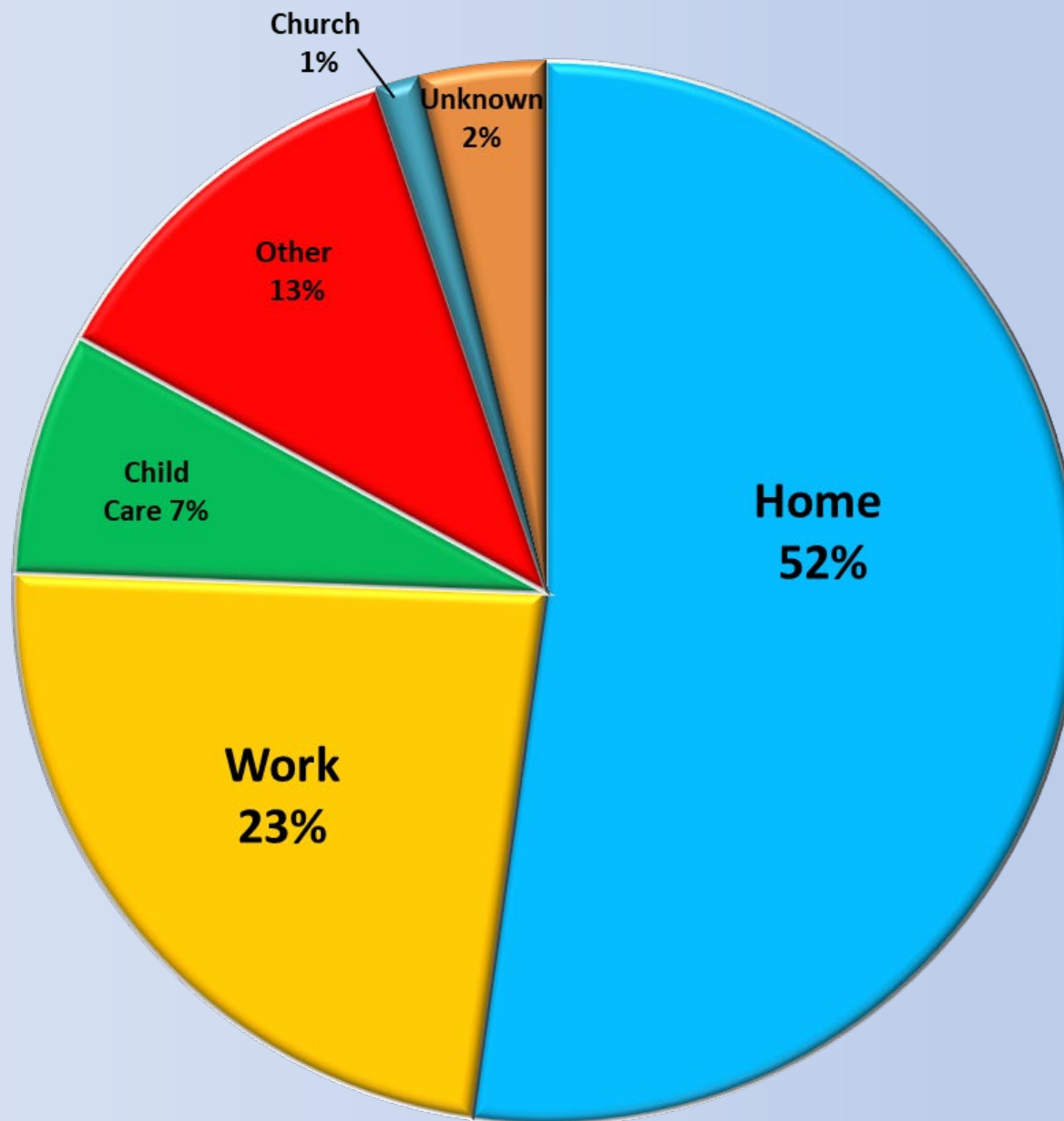
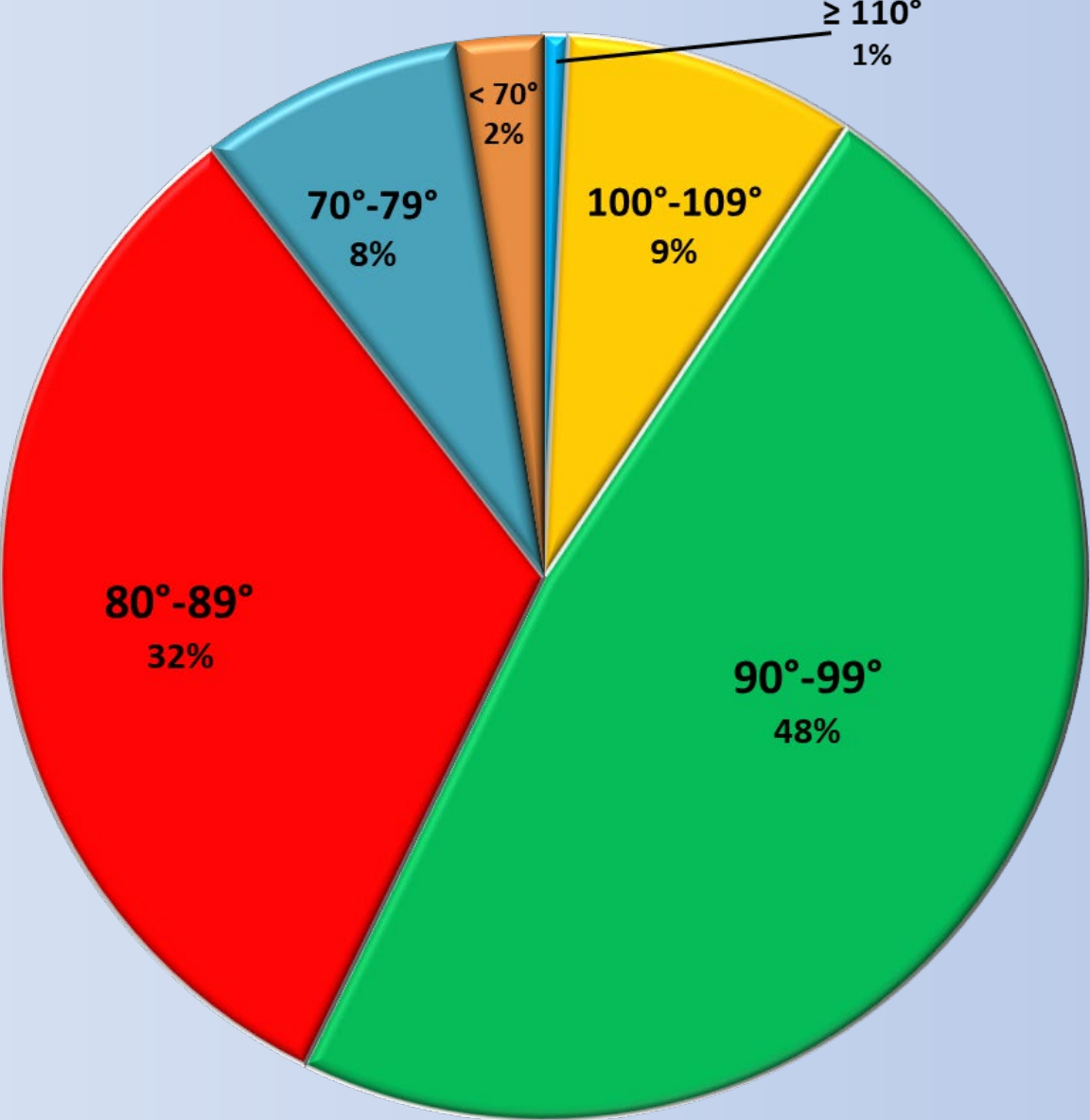


Figure 11.

Daily Max Temperatures for Pediatric Vehicular Heatstroke Deaths

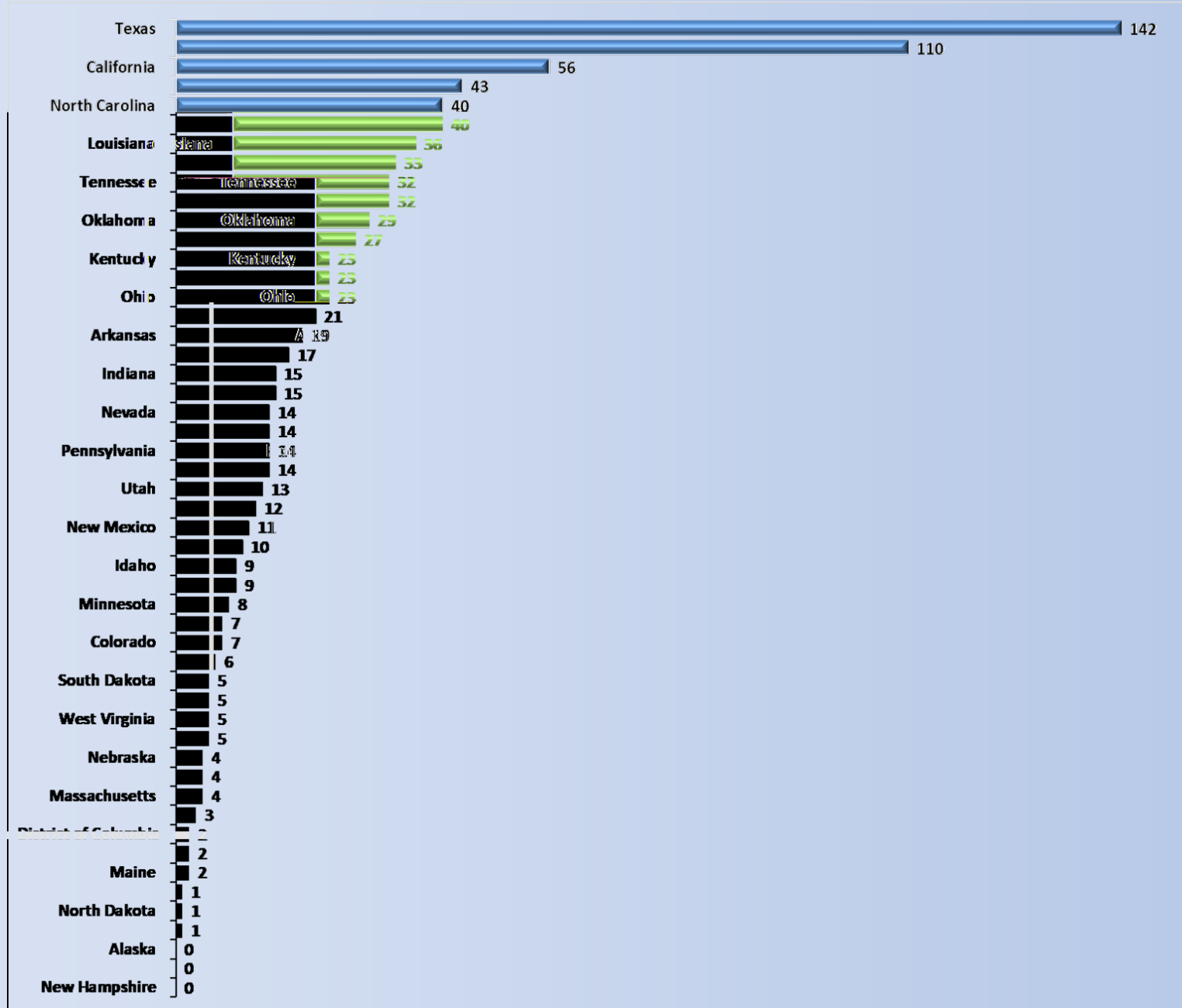
Figure 12.



Source:
NoHeatstroke.org

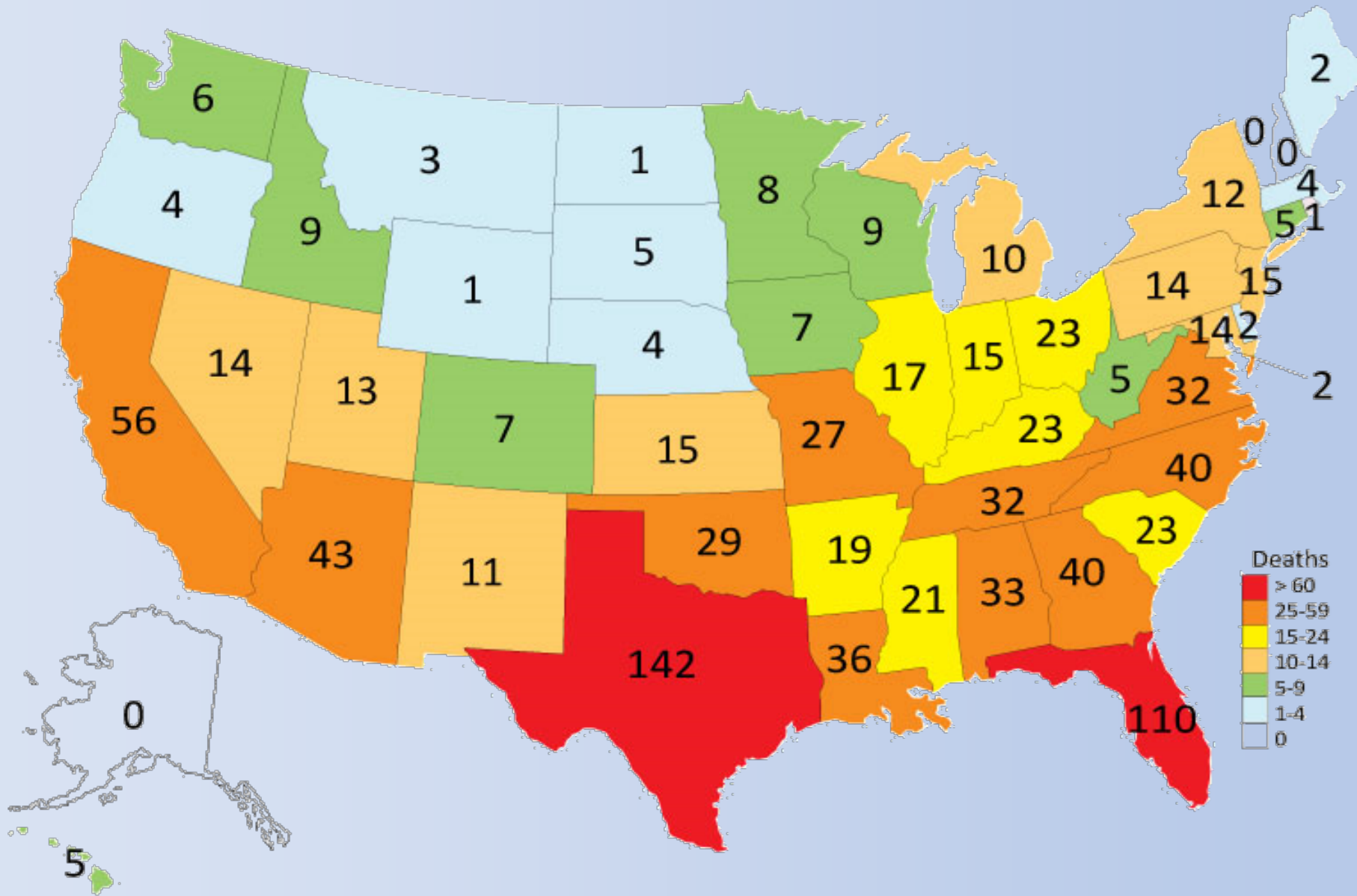
Pediatric Vehicular Heatstroke Deaths by State

Figure 13.



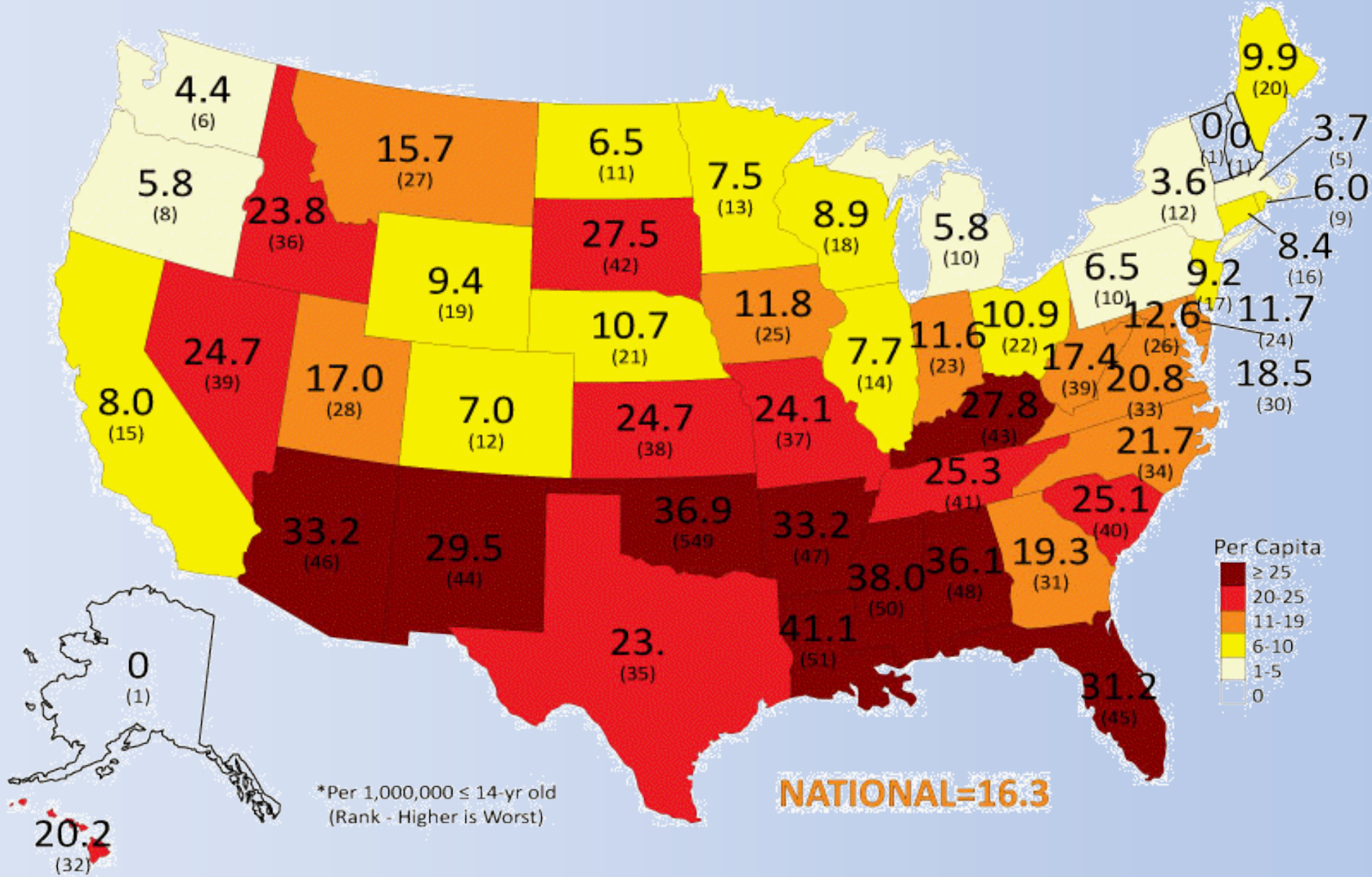
Pediatric Vehicular Heatstroke Deaths by State (1998-2023)

Figure 14.



Per Capita Pediatric Vehicular Heatstroke Deaths by State (1998-2023)

Figure 15.



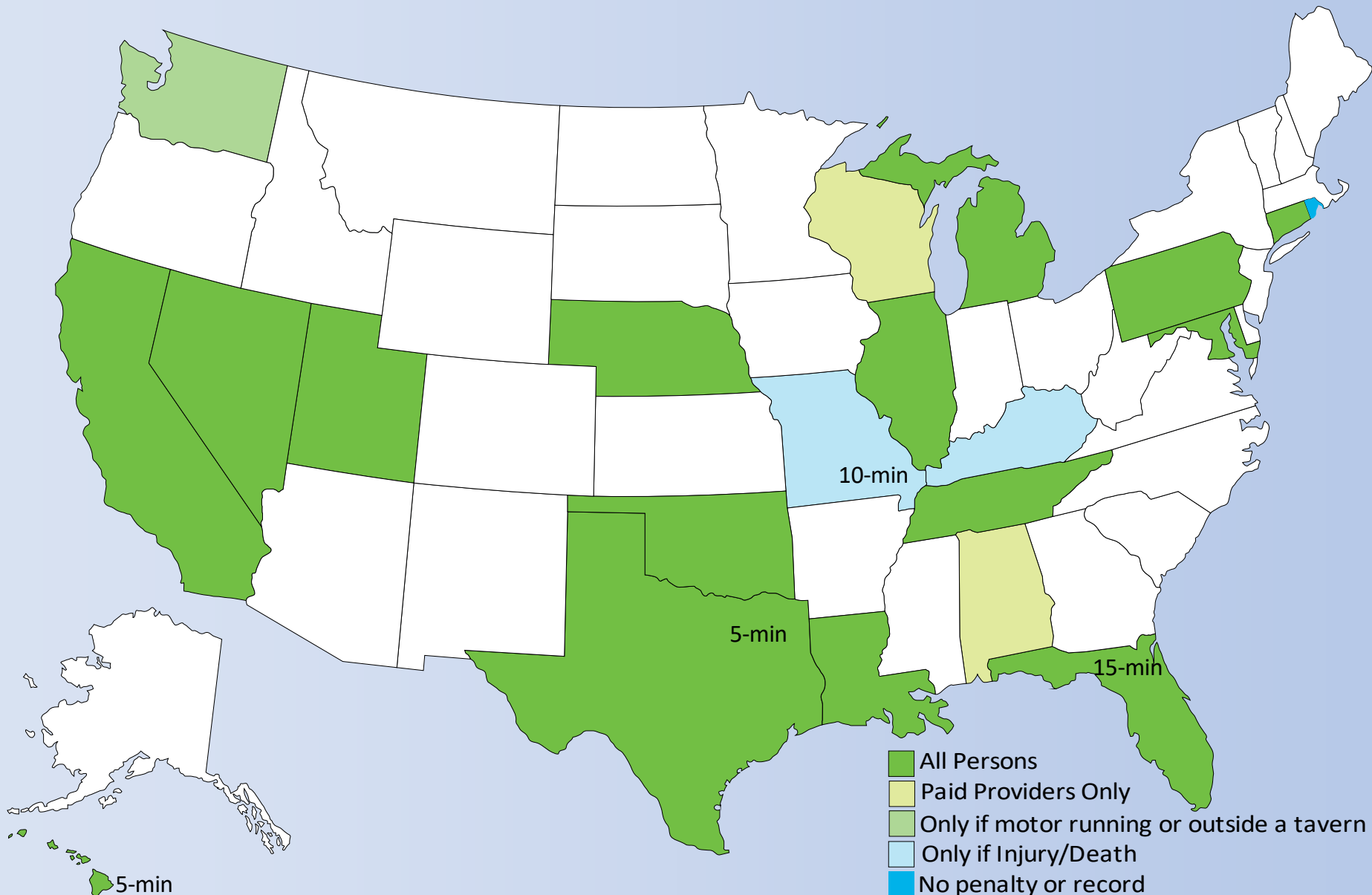
Pediatric Vehicular Heatstroke Circumstances by State

Figure 16.

| National Averages | | Forgotten | Accessed | Left |
|-------------------|--|------------|------------|------------|
| | | 52.5% | 24.9% | 20.9% |
| 1998-2023 | Highlighted red is ≥5% above National Average; highlighted blue is ≤5% below | | | |
| | Totals | State | Forgotten | Accessed |
| 142 | Texas | 60% | 22% | 13% |
| 110 | Florida | 64% | 15% | 13% |
| 56 | California | 46% | 21% | 30% |
| 43 | Arizona | 53% | 26% | 21% |
| 40 | Georgia | 45% | 13% | 35% |
| 40 | North Carolina | 48% | 25% | 23% |
| 36 | Louisiana | 53% | 25% | 22% |
| 33 | Alabama | 52% | 27% | 15% |
| 32 | Tennessee | 38% | 28% | 31% |
| 32 | Virginia | 69% | 3% | 19% |
| 29 | Oklahoma | 45% | 34% | 21% |
| 27 | Missouri | 30% | 33% | 26% |
| 23 | Kentucky | 43% | 43% | 13% |
| 23 | Ohio | 43% | 30% | 22% |
| 23 | South Carolina | 48% | 17% | 30% |
| 21 | Mississippi | 57% | 24% | 14% |
| 19 | Arkansas | 47% | 32% | 16% |
| 17 | Illinois | 41% | 35% | 18% |
| 15 | Indiana | 53% | 33% | 13% |
| 15 | New Jersey | 67% | 27% | 7% |
| 14 | Kansas | 50% | 36% | 7% |
| 14 | Maryland | 50% | 14% | 36% |
| 14 | Nevada | 64% | 21% | 14% |
| 14 | Pennsylvania | 57% | 36% | 0% |

21 States with Unattended Child in Vehicle Laws

Figure 17.



23 States with Good Samaritan Laws Related to Children in Vehicles

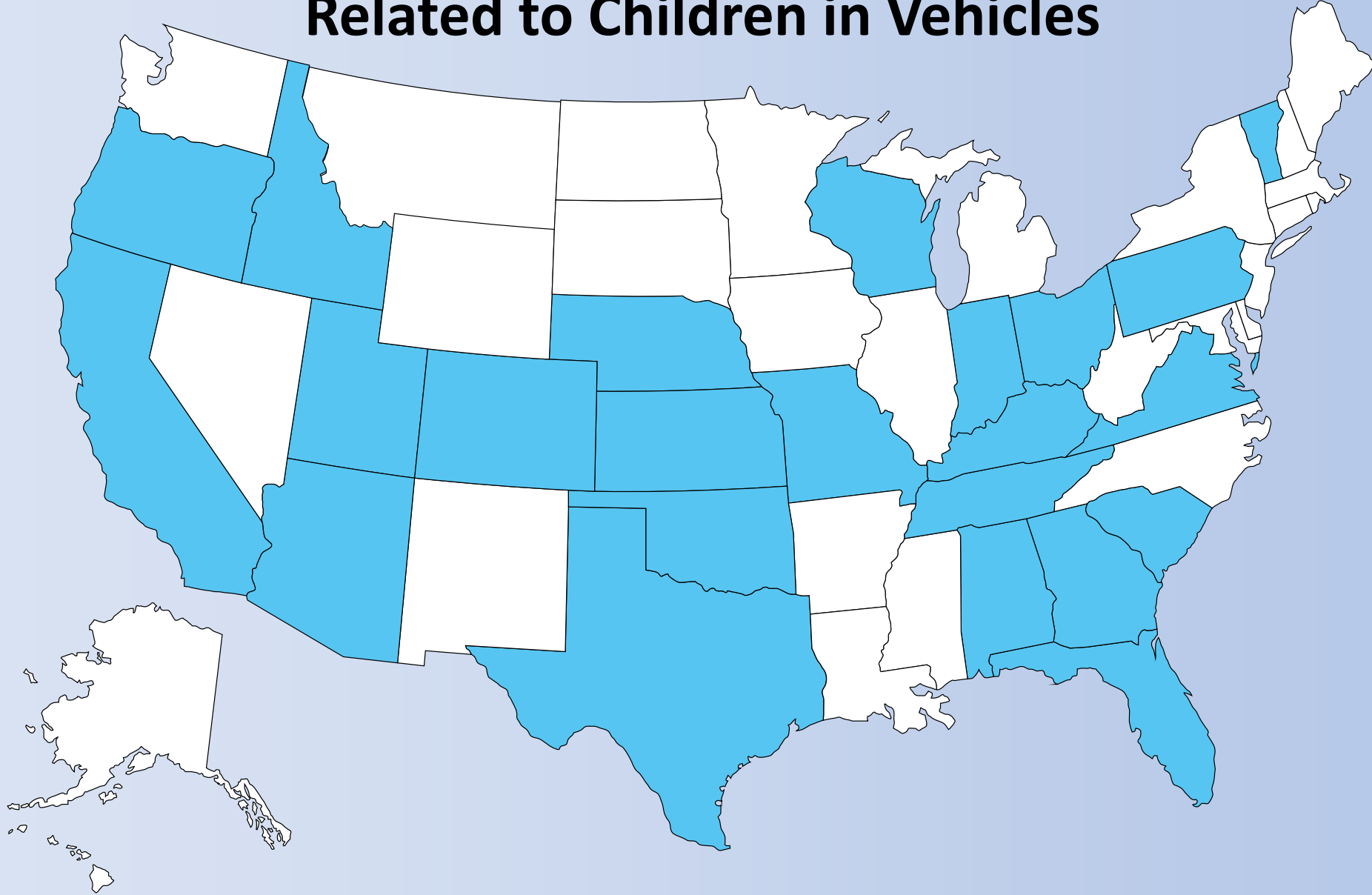


Figure 18.