

# 2017 Child Fatality Annual Report

## Understanding and Preventing Child Deaths in Tennessee

Data in this report reflect deaths occurring in children under 18 in calendar year 2015



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## **ACKNOWLEDGMENTS**

The Tennessee Department of Health expresses its gratitude to the agencies and individuals who have contributed to this report and the investigations that preceded it.

Thank you to the 34 Child Fatality Review Teams in the judicial districts across the state who treat each case with reverence and compassion, working with a stalwart commitment to preventing future fatalities.

Thank you to the State Child Fatality Prevention Review Team members who find ways to put the recommendations in this report to work in saving lives.

Their efforts, and ours, are reinforced immeasurably by the support and cooperation of the following Tennessee agencies: the Commission on Children and Youth, the Department of Children's Services, the Center for Forensic Medicine, the Office of the Attorney General, the Tennessee Bureau of Investigation, the Department of Mental Health and Substance Abuse Services, the Department of Intellectual and Developmental Disabilities, the Tennessee Medical Association, the Department of Education, the State General Assembly, the State Supreme Court, the Tennessee Suicide Prevention Network, Tennessee local and regional health departments, and the National Center for Child Death Review.

It is with deepest sympathy and respect that we dedicate this report to the memory of those children and families represented within these pages.

This report may be accessed online at  
<http://health.tn.gov/mch/childfatality.shtml>

## **DATA CONFIDENTIALITY**

Please note: Portions of the information and data contained in this report were compiled from records that are confidential and contain information which is protected from disclosure to the public, pursuant to Tennessee Code Annotated 68-142-108.

## EXECUTIVE SUMMARY

The data contained in this report represent a review of deaths occurring in children under the age of 18 during the calendar year of 2015. Local teams across the state reviewed all eligible 2015 deaths (n=813). The state child fatality review team developed the following report and recommendations based on these reviews.

### **Key Findings Overview:**

- 1) In 2015, a total number of 890 deaths occurred in children under age 18 years in Tennessee. Overall the child mortality rate for Tennessee slightly increased to 59.8/100,000 in 2015 from 59.4/100,000 in 2014.<sup>1</sup> Tennessee's 2015 child mortality rate still exceeds the 2014 national rate of 49.7.
- 2) In 2015, a total number of 569 deaths occurred in children under age 1 year. The number represents 7 more infant deaths in 2015 than in 2014. The infant mortality rate was 7.0 infant deaths per 1,000 live births, slightly increased 1.4% from 6.9 in 2014.<sup>2</sup> Prematurity is a leading cause of death among Tennessee infants (26% or 134 of reviewed deaths).
- 3) A racial disparity exists among child and infant fatalities. In 2015, black children died at a rate of 89.3 per 100,000 while white children died at a rate of 48.7 per 100,000. Black children had a mortality rate 1.8 times that of white children.
- 4) The number of deaths due to external causes increased while the number of deaths due to medical causes decreased. In 2015, 241 reviewed child deaths were classified as due to external causes including motor vehicle crashes, weapons, asphyxia, fire/burns, poisoning or overdose and fall/crush. This represents a 26% increase from the 191 cases observed in 2014. In 2015, the majority (60%) of the reviewed child deaths (N=487) were due to a medical condition and most were infants. This is a decrease of 8% in medically related child deaths compared to 2014.
- 5) Tennessee's male children accounted for a disproportionate percentage of child fatalities compared to females (59% vs. 41%, respectively). This pattern has been consistent for the past five years.

### **Summary of 2017 recommendations:**

Based on the key findings from the review, the State Child Fatality Review Team made these recommendations for 2017. A detailed explanation of each recommendation can be found on page 57.

1. Safe Sleep: Develop new projects to target at-risk groups
2. Motor Vehicle: Expand educational efforts in schools
3. Intentional Violence: Increase violence prevention work in schools
4. Medical: Make Voluntary Reversible Long-Acting Contraceptives (VRLACs) and alpha-hydroxyprogesterone (17P) more easily available
5. Poisoning: Promote proper storage of medications

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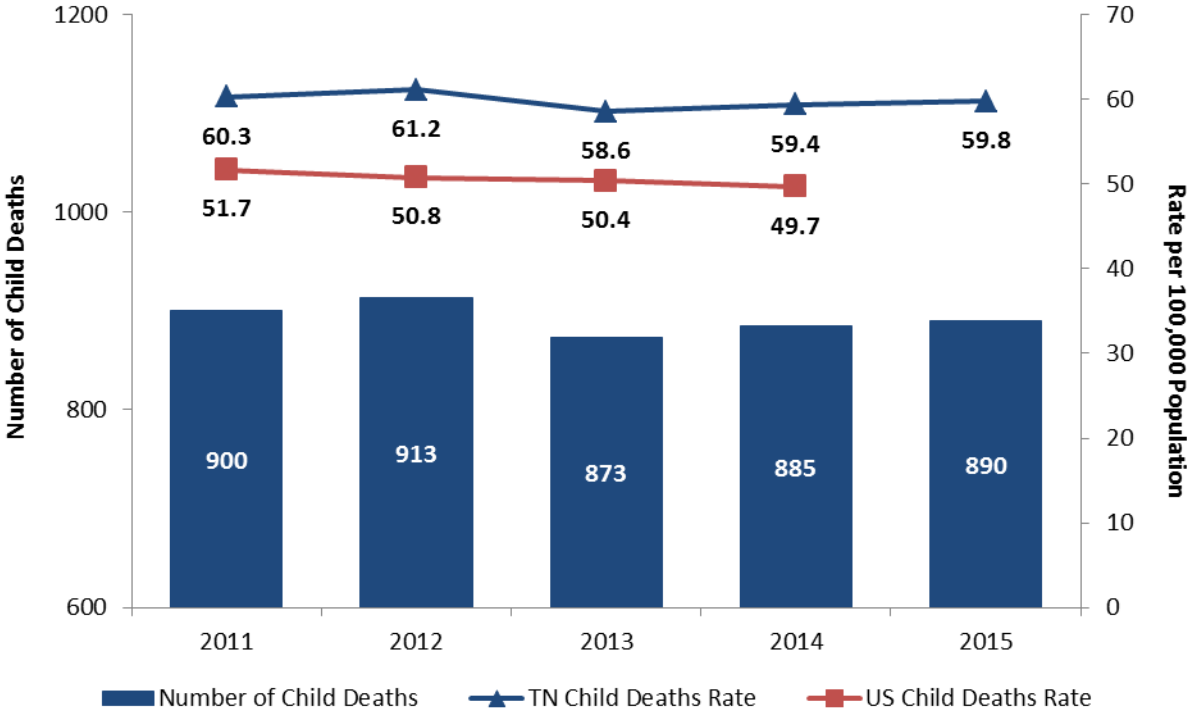
<sup>1</sup> This increase is not statistically significant ( $p>0.05$ ).

<sup>2</sup> This increase is not statistically significant ( $p>0.05$ ).

**General**

The overall 2015 child mortality rate for Tennessee was **59.8 child deaths per 100,000 child population, a slight increase (not statistically significant) from the rate of 59.4 in 2014.**<sup>3</sup> From 2012 to 2015, however, the overall mortality rate has decreased by 2.3% (not statistically significant at p-value<0.05). Tennessee’s 2015 child mortality rate (59.8) still exceeds the national rate of 49.7 by 20% in 2014, the latest year for which the national rate is available. The number and rate of child mortality in Tennessee and the U.S. ages 0-17 for the last five years are shown in Figure 1.

**Figure 1. Number and Rate of Child Mortality for Ages 0-17 Tennessee, 2011-2015**



- As expected, the first year of life continues to be the most perilous for Tennessee’s children, accounting for 64% of all deaths through the age of 17. Children between the ages of 15-17 and 10-14 suffered the next highest percentage of deaths at 11% and 9% respectively.
- Tennessee’s male children accounted for a disproportionate percentage of child fatalities compared to females (59% vs. 41%, respectively). This pattern has been consistent for the past five years.

<sup>3</sup> This increase is not statistically significant (p>0.05).

- A racial disparity exists among child fatalities. Although the majority of the deaths are comprised of white children, black children suffer a significantly higher rate of mortality than whites (Figure 2 and Table 1). In 2015, the mortality rate among black children was almost 1.7 times that of white children. **There was an 8% decrease (not statistically significant) in the mortality rate in black children from 2011 to 2015.**

Figure 2. Child Mortality Rate for Ages 0-17 by Race  
Tennessee, 2011-2015

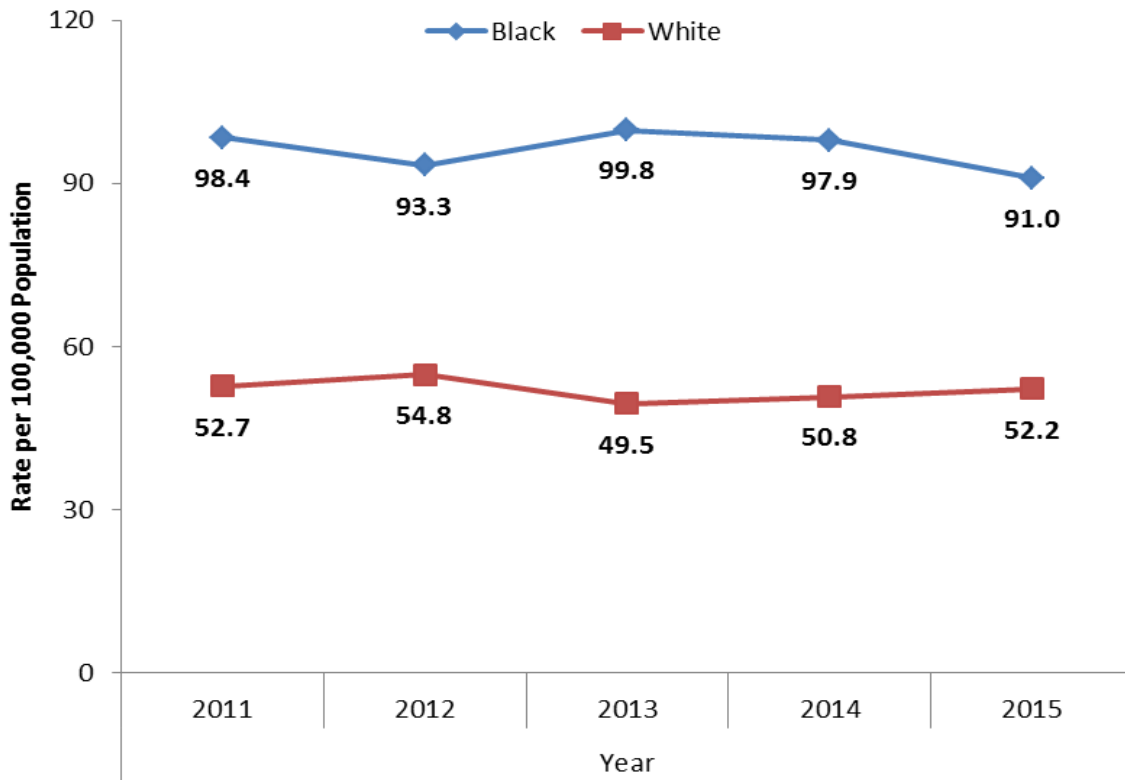


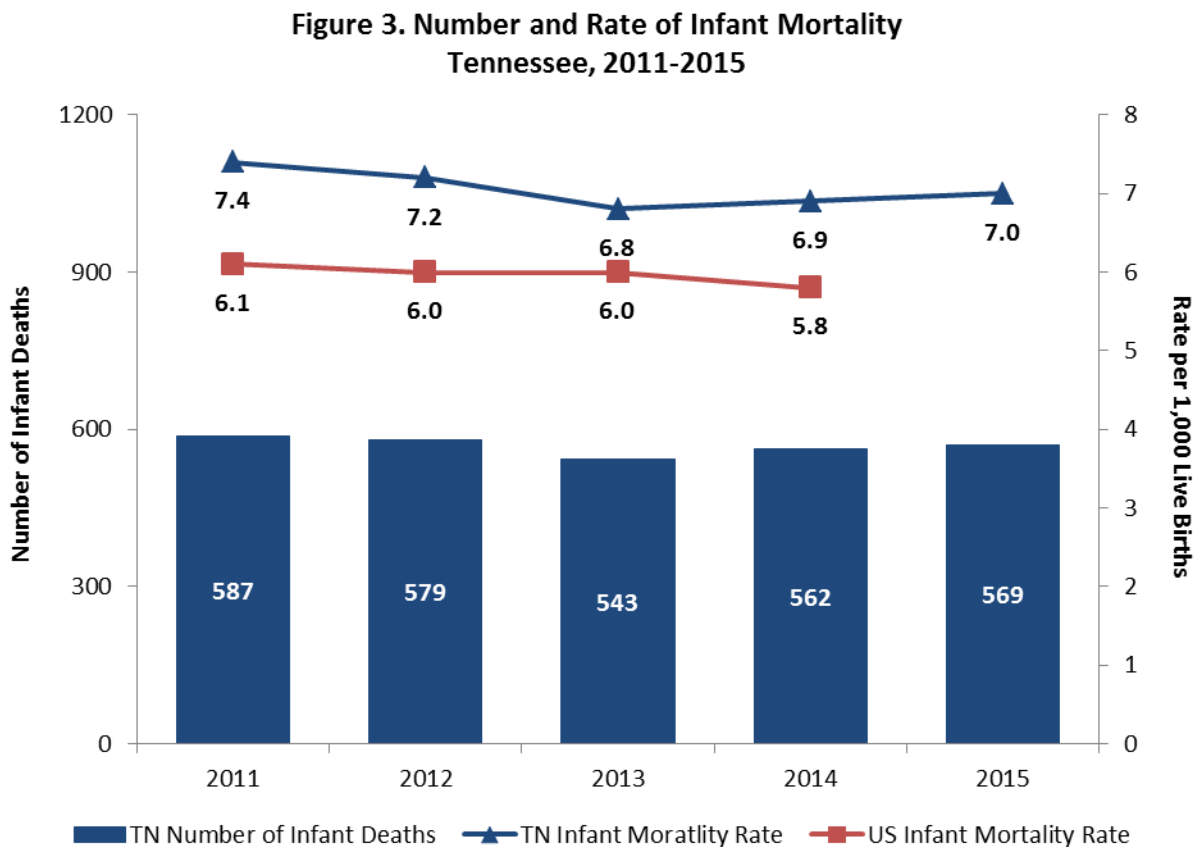
Table 1. Number and Rate of Child Mortality Ages 0-17 by Race in Tennessee, 2011-2015

Year	Blacks			Whites		
	Number of Deaths	Child Population	Rate per 100,000	Number of Deaths	Child Population	Rate per 100,000
2011	301	306034	98.4	581	1102142	52.7
2012	285	305376	93.3	602	1098938	54.8
2013	302	302655	99.8	542	1095152	49.5
2014	295	301419	97.9	555	1092578	50.8
2015	274	301100	91.0	569	1090727	52.2

Data source: Tennessee Department of Health, Division of Policy, Planning and Assessment, Office of Health Statistics.

## Infant Mortality

The overall 2015 infant mortality rate was 7.0 infant deaths per 1,000 live births, a slight increase from the rate of 6.9 in 2014.<sup>4</sup> However, the infant mortality rate in 2015 dropped by 5% in comparison to 2011 (not statistically significant). Similar to the overall child fatality rate, Tennessee's 2015 infant mortality rate still exceeded the national average of 5.8 by 21% in 2014,<sup>5</sup> the latest year for which the national rate is available. The number and rate of infant mortality in Tennessee and the U.S. for the last five years are shown in Figure 3.



- 142 infants died from suffocation, strangulation, or other causes in the sleep environment. This represents a 43% increase (statistically significant) from the 99 infants who died in 2014.
- A racial disparity exists among infants who suffer fatalities. Black infants have a higher mortality rate than whites or infants of other races (Figure 4 and Table 2)<sup>6</sup>; black infants had almost twice the mortality rate as white infants in 2015. There had been a decline in the infant mortality rates for whites since 2011 to 2014. A 10% (not statistically significant) increase is observed for the white infant

<sup>4</sup> This increase is not statistically significant ( $p > 0.05$ ).

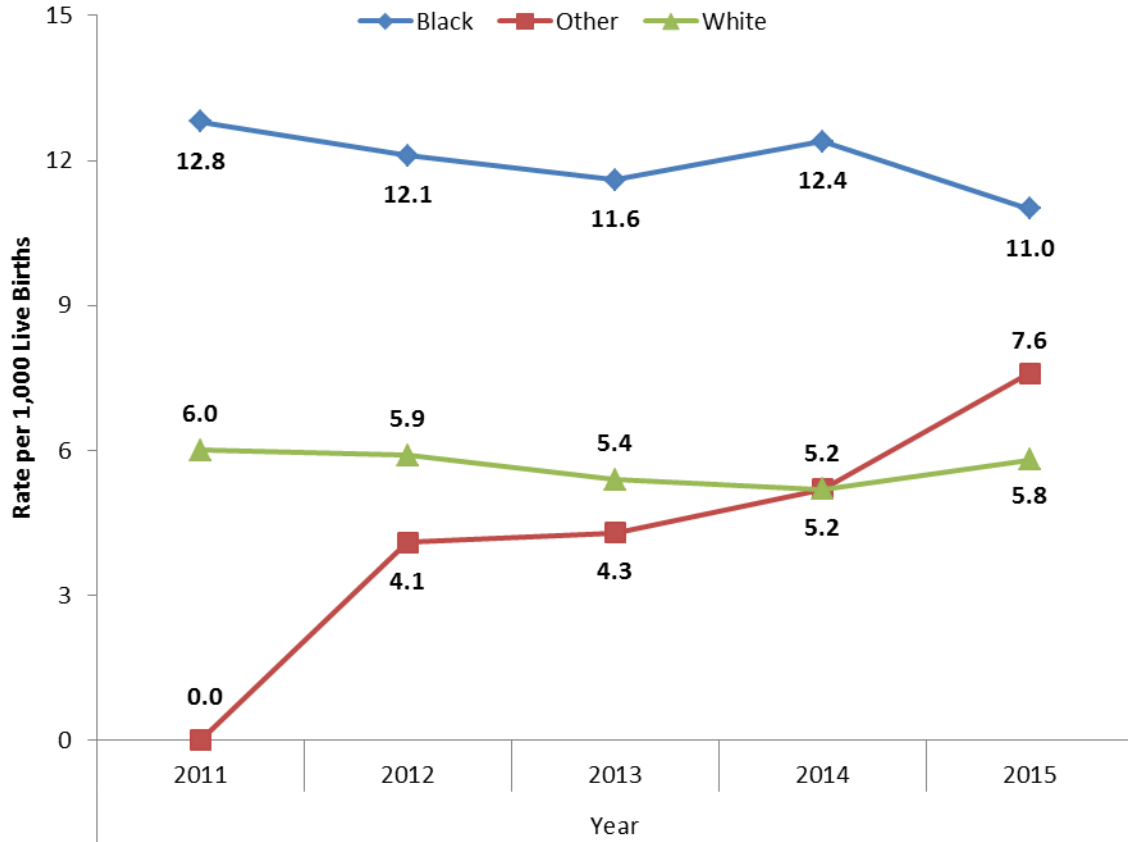
<sup>5</sup> Mathews TJ, MacDorman MF, Thoma ME. Infant mortality statistics from the 2013 period linked birth/infant death data set. National vital statistics reports; vol 64 no 9. Hyattsville, MD: National Center for Health Statistics. 2015.

<sup>6</sup> Other race includes all other non-White or non-black races.



mortality rate from 2014 to 2015. The infant mortality rate for black infants declined 11% from 2014 to 2015 but was also not statistically significant.

**Figure 4. Infant Mortality Rate by Race  
Tennessee, 2011-2015**



**Table 2. Number and Rate<sup>7</sup> of Infant Mortality by Race in Tennessee, 2011-2015**

Year	Blacks			Whites			Other		
	Number of Deaths	Live Births	Rate per 1,000	Number of Deaths	Live Births	Rate per 1,000	Number of Deaths	Live Births	Rate per 1,000
2011	211	16482	12.8	361	60252	6.0	0	2002	0.0
2012	200	16560	12.1	360	60792	5.9	9	2214	4.1
2013	196	16863	11.6	327	60954	5.4	9	2072	4.3
2014	212	17061	12.4	326	62096	5.2	12	2323	5.2
2015	184	16714	11.0	360	61648	5.8	18	2361	7.6

Data source: Tennessee Department of Health, Division of Policy, Planning and Assessment, Office of Health Statistics.

<sup>7</sup> Rates for less than 20 deaths are unstable and must be used with caution.

## **Manner of Death**

Manner of death refers to the intent of a death (Natural, Accident, Suicide, Homicide, or Undetermined). Additional details are available in the “Data Overview” section of this report.

- In 2015, 462 deaths were by natural manner (medical causes) and 148 deaths were determined to be accidental manner. By comparison, 507 of deaths in 2014 were attributed to natural manner while 118 were attributable to accidents.
- Forty deaths of children in 2015 (5% of all deaths) were the result of homicide, an increase from the 34 homicide deaths in 2014.
- Thirty-three young people took their own lives during 2015 (4% of all deaths); an increase from 24 suicides observed in 2014.

## **Cause of Death**

Cause of death refers to the effect, illness, or condition leading to an individual’s death. The cause may be due to a medical condition or an external cause (injury).

- In 2015, the majority (60%) of the reviewed child deaths (N=487) were due to a medical condition and most were infants. This is a decrease of 8% of medical-related child deaths compared to 2014 (N=527).
- Prematurity and congenital anomaly were the leading causes of death from a medical condition.
- In 2015, 241 reviewed child deaths were classified as due to external causes, including motor vehicle crashes, weapons, asphyxia, fire/burns, poisoning or overdose, and fall/crush. This represents a 26% increase from the 191 cases observed in 2014.
  - Seventy-three children (9% of all deaths) died of asphyxia; 56 of these children died in a sleep-related environment. This represents an increase in overall asphyxia cases of 59% from 2014 (46 asphyxia deaths, 31 of which occurred in a sleep-related environment).
  - Sixty-one children (8% of all deaths) died in motor vehicle crashes in 2015, an increase from the 53 vehicular deaths in 2014.
  - Fifty-nine children (7% of all deaths) died from weapon related injuries, a 48% increase from the 40 children who died in 2014. Thirty-four (58%) of the weapons-related fatalities were homicides, 18 (31%) were suicides.
  - Twelve children (1.5% of all deaths) died by drowning, a 43% decrease from the 18 cases in 2014.
  - Twelve children (1.5% of all deaths) died from poisoning, the highest number of poisoning-related child deaths since 2011. Seven of twelve poisoning fatalities involved prescription drugs.
  - Nine children (1% of all deaths) died from a fire, burn or electrocution, an increase of two from 2014.

Table 3 summarizes the most recent year-to-year trends for child fatalities in Tennessee.

**Table 3. Summary of Year-to-Year Trends for Child Fatalities in Tennessee, 2014-2015**

Categories	Number of Deaths	
	2014	2015
<b>Categories Showing Improvement</b>		↓
Drowning	21	12
Neurological/seizure disorder	27	12
<b>Categories Showing Small/No Changes</b>		↔
Animal bite or attack	0	0
Asthma	5	4
Cancer	42	37
Cardiovascular	30	26
Diabetes	0	2
Fall or crush	3	4
Fire, burn, or electrocution	7	9
Infant Mortality (<1 year of age)	562	569
Influenza	3	2
Low birth weight	0	1
Malnutrition/dehydration	0	2
Pneumonia	15	15
Poisoning, overdose or acute intoxication	8	12
Prematurity	145	134
SIDS	5	2
<b>Categories Showing Worsening Outcomes</b>		↑
Asphyxia	46	73
Congenital anomaly	113	125
Motor vehicle or other transport	53	61
Sleep-Related	99	142
Weapon, including body part	40	59

Data source: Tennessee Department of Health, Child Fatality Review Database System.

In Table 3 above, trends in death rates are clustered in three categories: those showing improvements from 2014 to 2015 (more than 10% decrease and number of change >5); those showing relatively no change from 2014 to 2015 (less than 10% change or number of change ≤ 5) and those showing worsening outcomes from 2014 to 2015 (more than 10% increase and number of change > 5).

The review of child fatalities in 2015 revealed decreases in some deaths such as drowning and neurological/seizure disorder. A few other preventable deaths, such as motor vehicle crashes, asphyxia, sleep and weapons-related cases have increased from 2014 to 2015. The rise of these preventable deaths underscores the need for a continued focus on the careful review of every child death, thoughtful identification of opportunities for prevention, and implementation of strategies to prevent future child deaths.

**STATE CHILD FATALITY TEAM MEMBERS**  
**(2017 CHILD FATALITY REPORT)**

**Chair**

John J. Dreyzehner, MD MPH FACOEM  
Commissioner  
Tennessee Department of Health

**Co-Chair**

Morgan McDonald, MD, FAAP, FACP  
Assistant Commissioner  
Director, Division of Family Health and Wellness  
Tennessee Department of Health

**Members**

Valerie Arnold, MD Tennessee Medical Association	Dewayne Johnson Tennessee Bureau of Investigation
Howard Burley, MD Tennessee Department of Mental Health and Substance Abuse Services	Senator Brian Kelsey Tennessee Senate
Thomas Cheetham, MD Tennessee Department of Intellectual and Developmental Disabilities	April Kincaid Tennessee Department of Health
Michael Cull, Ph. D. Tennessee Department of Children's Services	Linda O'Neal Tennessee Commission on Children and Youth
Donna Scott Davenport Tennessee Supreme Court	Senator Doug Overbey Tennessee Senate
Rachel Heitmann Tennessee Department of Health	Representative Antonio Parkinson Tennessee House of Representatives
Mike Hermann Tennessee Department of Education	Kristen Rector Prevent Child Abuse Tennessee
Bonnie Hommrich Tennessee Department of Children's Services	Scott Ridgway Tennessee Suicide Prevention Network
	Representative Ryan Williams Tennessee House of Representatives

## INTRODUCTION

### *The Child Fatality Review Process in Tennessee*

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Child deaths are often regarded as indicators of the health of a community. While mortality data provide an overall picture of child deaths by number and cause, it is from a careful study of each and every child's death that we can learn how best to respond to a fatality and how best to prevent future deaths.

Annually, approximately 40,000 children age 0-17 die in the United States.<sup>8</sup> Through child death review, local multidisciplinary teams meet in communities across the country to review case information for deaths in the hopes of better understanding why children die and what action can be taken to prevent future deaths. The Maternal and Child Health National Center for Child Death Review provides national-level leadership for state and local child fatality review teams. As of July 2012, every state and the District of Columbia had a system for reviewing child deaths.<sup>9</sup>

The Child Fatality Review and Prevention Act of 1995 established the Tennessee Department of Health's Child Fatality Review (CFR). The mission of the CFR is to review deaths in order to promote understanding of the causes of childhood deaths and make and carry out recommendations that will prevent future childhood deaths.

### **Overview of Child Fatality Review Teams**

A local CFR team exists in each of Tennessee's judicial districts; these 34 teams cover all 95 counties, review all deaths of children 17 years of age or younger and make recommendations to the State CFR Team for reduction and prevention of child deaths statewide. Their careful review process results in a thorough description of the factors related to child deaths. Membership of the local teams is outlined in T.C.A. 68-142-106, and includes the regional health officer, Supervisor of Children's Services, Medical Examiner, Prosecuting Attorney, a member of the local education agency, a mental health professional, a pediatrician or family practice physician, an emergency medical service provider or firefighter, and juvenile court representative. While these members are required to attend by law, other agencies that work with children and their families also attend.

The composition of the State CFR Team is outlined in T.C.A. 68-142-103, and includes high-level officials such as the Health Commissioner, the Attorney General, and political leaders such as State Senators and Representatives. This team reviews the aggregate data from the local teams, analyzes statistics of the incidence and causes of child deaths, and makes recommendations to the Governor and General Assembly for their

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<sup>8</sup> Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2014 on CDC WONDER Online Database, released 2016. Accessed at <http://wonder.cdc.gov/ucd-icd10.html>.

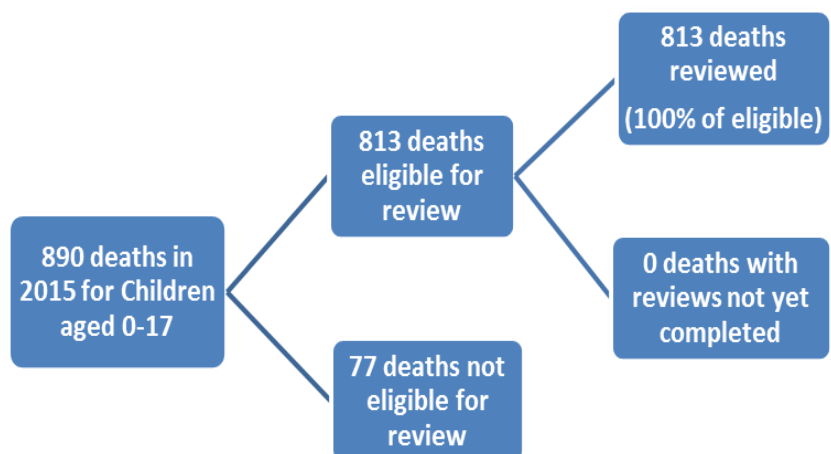
<sup>9</sup> National Center for the Review and Prevention of Child Deaths. Keeping Kids Alive: A Report on the Status of Child Death Review in the United States, 2011. Available at: [http://www.childdeathreview.org/reports/CDRinUS\\_2011.pdf](http://www.childdeathreview.org/reports/CDRinUS_2011.pdf).

consideration in implementing laws, policies, and practices to prevent child deaths in Tennessee and to make improvements in protocols and procedures.

### Review of Child Fatality Review Data

The CFR data included in this report represent thoughtful inquiry and discussion by a multi-disciplinary group of community leaders who consider all the circumstances surrounding the death of each child. They bring to the review table information from a variety of agencies, documents, and areas of expertise. Their careful review process results in a thorough description of the factors related to child deaths.

Of the 890 deaths in 2015, 813 met the review criteria. Another 77 cases did not meet the criteria for gestational age or weight (as defined below). Reviews were completed on all (100%) eligible cases and are represented in this annual report. In previous years, not all child deaths were reviewed before the annual report was released. Such case reviews were considered ongoing and awaited results of contributing information, such as legal investigations or autopsy results. The completion of all 2015 death reviews is a reflection of the significant efforts put in by the local CFR teams and other partnering State agencies.



Deaths of less than 23 weeks gestation and less than or equal to 500 grams in weight are not reviewed because these deaths occur before the currently-accepted limits of viability. Deaths have to meet both the gestation and weight criteria to not be eligible for review. Because of these variables, it is usually impossible to find an exact number-for-number match between CFR data and data from other sources such as vital statistics. The unique role of CFR is to provide a comprehensive depth of understanding of the deaths which may have been prevented to augment other, more one-dimensional data sources.

Tennessee Department of Health (TDH) staff oversee the statewide CFR as mandated in T.C.A. 68-142-101 et. seq. The CFR process incorporates best practices identified by the National Center for the Review and Prevention of Child Death, including: central

administration of statewide child fatality reviews; standardized data collection across review teams; and coordination of recommendations to prevent deaths.

Comparison data from the Centers for Disease Control and Prevention (CDC) and population data by county from the Tennessee Department of Health Division of Policy, Planning, and Assessment are used in many of the analyses included in this report.

### **Limitations of Child Fatality Review Data**

Results for the analysis of the CFR data may vary from previous reports due to the nature of how the data is collected and stored. If the CFR team obtains additional information on a child's death after the completion of the annual report, they are allowed to make changes to any of the already reviewed data, which is then overwritten in the database system. Because local CFR teams may have added additional information to cases described in previous CFR reports after the completion of the reports for those years, the results of prior year data in this year's report may not exactly match numbers in prior years' reports.

Local CFR teams analyze each case based on the best information available to them. As such, there may be additional facts not available to the team that would result in a different classification or conclusion; therefore, the numbers contained in this report may not match reports from other agencies or departments.

## DATA OVERVIEW

### Summary of Child Mortality Data

The overall rate of child fatalities for 2015 was 59.8 per 100,000 in the population of children less than 18 years of age.

In 2015, there were 890 child deaths in Tennessee, of which 813 were reviewed by local CFR teams. Among the reviewed child deaths, the first year of life is the most perilous for Tennessee's children, accounting for 63% of all reviewed deaths through the age of 17 (depicted in Figures 5-7). Males died more frequently than females (accounting for 59% of child fatalities). A racial disparity exists among child fatalities as well. While the majority of the deaths are among white children, black children suffer a higher rate of mortality than whites or other races.<sup>10</sup>

Figure 5. Child Deaths by Age Groups in Tennessee, 2015

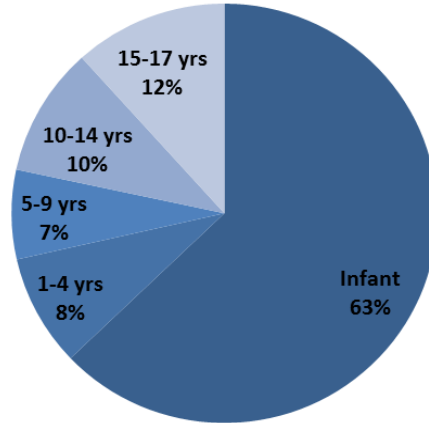


Figure 6. Child Deaths Ages 0-17 by Sex in Tennessee, 2015

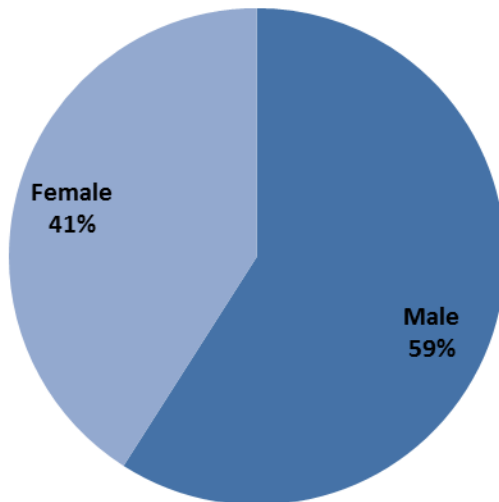
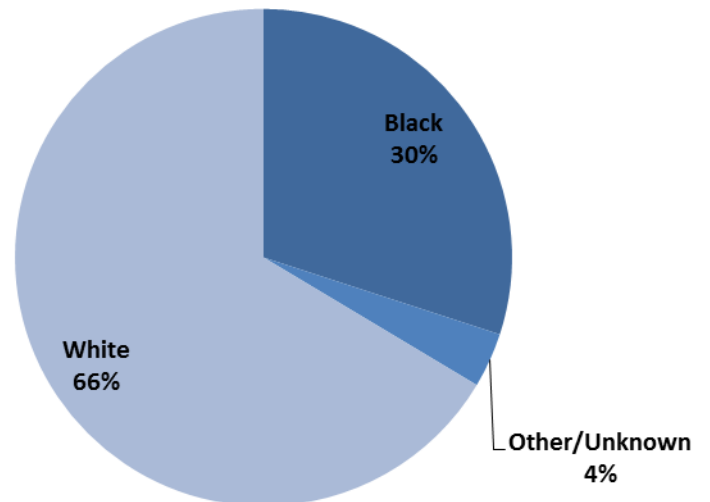


Figure 7. Child Deaths Ages 0-17 by Race in Tennessee, 2015



<sup>10</sup> Other race includes all other non-White or non-black races.



Child deaths are classified by cause and manner of death. There are many complexities involved in determining these classes, beginning with the difference in their definitions. **Manner of death** describes the intent of a death, i.e. whether a death was caused by an act carried out on purpose by oneself or another person(s). The CFR case report tool classifies the manner of death as natural (from medical conditions), accidental (unintentional injuries), homicide, suicide, pending, undetermined, and unknown. **Cause of death** is a specific classification of the effect, illness, or condition leading to an individual's death. The causes of death categories are medical, external (injuries), undetermined or unknown. Medical causes are then further delineated by specific disease entities, while external causes are further delineated by the nature of the injury. In general, determining the cause of death can be easier if a death certificate and an autopsy are available, whereas the manner of death may have a pending investigation and cannot be determined until the investigation is finalized.

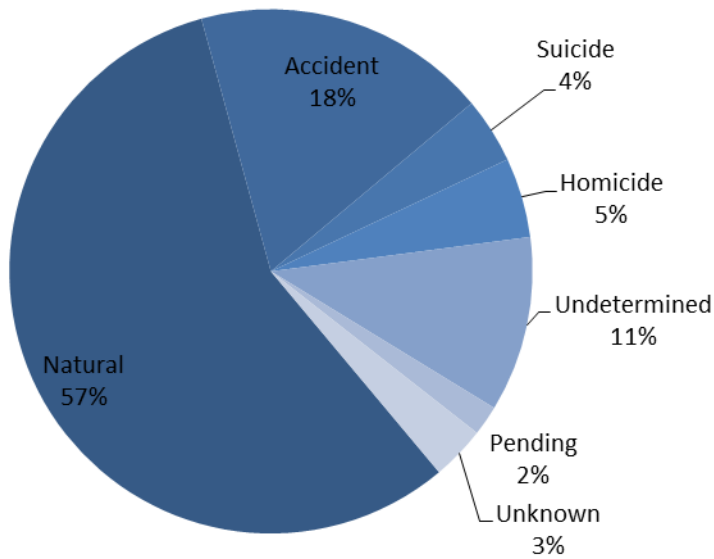
For deaths being reviewed, the CFR teams report the cause and manner of death as indicated on the death certificate. In those instances where a cause or manner of death is left blank, CFR teams may make the determination upon conclusion of the review process. Local child fatality review teams determine the cause and manner of death based on the sum of information available to them at the time of review. In some cases, an exact cause or manner of death may not be known to the team. **Undetermined** cases are those in which the investigation of circumstances surrounding a death fails to reveal a clear determination. For example, the investigation of a sudden unexpected infant death (including autopsy, death scene investigation, and medical record review) may fail to reveal whether the death was due to a medical condition or external causes. **Pending** cases are those in which further information is anticipated to be forthcoming. Cases that are marked as **Unknown** are those in which information necessary to determine the exact cause or manner of death is unattainable or unavailable to the team.

Of the 813 deaths reviewed by the CFR teams in 2015:

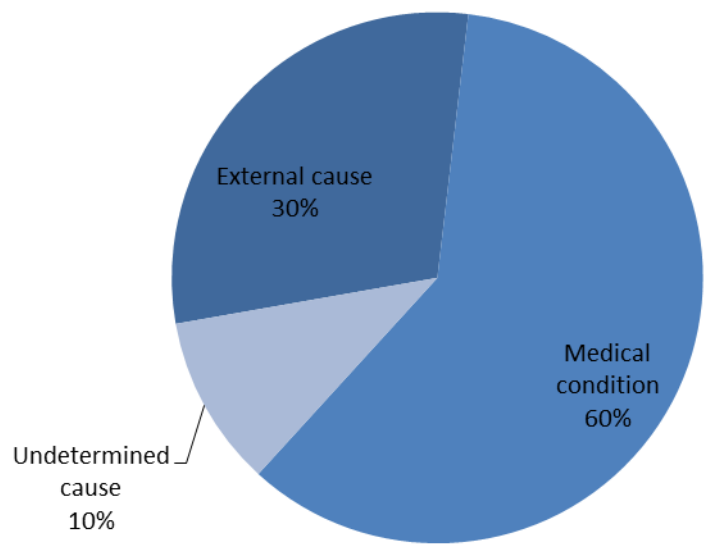
- 487 cases (60%) were due to **medical** causes.
- 241 cases (30%) were due to **external** (injury) causes of death.
- 85 cases (10%) were **unknown or could not be determined** as a medical or external cause. Of 85 cases marked as “Undetermined” or “Unknown,” 80 were less than one year of age. This reflects the inherent complexities in determining the manner and cause of infant deaths.

More detailed data on these deaths is contained in the pages that follow. Figures 8-10 summarize the causes and manners of death for 2015 fatalities. Additionally, Tables 4-6 provide a breakdown of causes by manner and demographic distributions (age, sex and race) for each cause and manner of death. Note that causes of death are broad categories. Detailed information regarding specific cause of death is contained later in the report.

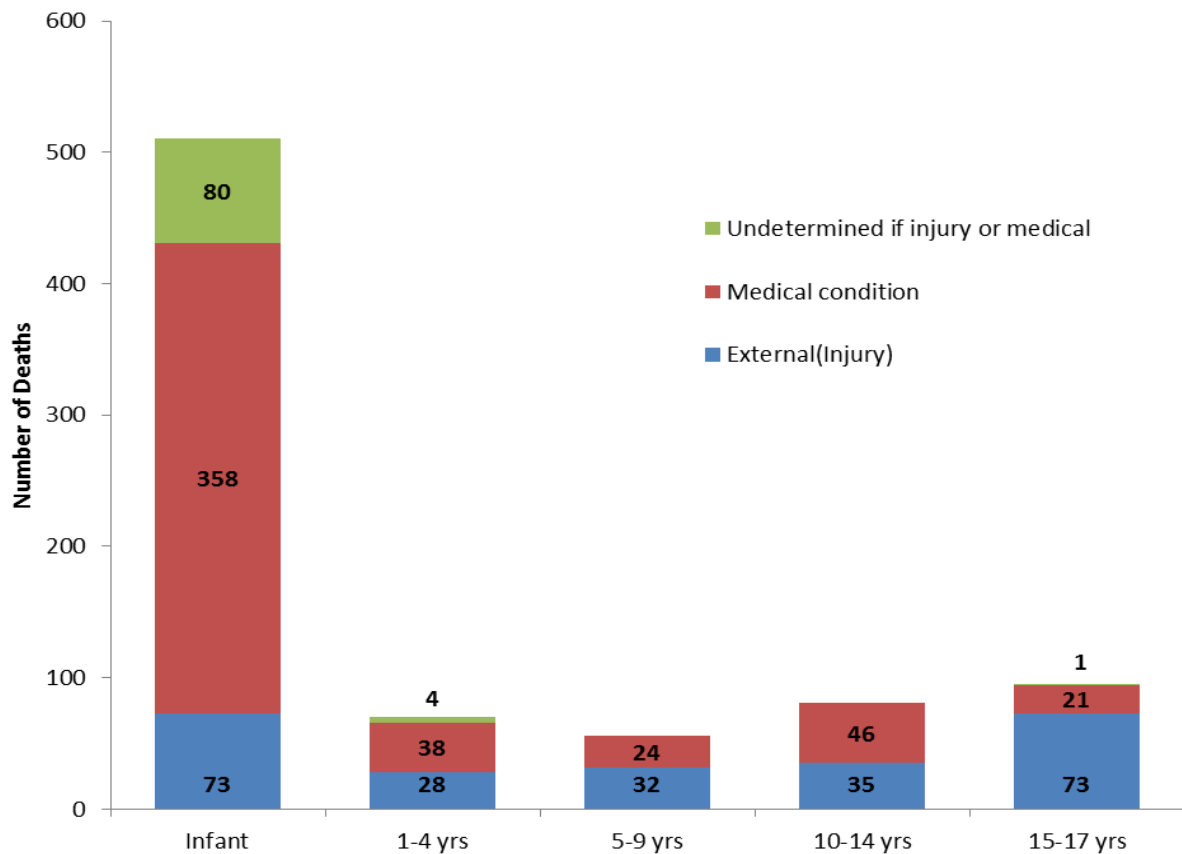
**Figure 8. Manner of Death Summary, Children Ages 0-17 in Tennessee, 2015**



**Figure 9. Cause of Death Summary, Children Ages 0-17 in Tennessee, 2015**



**Figure 10. Medical/External Causes of Death for Children Ages 0-17 by Age Group Tennessee, 2015**



In order to better understand cause and manner of death, it is important to examine both their differences and similarities. While cause and manner of death have two very distinct definitions, they are strongly associated. In most cases, there is an obvious link between them. For example, a death due to a medical cause would be listed as having occurred in a natural manner while a death due to an external cause of injury might be listed as having occurred in an accidental manner. However, there may be cases where the manner and causes do not obviously relate. The underlying cause of death could be due to a medical condition, but the manner of death could be an accident. An example of this would be a case where a mother was pregnant and a motor vehicle accident resulted in preterm labor, and the baby was born and died with complications associated with preterm birth. This relationship is illustrated on Table 4, where the causes of death are stratified by manner. Table 5 and Table 6 provide demographic information for cause of death and manner of death.

**Table 4. Medical/External Causes of Death by Manner for Children Ages 0-17 in Tennessee, 2015**

Cause of Death	Manner of Death							Total
	Natural	Accident	Suicide	Homicide	Undetermined	Pending	Unknown	
External (Injury)	4	146	33	39	10	5	4	241
Medical condition	454	2	0	1	3	5	22	487
Undetermined Cause	4	0	0	0	75	5	1	85
<b>Total</b>	<b>462</b>	<b>148</b>	<b>33</b>	<b>40</b>	<b>88</b>	<b>15</b>	<b>27</b>	<b>813</b>

**Table 5. Medical/External Causes of Death Summary for Children Ages 0-17 in Tennessee, 2015**

2015	Cause of Death			Total
	External (Injury)	Medical condition	Undetermined if injury or medical	
<b>Total</b>	241	487	85	813
Age Group				
<b>Infant</b>	73	358	80	511
<b>1-4 yrs</b>	28	38	4	70
<b>5-9 yrs</b>	32	24	0	56
<b>10-14 yrs</b>	35	46	0	81
<b>15-17 yrs</b>	73	21	1	95
Race				
<b>Black</b>	72	139	33	244
<b>Other/Unknown</b>	4	21	4	29
<b>White</b>	165	327	48	540
Sex				
<b>Male</b>	161	262	57	480
<b>Female</b>	80	225	28	333

**Table 6. Manner of Death Summary for Children Ages 0-17 in Tennessee, 2015**

2015	Manner of Death							Total
	Natural	Accident	Suicide	Homicide	Undetermined	Pending	Unknown	
<b>Total</b>	462	148	33	40	88	15	27	813
<b>Age Group</b>								
<b>Infant</b>	340	57	0	6	79	8	21	511
<b>1-4 yrs</b>	35	19	0	7	4	2	3	70
<b>5-9 yrs</b>	24	23	0	8	1	0	0	56
<b>10-14 yrs</b>	43	14	14	3	1	5	1	81
<b>15-17 yrs</b>	20	35	19	16	3	0	2	95
<b>Race</b>								
<b>Black</b>	131	45	4	22	34	2	6	244
<b>Other/Unknown</b>	21	2	1	1	3	1	0	29
<b>White</b>	310	101	28	17	51	12	21	540
<b>Sex</b>								
<b>Male</b>	248	99	23	29	55	10	16	480
<b>Female</b>	214	49	10	11	33	5	11	333

From 2012 to 2015, the overall mortality rate has decreased by 2.3% (not statistically significant); however, the 2015 rate is a slight increase from the 2014 rate. While deaths due to medical conditions in 2015 have decreased 7.6% compared to 2014, there was a 27% increase in fatalities due to external causes of injury from 2014 to 2015. Figures 11 and 12 depict these yearly trends and additional information is provided in the next section “Specific Causes of Death.”

**Figure 11. Rate of Child Mortality Ages 0-17 by Cause of Death in Tennessee, 2011-2015**

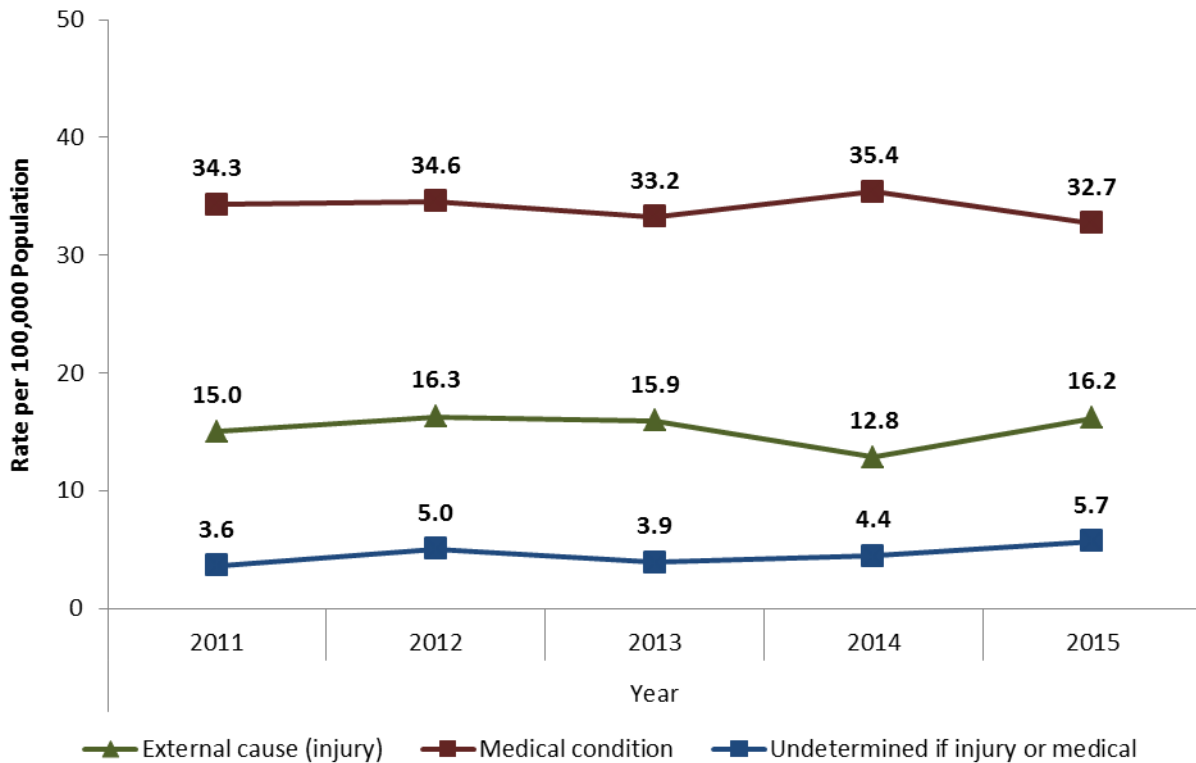
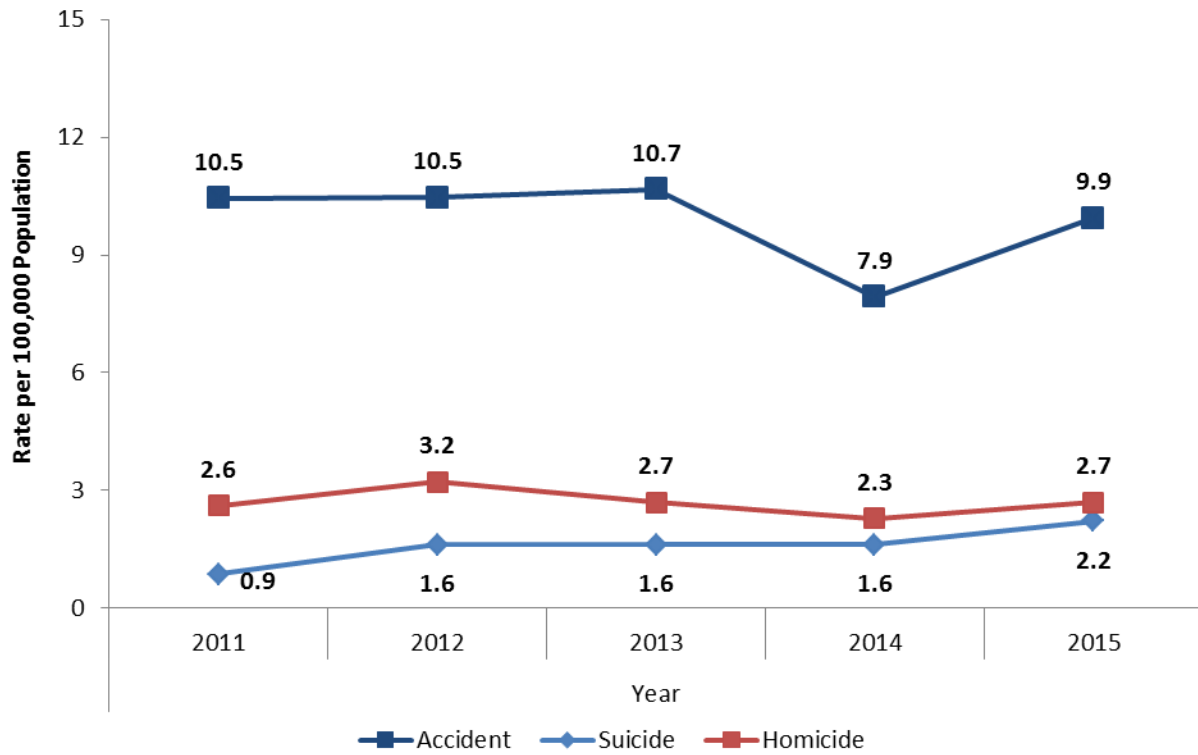


Figure 12. Rate of Child Mortality Ages 0-17 by Manner of Death in Tennessee, 2011-2015



## Specific Causes of Death

The cause of death includes two broad categories: external causes of death and medical causes. Within the external classification, individual deaths are further classified according to the nature of the injury. Of the 813 reviewed child deaths in 2015, 241 (approximately 30%) were classified as due to external causes, including asphyxia, motor vehicle crashes, weapons, drowning, poisoning or overdose, fire/burns and fall/crush. This represents a statistically significant increase from 26% in 2014 (191 deaths of external causes out of 784). Detailed analysis for each specific injury death is provided in later sections of this report.

**Table 7. External Cause of Death (Injury Causes) for Children Ages 0-17 by Age Groups Tennessee, 2015**

Injuries	Total	Percent of Reviewed Deaths	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs
Asphyxia	73	9.0%	58	5	0	4	6
Motor vehicle or other transport	61	7.5%	4	4	15	10	28
Weapon	59	7.3%	5	5	6	15	28
Drowning	12	1.5%	0	4	3	2	3
Poisoning, overdose or acute intoxication	12	1.5%	2	2	2	1	5
Fire, burn, or electrocution	9	1.1%	0	2	3	3	1
Other	8	1.0%	3	3	1	0	1
Fall or crush	4	0.5%	0	2	1	0	1
Unknown	2	0.2%	0	1	1	0	0
Undetermined	1	0.1%	1	0	0	0	0
<b>Total</b>	<b>241</b>	<b>29.6%</b>	<b>73</b>	<b>28</b>	<b>32</b>	<b>35</b>	<b>73</b>

Within the medical classification, causes are further specified by particular conditions or disease entities. In 2015, **487 deaths were attributed to medical causes**. Medical causes can include those acquired congenitally (present at birth) or those that develop as the child grows. The majority of deaths from medical causes in Tennessee are related to prematurity and congenital anomalies. Other causes include infections, neurological conditions including seizures, and childhood cancers. In 2015, approximately 60% of reviewed deaths were attributed to medical causes; this represents a decrease from 67% in 2014. The largest decrease was observed in neurological/seizure disorders (27 cases in 2014 compared to 12 in 2015) followed by prematurity (146 cases in 2014 compared to 134 cases in 2015). Medical causes of death are outlined in Table 8.

It is important to note that when SIDS and/or a Sudden Unexplained Infant Death (SUID) is identified on a death certificate, the cause may be classified as “Medical” or “Undetermined.”

**Table 8. Medical Cause of Death (Medical Causes) for Children Ages 0-17 by Age Groups  
Tennessee, 2015**

Medical Causes	Total	Percent of Reviewed Deaths	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs
Prematurity	134	16.5%	133	1	0	0	0
Congenital anomaly	125	15.4%	112	6	3	3	1
Other medical condition*	86	10.6%	49	7	11	14	5
Cancer	37	4.6%	1	11	6	13	6
Cardiovascular	26	3.2%	16	4	1	2	3
Other perinatal condition	17	2.1%	17	0	0	0	0
Pneumonia	15	1.8%	8	1	0	2	4
Other infection	13	1.6%	8	3	0	2	0
Neurological/seizure disorder	12	1.5%	3	2	2	4	1
Asthma	4	0.5%	0	0	1	2	1
Influenza	2	0.2%	0	2	0	0	0
Malnutrition/dehydration	2	0.2%	1	1	0	0	0
SIDS	2	0.2%	2	0	0	0	0
Diabetes	2	0.2%	0	0	0	2	0
Low birth weight	1	0.1%	1	0	0	0	0
Undetermined medical cause	1	0.1%	1	0	0	0	0
Unknown	8	1.0%	6	0	0	2	0
<b>Total</b>	<b>487</b>	<b>59.9%</b>	<b>358</b>	<b>38</b>	<b>24</b>	<b>46</b>	<b>21</b>

\*Other medical condition includes all other conditions that fall under a different category than those listed above, e.g. myocarditis or intestinal infarction.



## **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Routine vaccination of infants and children against diseases such as pertussis, measles, and influenza.
- Early and regular prenatal care for pregnant women.
- Screening to identify risk factors for prematurity that may indicate the need for treatment with 17 alpha-hydroxyprogesterone caproate (17P).
- Avoidance of tobacco by pregnant women.
- Promotion of social services that are available to low-income, child-bearing age and pregnant women.
- Widespread messaging campaigns to promote the importance of safe sleep.
- Provider and patient education and facilitation of antenatal steroids when appropriate.

Current prevention efforts in Tennessee include:

- Certified Application Consultants have been staffed in each local health department to help women with presumptive Medicaid eligibility sign up on the Marketplace.
- The Tennessee Department of Health funds the Tennessee Tobacco QuitLine which offers smoking cessation services to anyone, including pregnant women.
- Tobacco settlement funds are provided to all 95 counties for pregnancy smoking cessation activities.
- The Tennessee Department of Health operates the “ABC’s of Safe Sleep” campaign to reduce SIDS and other sleep-related deaths.
- Prevent Child Abuse Tennessee (PCAT) connected 91% of 882 families served this fiscal year to a medical home. 83% of children enrolled in PCAT home visiting programs were up to date on immunizations by 2 years of age and 93% of women enrolled in the home visiting programs prenatally, delivered full term infants.
- Promotion of highly effective contraception including Voluntary Reversible Long Acting Contraceptives (VRLACs), when appropriate and desired by women to encourage safer spacing between pregnancies.

**Summary of Infant Mortality Data**

Infant mortality is defined as a death during infancy (the first 12 months of life). Infant mortality accounts for the largest single component of the Child Fatality Review process and is of particular concern in the state of Tennessee. The state’s infant mortality rate declined from 2011 to 2013 (from 7.4 in 2011 to 6.8 deaths per 1,000 live births in 2013) but a small increase was observed between 2013 to 2015 (6.8 to 7.0, respectively). Tennessee’s infant mortality rate in 2015 was 21% higher than the national average for infant mortality (5.8 in 2014).<sup>11</sup>

In 2014 (the most recent year for which national data is available), 23,215 infants died prior to their first birthday in the United States (5.8 per 1,000 live births). Two-thirds of infant deaths occur during the first twenty eight days. The leading causes of infant death in the United States in 2014 were congenital malformations, low birthweight, maternal complications, SIDS and unintentional injuries. Together, the five leading causes accounted for 57% of all infant deaths in the United States in 2014.<sup>12</sup>

In 2015, **511** Tennessee infant deaths<sup>13</sup> were reviewed by local child fatality review teams. Table 9 provides a snapshot of the risk factors readily associated with infant mortality. It is important to note that, because the categories are not mutually exclusive, their total will exceed that of the 511 deaths.

**Table 9. Risk Factors Associated with Infant Deaths Reviewed by Tennessee CFR Teams, 2015**

Risk Factors	Total	Natural	Accident	Homicide	Undetermined	Pending	Unknown	Percent of Total Infant Deaths
<b>Deaths Reviewed</b>	<b>511</b>	340	57	6	79	8	21	100%
Low birth weight (<2500 grams)	<b>390</b>	297	29	5	39	5	15	76%
Premature (<37 weeks)	<b>296</b>	245	10	2	24	2	13	58%
Known Intrauterine Smoke Exposure	<b>146</b>	68	28	2	36	6	6	29%
Known Intrauterine Drug Exposure	<b>48</b>	22	7	0	12	1	6	9%
Late(>6 months) or No Prenatal Care	<b>48</b>	25	8	0	14	0	1	9%
Known Intrauterine Alcohol Exposure	<b>3</b>	1	0	0	2	0	0	1%

<sup>11</sup> Centers for Disease Control and Prevention. Deaths: Final Data for 2014. National Vital Statistics Reports; Vol 64 No 9. Hyattsville, MD: National Center for Health Statistics. 2016.

<sup>12</sup> <http://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm>;

National vital statistics reports; vol 64 no 9. Hyattsville, MD: national Center for Health Statistics.2016.

<sup>13</sup> Deaths of less than 23 weeks’ gestation and less or equal than 500 grams in weight are not reviewed. Therefore, this number may differ from that published in other Departmental reports.

As indicated in Table 9, low birth weight and prematurity were risk factors associated with many infant deaths. This is consistent with other analyses that indicate low birth weight and prematurity are major contributors to Tennessee's infant mortality rate. Additionally, 29% of infant deaths were associated with known intrauterine smoke exposure. Smoking during pregnancy is known to be associated with both prematurity and low birth weight, both of which are independent risk factors for infant mortality.

A detailed county-level listing of infant mortality rates can be found in Appendix D. The count of infants deaths reported there differs from that reported through the Child Fatality Review process, as the local CFR teams only review deaths in which the infant was born weighing over 500 grams or at 23 weeks' gestational age or greater. Appendix D includes infant deaths for all live-born children, regardless of weight or gestational age.

## Prevention Analysis

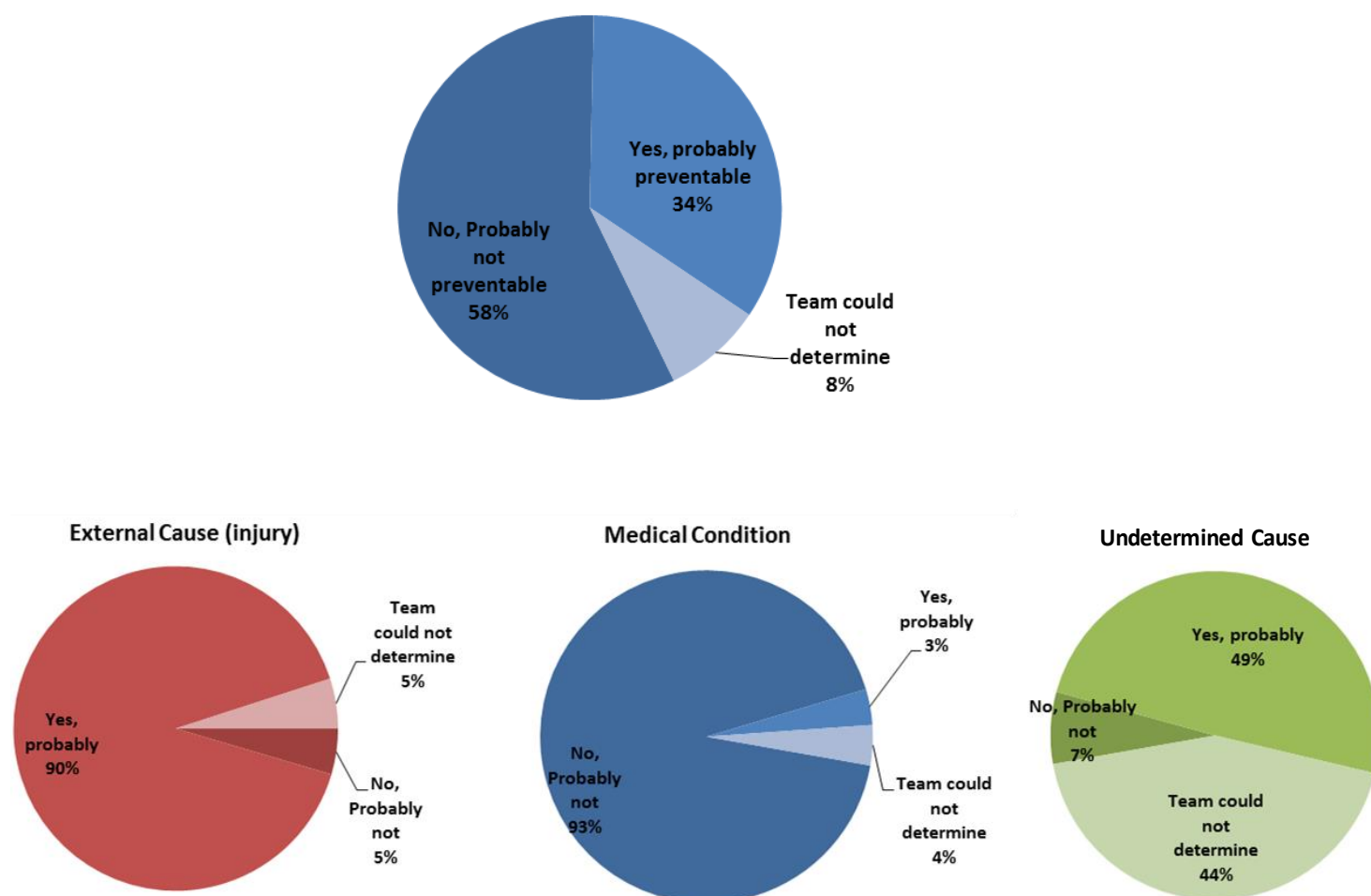
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The overarching goal of the Child Fatality Review Program is to craft and adopt recommendations for actions that can prevent future child deaths. In Tennessee, several policies have been the direct result of the Child Fatality Review process.

If an individual or the community could reasonably have done something that would have changed the circumstances leading to a child's death, that fatality is considered to have been **preventable**. CFR teams carefully examine each death in an effort to determine preventability.

Of the cases reviewed, CFR teams determined that **277 deaths (34%) could probably have been prevented**, as shown in Figure 13. As suspected, the great majority of the preventable deaths are those caused by an external cause of injury (218 cases) versus medical causes (17 cases).

Figure 13. Preventability of Child Deaths Ages 0-17 by Cause of Death in Tennessee, 2015



Prevention of future child deaths is the primary goal of Child Fatality Review. Spread throughout the report are highlighted boxes labeled “**Focusing on Prevention.**” These boxes contain nationally-recommended strategies for preventing a particular type of death as well as highlights of current TN initiatives focused on preventing death in a particular category.

**FOCUSING ON PREVENTION**

Potential prevention opportunities include:

- Routine vaccination of infants and children against diseases such as pertussis, measles, and influenza.
- Early and regular prenatal care for pregnant women.
- Screening for 17 alpha-hydroxyprogesterone caproate when appropriate prematurity risk factors are identified.
- Avoidance of tobacco by pregnant women.
- Promotion of social services that are available to low-income, child-bearing age and pregnant women.
- Widespread messaging campaigns to promote the importance of safe sleep.
- Provider and patient education and facilitation of antenatal steroids when appropriate.

Current prevention efforts in Tennessee include:

- Certified Application Consultants have been staffed in each local health department to help women with presumptive Medicaid eligibility sign up on the Marketplace.
- The Tennessee Department of Health funds the Tennessee Tobacco QuitLine which offers smoking cessation services to anyone, including pregnant women.
- Tobacco settlement funds are provided to all 95 counties for pregnancy smoking cessation activities.
- The Tennessee Department of Health operates the “ABC’s of Safe Sleep” campaign to reduce SIDS and other sleep-related deaths.
- Prevent Child Abuse Tennessee (PCAT) connected 91% of 882 families served this fiscal year to a medical home. 83% of children enrolled in PCAT home visiting programs were up to date on immunizations by 2 years of age and 93% of women enrolled in the home visiting programs prenatally, delivered full term infants.
- Promotion of highly effective contraception including Voluntary Reversible Long Acting Contraceptives (VRLAC’s), when appropriate and desired by women to encourage safer spacing between pregnancies.

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- Promotion of highly effective contraception including Voluntary Reversible Long Acting Contraceptives (VRLAC’s), when appropriate and desired by women to encourage safer spacing between pregnancies.

## Acts of Child Abuse or Neglect

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Child abuse or neglect represents a serious concern for the United States. In 2014, it is estimated that 702,208 children were victims of child abuse across the U.S, of whom approximately 1,546 children died. Of the children who died from child abuse in the U.S, 72.3% experienced neglect and 41.3% experienced physical abuse. Children ages 0-5 years account for 82% of child abuse victims, but approximately 71% of child abuse fatalities occurred to children under the age of 3.<sup>14,15</sup>

In Tennessee, 11,695 (rate of 7.8 per 1,000) children were determined to have been victims of child abuse in 2014 and 28 (rate of 1.9 per 100,000 population) children died. Of the children who were victims of child abuse in 2014, 69% experienced neglect, 23% experienced sexual abuse and 12% experienced physical abuse. The majority (75%) of child abuse victims were under the age of 5.<sup>16</sup>

A portion of preventable deaths are either directly or indirectly related to the lack of quality care or supervision on the part of a child's parents, guardians, or supervisors at the time of, or the time leading up to, death. Supervision may be entirely absent or inadequate for the age or activity of the child or the child's supervisor may willfully endanger the child's health and welfare.

Table 10 below describes the cases<sup>17</sup> for which review teams found there was poor or absent supervision, child abuse, child neglect,<sup>18</sup> or other negligence among 2015 deaths.

These numbers reflect all cases in which the local team determined there was poor supervision, abuse or neglect and do not necessarily represent the legal definition of poor supervision, abuse or neglect. These numbers may vary from DCS reports because DCS counts cases in which abuse or neglect are substantiated while the TDH local teams are examining deaths from a public health approach to determine whether there was opportunity for improvement with supervision, abuse or neglect.

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<sup>14</sup> U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2016). Child maltreatment 2014. Available from: <http://www.acf.hhs.gov/programs/cb/research-data-technology/statistics-research/child-maltreatment>

<sup>15</sup> Centers for Disease Control and Prevention, National Center for Injury Prevention and Control: Division of Violence Prevention. Available at: 615-253-2950

<sup>16</sup> Source: Child Maltreatment 2014; Children's Bureau (Administration on Children, Youth and Families, Administration for Children and Families) of the U.S. Department of Health and Human Services.

<sup>17</sup> There will always be differences in the numbers of child abuse and neglect deaths reported by DCS and TDH because the reporting focus is different for each agency. DCS reporting is focused on child deaths based on standards of proof for legal culpability. TDH reporting is focused on identifying opportunities to **prevent** child deaths, regardless of culpability.

<sup>18</sup> For purposes of this Child Fatality Review, **neglect** is defined as: "failure to act on the part of a parent or caregiver which results in death, or presents an imminent risk of serious harm." **Other negligence** is defined as: "acts or failures to act that are neglectful including criminal negligence, vehicular manslaughter, voluntary intoxication, but not restricted to the level of criminal culpability." Source: National MCH Center for Child Death Review, Child Death Review Case Reporting System Data Dictionary. Available at: <https://www.cdrdata.org/forms/DataDictionary.pdf>

**Table 10. Acts of Child Abuse or Neglect among Reviewed Deaths for Children Ages 0-17 Tennessee, 2015**

Age Group	Poor/absent Supervision	Child Abuse	Child Neglect	Other Negligence	Total
Infant	5	7	2	56	70
1-17 yrs	12	8	0	20	40
Total	17	15	2	76	110

### **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Increased child abuse awareness and recognition training in schools and childcare environment.
- Educational and family support programs for at risk families to promote child social and cognitive development and increase parental participation.

Current prevention efforts in Tennessee include:

- The Tennessee Department of Health (TDH) funds evidence-based home visiting programs in the most at-risk counties; these programs have been shown to reduce child maltreatment.
- Prevent Child Abuse Tennessee (PCAT) continues to lead the Nashville Child Protection Coalition (NCPC) and serve on the steering committee. The coalition's goal is to diminish the incidence and impact of child sexual abuse by teaching 5% of the adult population in Nashville how to recognize and react responsibly to child sexual abuse. PCAT was designated as the organization responsible for coordinating efforts and facilitating Stewards of Children training opportunities for nonprofit organizations, businesses, congregations and parents. PCAT has hosted 72 trainings with 1149 adults in fiscal year 2015-2016.
- Of the 882 families served by PCAT in the 2015-2016 year, 86% of mothers that had post-partum depression were referred to mental health services and 95% of children had no new substantiated reports of abuse.
- The Second Look Commission (SLC) has the statutory duty to review an appropriate sampling of cases involving a second or subsequent incident of severe child abuse in order to provide recommendations and findings to the General Assembly regarding whether or not severe child abuse cases are handled in a manner that provides adequate protection to the children of this state. Since 2014, the SLC has reviewed cases involving child fatalities. Many of the findings and recommendations of the SLC have the potential to prevent child fatalities.
- The Department of Children's Services (DCS) utilizes In Home Tennessee (IHT) to build organizational and community capacity, improve access and quality services, and enhance how DCS works with families. In October 2014, IHT unit began the rollout of the federal IV-E waiver allowing states to use federal dollars in a more flexible way, focusing on prevention services.

- The DCS child Abuse Hotline (CAH) handled 152,946 calls in CY2015. Child Protective Services (CPS) investigated over 211,725 allegations of abuse and neglect representing over 70,848 CPS cases.
- Using Safety Science, the DCS Child Death Review (CDR) process was created to increase safe outcomes by identifying and learning from those factors which influence the quality and delivery of services provided to children and their families. The Child Death Review process engages supportive, in-depth, qualitative reviews in a collaborative relationship with multidisciplinary participants from various divisions in DCS and community partners.
- Annual reports are released by DCS following the first quarter of each calendar year. These reports highlight the significant findings and departmental improvement efforts from the previous year. An item of particular note—DCS has advanced the use of Spaced Education. After two consecutive years of piloting Spaced Education in a limited number of DCS regions, Spaced Education will be launched to all regions in 2017. Spaced Education is a learning system designed to quickly communicate important information from CDRs to DCS employees to ultimately increase favorable outcomes for children and families served by DCS.
- The Confidential Safety Reporting System (CSRS) allows DCS employees to report any issues they feel may affect the safety of DCS employees or children and families served by the department. Public Chapter Number 21 was signed into law on March 27<sup>th</sup>, 2015 by Governor Bill Haslam. Special legislation was required in Tennessee because child welfare does not currently have the protections for safety and quality improvement efforts seen in other safety critical industries. The protection of safety-related information has been used successfully in industries such as aviation, healthcare, nuclear power, military and steel production. Research across these multiple disciplines has shown that employee participation in discussing safety-related issues dramatically increases when issues can be discussed without the fear of punitive responses by their employer or outside agencies. The open dialogue that will take place is expected to increase organizational learning and prevent the occurrence of adverse events through systemic changes.



Children with special circumstances include those with a disability, chronic illness, or Child Protective Services (CPS) case open at time of death. Approximately one-third of the deaths in 2015 involved children known to have suffered from a disability or chronic illness. Of those 301 children, 19 were enrolled in the Tennessee Department of Health's Children's Special Services program (CSS). CSS is a voluntary program that provides care coordination and payments for medical services for families of children with special health care needs.

The families of 34 children were known by the local Child Fatality Review teams to have been involved in an open CPS case at the time of their deaths.<sup>19</sup>

**Table 11. Children with Disability among Reviewed Deaths\* of Children Ages 0-17 by Age Group Tennessee, 2015**

Type of Disability or Chronic illness	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs	Total
Physical	161	34	22	38	16	271
Sensory	1	0	3	2	1	7
<b>Mental health</b>	1	0	0	4	9	14
Cognitive	11	5	7	10	1	34
<b>Total of Disability or Chronic illness</b>	<b>170</b>	<b>36</b>	<b>26</b>	<b>44</b>	<b>25</b>	<b>301</b>

\*Because more than one disability or chronic illness may be present in a child, the sum of each type exceeds the total.

**Table 12. Children with Special Circumstances among Reviewed Deaths of Children Ages 0-17 Tennessee, 2015**

Circumstance	Number of Deaths
If disabled, child was enrolled in Children's Special Services (CSS)	19
Open child protective services (CPS) case at time of death	56

<sup>19</sup> This number will vary from the data reported by DCS as child fatalities from DCS are based on the date of the abuse or neglect substantiation and not the date of death; thus the reporting timeframe for DCS is different than TDH. Local Child Fatality Review Teams report based on information available to them from team members and other organizations in making their determinations at the time of the review.

## **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Provide respite care and other support services for families of children who are at high risk for abuse and neglect, including children and youth with special health care needs.

Current prevention efforts in Tennessee include:

- The Tennessee Department of Health operates Children's Special Services in all 95 counties. Trained care coordinators work with children with special health care needs and their families. Care coordinators refer families to community resources to help meet family-specific needs and improve coping with the child's condition.

## *Sudden Death in the Young (SDY) Registry Project*

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In October 2014, Tennessee was awarded a \$200,000 grant from the Centers for Disease Control and Prevention (CDC) to help establish the Sudden Death in the Young (SDY) Registry. Ten other states/jurisdictions received funding as well, including Delaware, Georgia, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, Wisconsin, the city of San Francisco and the Tidewater region of Virginia.

The goals of the SDY registry are to a) establish the incidence of sudden death in the young in the United States using a population-based approach through state public health offices, and b) investigate the etiologies and risk factors for sudden death in the young, including sudden unexpected infant death (SUID), sudden cardiac death (SCD) and sudden unexpected death in epilepsy (SUDEP). All deaths in young people under age 20 may be considered for inclusion in the registry, except in cases where death was due to any of the following:

1. Accident in which the external cause was the obvious and only reason for the death, except infant suffocation
2. Homicide
3. Suicide
4. Accidental or intentional overdose of drugs even if this caused cardiac or respiratory arrest with no prior history of other possible chronic disease or autopsy findings suggestive of another cause
5. Terminal illness in which the death was reasonably expected to occur within 6 months

To accomplish this, the TDH has partnered with three of the five regional forensic centers (RFCs) in Tennessee (ETSU William L. Jenkins, Middle Tennessee Center and West Tennessee) and our 34 local CFR teams. The RFCs are responsible for identifying and notifying the state CFR program staff of any cases eligible for inclusion in the registry within 72 hours of death, conducting a thorough investigation into the circumstances of the death and obtaining consent from families for participation in the registry. The local CFR teams are responsible for reviewing SUID/SDY deaths within 90 days of notification.

For infant deaths, teams follow the SUID algorithm provided by CDC to categorize all cases where the death certificate indicated the cause as unknown, undetermined, SIDS, SUID, unintentional sleep-related asphyxia/suffocation/strangulation, unspecified suffocation, cardiac or respiratory arrest without other well-defined causes, or unspecified causes with potentially contributing unsafe sleep factors. The local teams review all of the circumstances surrounding the SUID event, including the autopsy and death scene investigation reports to categorize the death into one of the 6 categories shown in Table 13.

**Table 13. Categorization for SUID Case Registry (Age<1)**

<b>Categorization for SUID Case Registry</b>	<b>Number of Infants</b>
Excluded	16
Unexplained: No autopsy or death scene investigation	1
Unexplained: Incomplete case information	6
Unexplained: No unsafe sleep factors	5
Unexplained: Unsafe sleep factors	51
Unexplained: Possible suffocation with unsafe sleep factors	20
Explained: Suffocation with unsafe sleep factors	54
<b>Total</b>	<b>153</b>

There must be strong evidence of factors for suffocation present in order for a SUID case to be categorized as unexplained: possible suffocation with unsafe sleep factors or explained: suffocation with unsafe sleep factors. Table 14 summarizes the primary mechanism(s) explaining the suffocation or possible suffocation as detailed in the autopsy and/or death scene investigation reports that are reviewed by local teams.

**Table 14. Unsafe Sleep Factors**

<b>Unsafe sleep factors</b>	<b>Number of cases</b>
Overlay	20
Soft bedding	19
Wedging	14
Other	21
<b>Total</b>	<b>74</b>

Teams follow the SDY algorithm provided by the CDC to determine whether cases – including SUID cases – meet the criteria of having an “explained cause of death”. Cases that are not determined as having an explained cause of death are sent to an advanced review team if both an autopsy and death scene investigation were conducted. The advanced review teams are located in Memphis and Nashville and include pediatric neurologists, pediatric cardiologists, an epileptologist, a neonatologist and forensic pathologists. Appendix H lists the advanced review team members. The advanced review team reviews all medical and investigative records to categorize the death into one of the following seven categories: explained cardiac, explained neurological, possible cardiac, possible SUDEP, possible cardiac and SUDEP, unexplained death ≥

one year of age or unexplained death under age one. Table 15 summarizes how the teams have categorized the SDY cases.

**Table 15. Categorization for SDY Case Registry (Age 0-17)**

<b>Categorization for SDY Case Registry</b>	<b>Infant</b>	<b>1-17 yrs</b>	<b>Total</b>
Incomplete case information	8	8	16
Explained cardiac	6	6	12
Explained neurological	0	1	1
Explained infant suffocation	54	0	54
Explained other	11	12	23
Unexplained, possible cardiac	3	1	4
Unexplained, possible cardiac and SUDEP	0	1	1
Unexplained, SUDEP	0	3	3
Unexplained infant death	70	0	70
Unexplained child death(age 1+)	1	2	3
<b>Total</b>	<b>153</b>	<b>34</b>	<b>187</b>

### **Registry Initiatives**

The state CFR program was able to allocate funding from the SDY Registry project to purchase and distribute digital cameras and Sudden Unexplained Infant Death Investigation (SUIDI) dolls. Any agency responsible for conducting the infant or child death investigations was eligible to apply for these materials. All three of the participating regional forensic centers are now obtaining consent and collection bio-samples. An individual meeting was held with each center to discuss consent process and new ideas for obtaining consent. A one page document explaining the process and other information was created. For 2015, 187 SDY cases were identified and reviewed by the local teams. Of those cases, 108 met criteria to be referred and categorized at advanced review.

## DETAILED REVIEW: SPECIFIC CAUSES OF DEATH

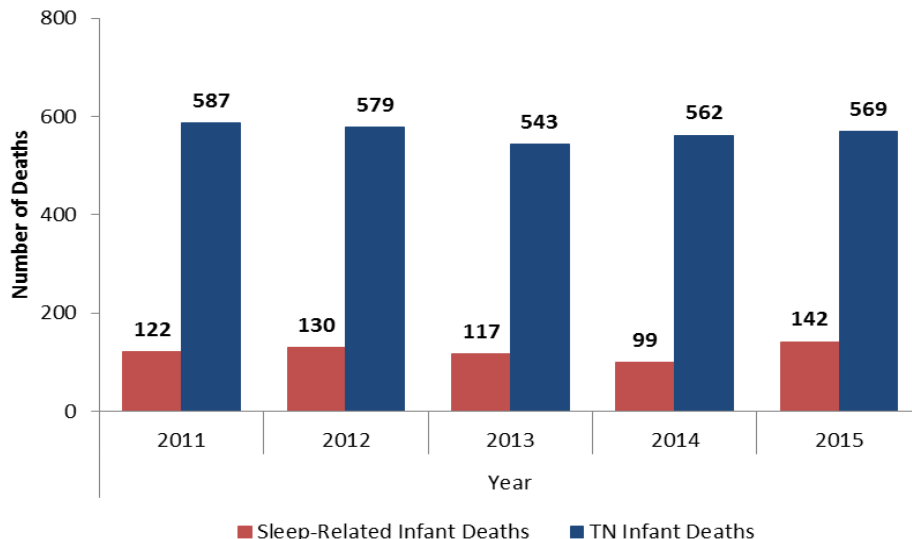
### Sleep-Related Infant Deaths

Sleep related infant deaths are identified when a baby is found deceased in a sleeping environment with a history of his or her head pressed into the mattress or pillow, with a co-sleeper, or when he or she is found wedged against an object and other causes that may have contributed to the infant's suffocation or strangulation. Sleep-related infant deaths may also be classified as a diagnosis of Sudden Infant Death Syndrome (SIDS), which is an exclusionary cause of death for children under one year of age. A diagnosis of SIDS indicates that all evidence (including an autopsy, death scene investigation, and review of the medical record) has failed to yield the specific cause of death; SIDS cases are classified as sleep-related infant deaths.

The cause and manner of death in these cases are determined from the information obtained in the death scene investigation and after a Medical Examiner's autopsy. When seemingly healthy infants fail to awaken from sleep, their deaths may be SIDS, the result of suffocation related to the sleep environment, or the sign of an undiagnosed childhood malady. The exact cause of death may be difficult, if not impossible, to determine. In 2015, the cause of death in 80 reviewed fatalities (16%) of children under the age of one year was classified as 'Undetermined'. This number reflects the complexities inherent in determining the exact cause of a sudden infant death.

Figure 14 displays the number of sleep-related infant deaths and number of infant deaths in Tennessee for the last five years. **In 2015, there were 142 infant deaths that resulted from or were associated with an unsafe sleep environment.** These sleep-related deaths account for 25% of all infant fatalities in Tennessee. The overall infant mortality rate has increased slightly from 6.9 per 1,000 live births in 2014 to 7.0 in 2015. Sleep-related infant deaths significantly increased by 43% between 2014 (99 deaths) and 2015 (142 deaths).

Figure 14. Number of Sleep-Related Infant Deaths in Tennessee, 2011-2015



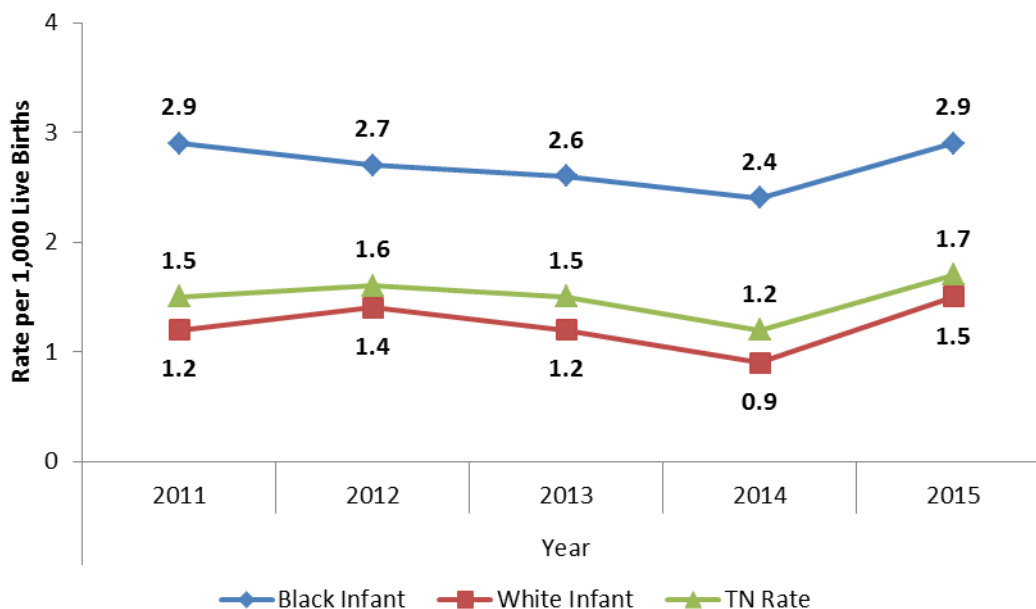
Of the 142 sleep-related deaths, 56 deaths were confirmed as asphyxia in the sleep environment. In many cases, family members or others who find the baby may not be able to provide a detailed history of what transpired. When investigators arrive on the scene the baby has often been moved, and accurately recreating the death scene may not be possible. Thus, despite autopsies and the efforts of Child Fatality Review Teams, the exact cause of infant sleep-related deaths may never be known for some infants and their families.

Among sleep-related infant deaths there is a significant racial disparity. Black infants are 1.9 times more likely to suffer a sleep-related fatality as white infants, as seen in Table 16. A higher percentage of male infants suffered this fatality (59%) than females (41%).

**Table 16. Number of Sleep-Related Infant Deaths and Rates per 1,000 Live Births by Race Tennessee, 2011-2015**

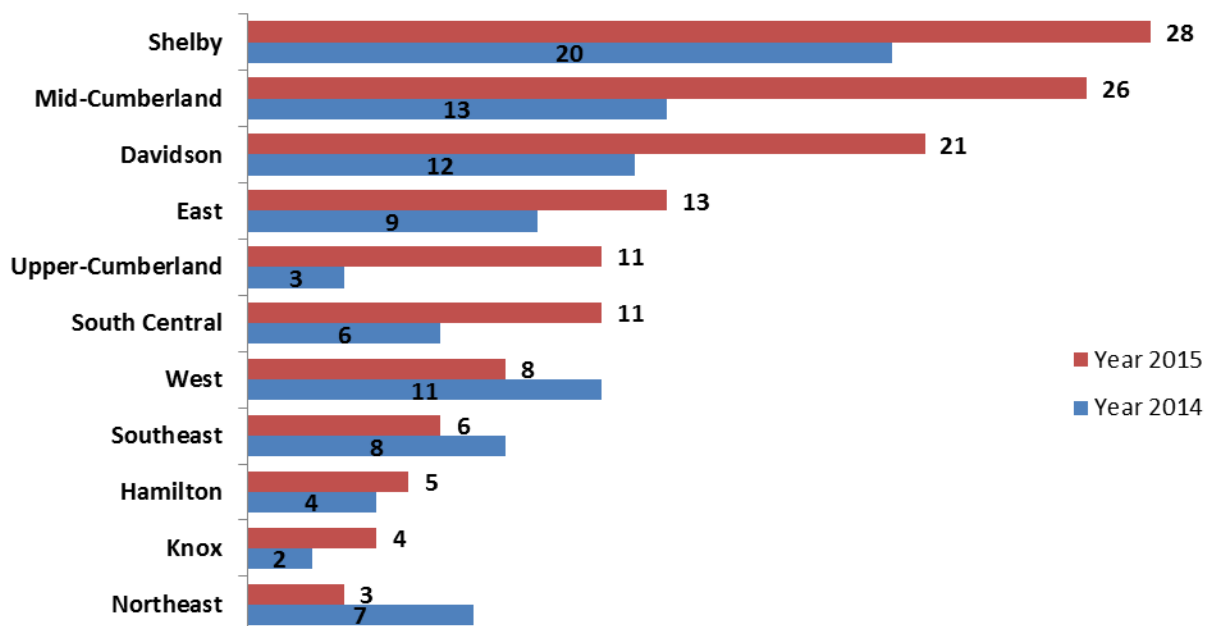
Year	Blacks			Whites			TN Sleep-Related Infant Deaths Rate (per 1,000 Live Births)
	Number of Deaths	Live Births	Rate per 1,000 Live Births	Number of Deaths	Live Births	Rate per 1,000 Live Births	
2011	47	16482	2.9	75	60252	1.2	1.5
2012	45	16560	2.7	85	60792	1.4	1.6
2013	44	16863	2.6	71	60954	1.2	1.5
2014	41	17061	2.4	58	62096	0.9	1.2
2015	48	16714	2.9	91	61648	1.5	1.7

**Figure 15. Sleep-Related Death Rates per 1,000 Live Births by Race in Tennessee, 2011-2015**



Additionally, a regional distribution of sleep-related infant deaths is provided in Figure 16. The region with the highest number of sleep related infant deaths is Shelby County with 28 cases (20% of all sleep related deaths), followed by Mid-Cumberland with 26 cases (18%) and Davidson County with 21 cases (15%). Mid-Cumberland was the region with the largest increase in sleep-related deaths in 2015.

**Figure 16. Number of Sleep-Related Infant Deaths in Tennessee by Region, 2014 vs 2015**



\* Numbers for Madison and Sullivan are suppressed due to confidentiality concern.

**Table 17. Contributing Factors in Sleep-Related Infant Deaths<sup>20</sup> in Tennessee, 2011-2015**

Circumstance	2011	2012	2013	2014	2015	2015 Percent of Sleep-Related Infant Deaths
Unsafe bedding or toys in sleeping area*	56	53	72	70	123	87%
Infant found not sleeping in crib or bassinette	100	95	88	78	114	80%
Infant sleeping with other people	73	68	67	65	88	62%
Infant found not sleeping on back	66	72	71	40	71	50%
Infant sleeping with obese adult	9	9	13	7	21	15%
Adult fell asleep while breast feeding	1	2	3	1	6	4%
Drug impaired adult sleeping with infant	5	1	5	12	4	3%
Alcohol impaired adult sleeping with infant	3	2	2	3	3	2%
Adult fell asleep while bottle feeding	1	0	3	3	1	1%

\*Includes comforter, blanket, pillow, bumper pads, toys, plastic bags and other.

<sup>20</sup> Because more than one contributing factor may have been present in a single death, the total number of contributing factors exceeds the number of sleep environment deaths.



As indicated in Table 17, four main contributing factors are consistently present in sleep-related infant deaths: unsafe bedding or toys in sleeping area (87% of cases), infant not sleeping in a crib or bassinette (80% of cases), infant not sleeping alone (62% of cases), and infant not sleeping on their back (50% of cases). These risk factors are key points for education in the Tennessee Department of Health's "ABC's of Safe Sleep" campaign (Babies should sleep **A**lone, on their **B**ack, and in a **C**rib).

### **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Widespread messaging campaigns particularly targeted at parents and caregivers of infants.
- Provision of portable cribs to families with limited resources.
- Modeling of correct safe sleep practices by trusted professionals such as physicians and nurses.
- Focusing safe sleep messaging on the most at risk infants and communities.

Current prevention efforts in Tennessee include:

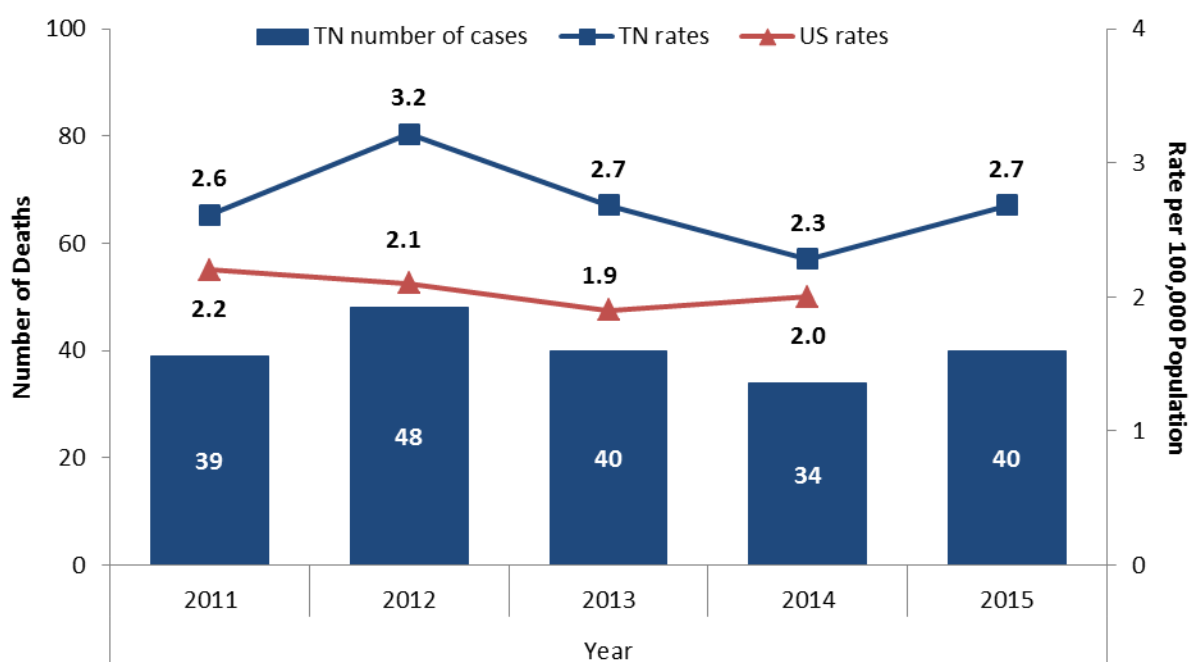
- TDH continues to partner with 100% of birthing hospitals (65) and 5 non-delivery hospitals across Tennessee, all of which have all developed and implemented safe sleep policies to include: modeling of safe sleep behavior in the hospital, education for parents and caregivers and education for staff. In addition, hospitals are responsible for completing quarterly crib audits and submitting annual reports to monitor compliance with their safe sleep policies. TDH continued to provide safe sleep materials and the Sleep Baby Safe and Snug board books to hospitals.
- In addition to the safe sleep policy project, hospitals have been encouraged to apply for a national Safe Sleep Certification through Cribs for Kids. Currently 14 hospitals have certification: 6 bronze, 1 silver and 7 gold. Each level represents additional tasks required to educate and promote safe sleep to parents.
- Implementation of the Direct On Scene Education (D.O.S.E.) program has continued to expand across the state. When responding to an emergency or non-emergency call from a household with a pregnant woman or an infant, responders are trained to look for unsafe sleep conditions and offer the residents a safe sleep kit with information on the ABC's of Safe Sleep. As of this date, 28 first responder agencies across the state are participating in the D.O.S.E. program. They have distributed 1272 safe sleep kits and 32 portable cribs.
- TDH implemented the safe sleep floor talker project in 2014. Partner sites display a large plastic decal on the floor or other hard surface to promote the safe sleep message. As of this date, 678 floor talkers have been placed in various partner sites including stores, clinics, and health departments.
- Tennessee Department of Health launched an online safe sleep educational module which has been completed by approximately 2000 WIC parents. The post-test data from the module show significant improvement in intent to practice safe sleep.

- TDH created a safe sleep church bulletin insert to promote the safe sleep message to faith based communities.
- Each of the DCS regions throughout the state has established a local protocol to guide their staff on the importance of educating families on safe sleep. DCS staff assess for safe sleeping environments, educate parents and caregivers on the importance of safe sleep, and ensure each infant has a safe sleeping environment.
- Prevent Child Abuse Tennessee (PCAT) is assessing and educating families enrolled in the Healthy Families Tennessee (HFTN) and Nurturing Parenting programs for a safe sleep environment. Parents in the programs are offered coaching and empowerment through voluntary home visitation, receive education on safe sleep and are provided with a portable crib. In the past fiscal year 882 families were served through the program.
- PCAT collaborated with TDH to implement a pilot project to distribute baby boxes to all newly enrolled families in their program. These large boxes contain several safe sleep related items to deliver consistent safe sleep messaging and are large enough to use as a sleep environment for an infant. Training was provided to staff on how to present the box to families. Information is being collected from families to evaluate whether the family uses the box as a sleep environment.
- Tennessee Commission on Children and Youth (TCCY) regional councils distribute safe sleep information at regional council meetings and conferences where they have a display.
- TCCY included information about the ABCs of safe sleep in a video released in conjunction with the release of the national 2016 KIDS COUNT Data Book (<http://www.tn.gov/tccy/article/tccy-kc-2016-data-book-flourishes>).

## Homicide Deaths

Homicide is a serious problem nationally, affecting people across all stages of life. In 2014, over 15,809 people nationwide were homicide victims, of which 1,435 were children under 18 years old. Homicide is the fourth leading cause of death for children between the ages of 1 and 17. Black children (vs. white) and males (vs. females) had higher homicide rates in 2014.<sup>21</sup>

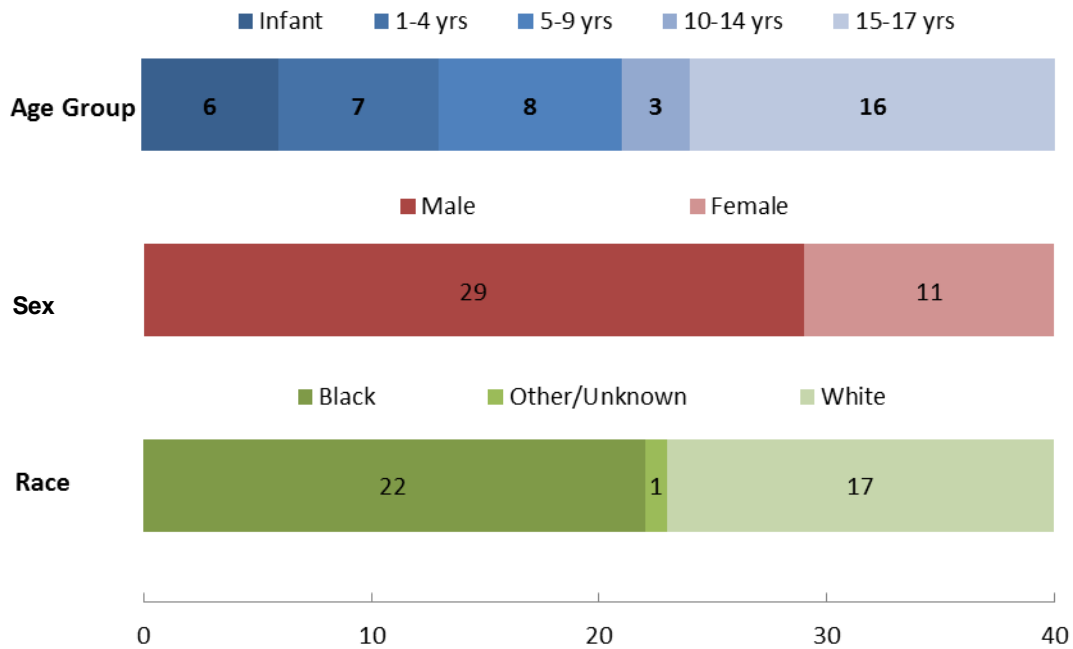
**Figure 17. Homicide Deaths and Rates per 100,000 Children Population Ages 0 to 17 in Tennessee and the US, 2011-2015**



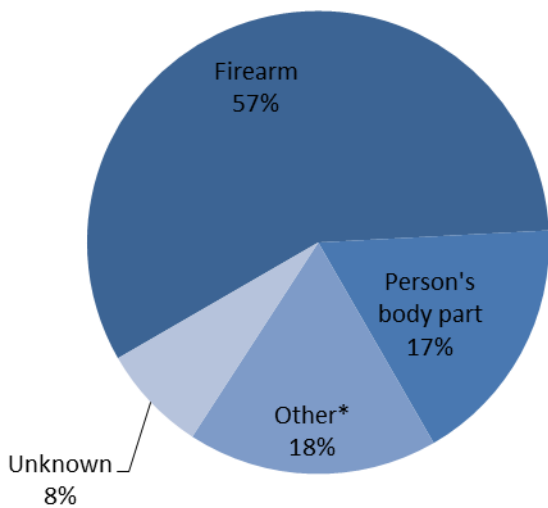
Tennessee's child homicide rate has remained consistently above the national rate. In 2015, **forty children died of homicide in Tennessee**, an increase from the 34 cases from 2014. This number represents **4 percent of all child deaths**. Twenty-nine homicide victims were males; 11 were females. More than half of the victims (22 cases) were black children and 17 were white. Older teenagers (age 15-17) suffered the highest percentage of fatalities, 40%. More than half of all homicides (57%) involved firearms, and 47% occurred in the child's home.

<sup>21</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)

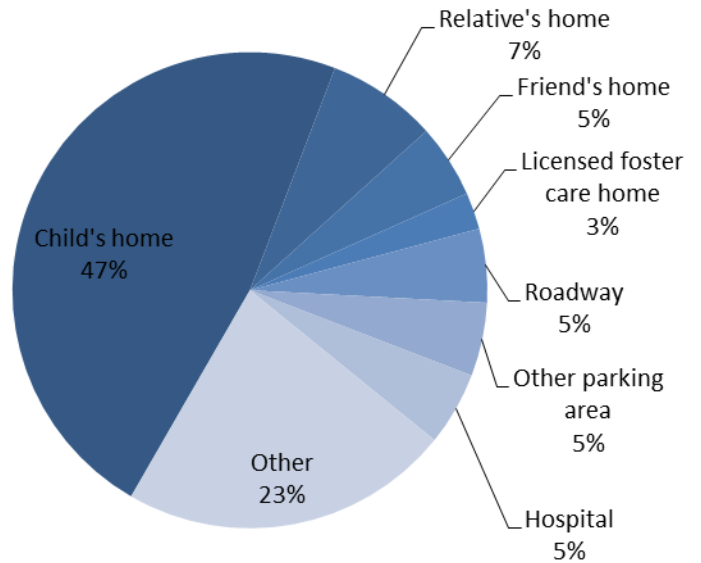
**Figure 18. Demographic Distribution of Homicide Deaths among Children Ages 0-17 Tennessee, 2015**



**Figure 19. Cause of Homicide Deaths among Children Ages 0-17 in Tennessee, 2015**



**Figure 20. Homicide Deaths among Children Ages 0-17 by Victim's Location in Tennessee, 2015**



\*Other includes cases that did not involve a weapon such as starvation or shaking baby

## **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Targeted activities in neighborhoods with high homicide rates including: enhanced police presence, neighborhood watch and after school recreation programs.
- Increased intensive early intervention services for high-risk parents.

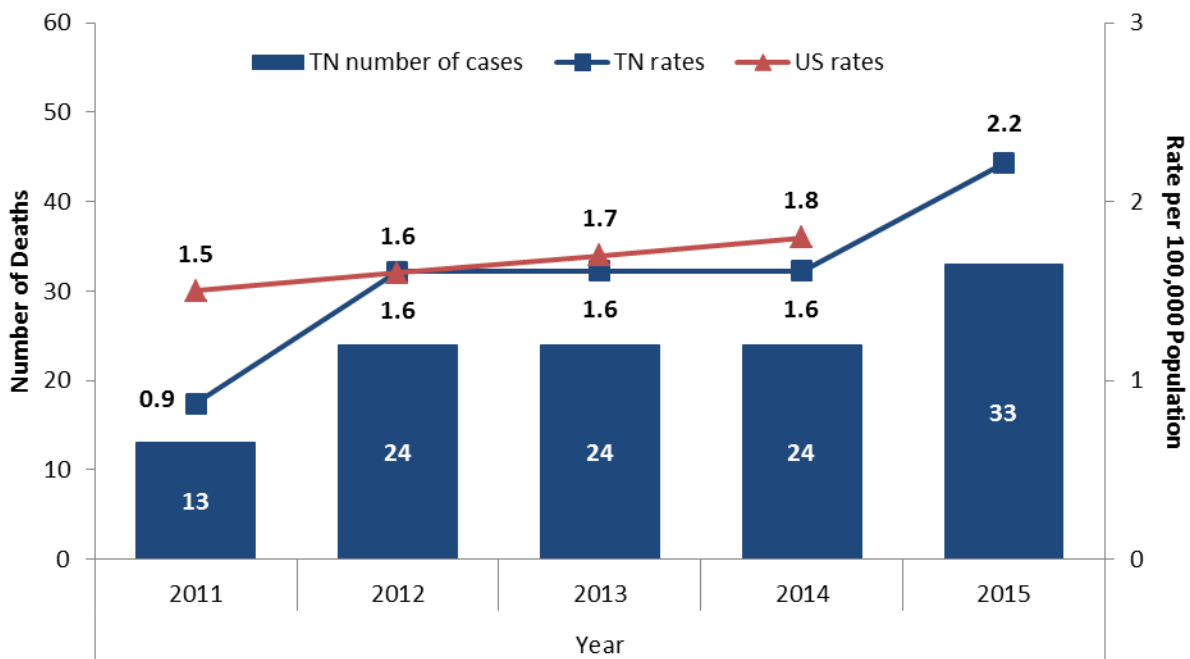
Current prevention efforts in Tennessee include:

- Prevent Child Abuse Tennessee's Shaken Baby Prevention project materials are now disseminated statewide to every birthing hospital in Tennessee.
- In FY2016, PCAT distributed 87,000 materials to 100% of birthing hospitals (in English and Spanish) to educate parents on abusive head trauma prevention.
- The Tennessee Department of Health provides presentations in schools on bullying and violence prevention
- The Tennessee Commission on Children and Youth awards grants to agencies to provide services for at-risk youth to prevent criminal behavior. The grants allow agencies to provide interventions to ensure that youth who commit offenses receive proper services.
- School districts and other non-profit agencies primarily serving low-income students receive federal funding from the 21<sup>st</sup> Century Community Learning Centers. This initiative supports afterschool programs designed to reinforce and complement the regular academic program. Approved activities include parent involvement, counseling programs, character education, and drug and violence prevention.

## Suicide Deaths

Suicide is a leading manner of death for child ages 10 to 17 nationwide. In 2014, 1,341 children between ages 10-17 died from suicide (4.0 per 100,000) throughout the United States. White (vs. black) children and males (vs. females) had higher rates of suicide nationally in 2014.<sup>22</sup>

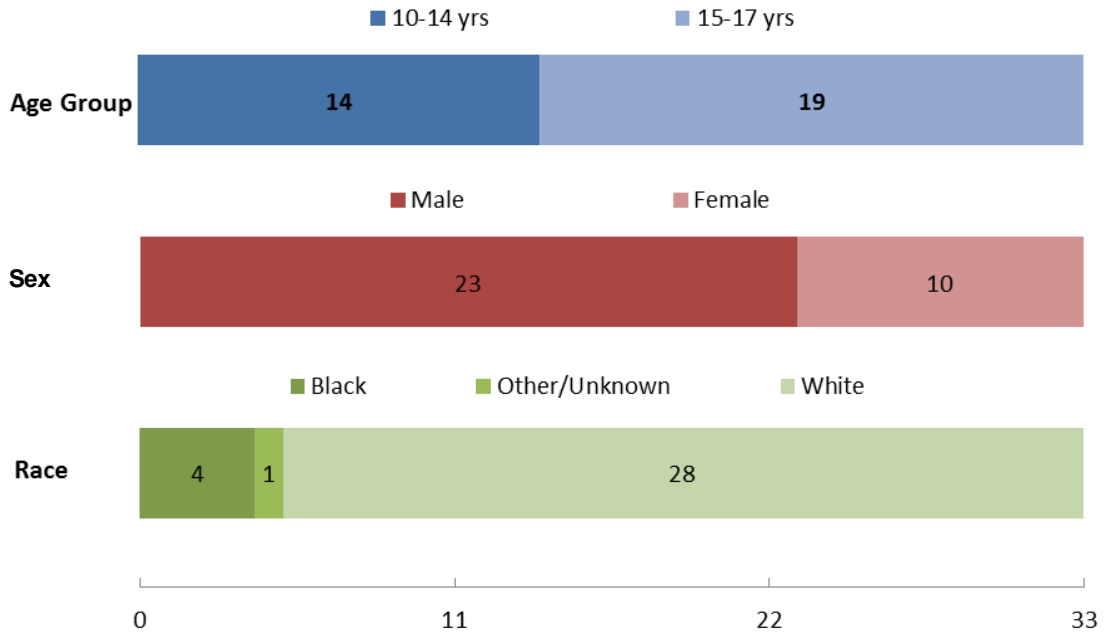
**Figure 21. Suicides and Suicide Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**



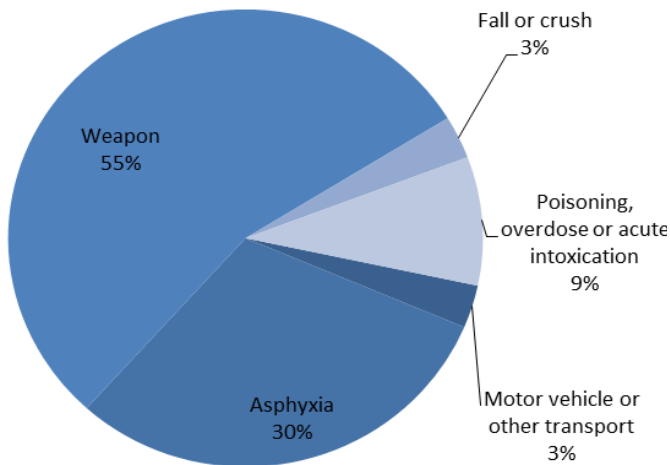
In Tennessee, **thirty-three** young people took their own lives during 2015, a figure that represents **4 percent of all deaths**. Half of all suicide cases involved a weapon. The suicides were more frequent among males (N=23) than females (N=10), and among whites (N=28) than blacks (N=4). The majority of the cases (75%) occurred in the child's home.

<sup>22</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)

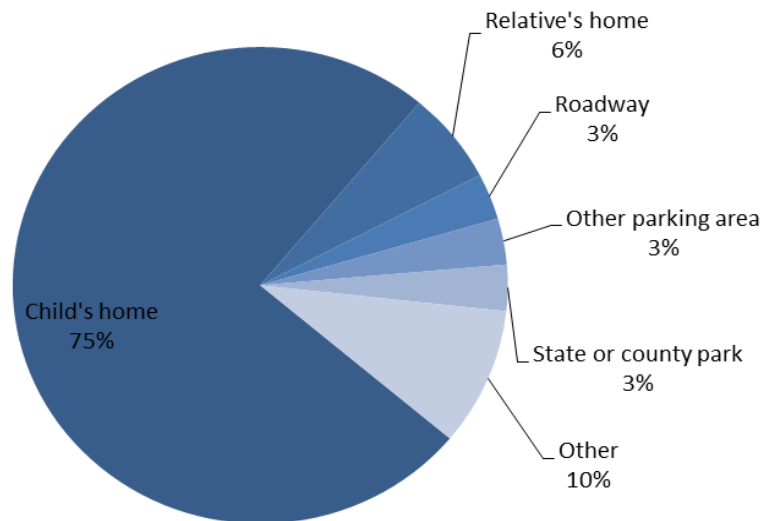
**Figure 22. Demographic Distribution of Suicide Deaths among Children Ages 0-17 in Tennessee, 2015**



**Figure 23. Cause of Suicide Deaths among Children Ages 0-17 in Tennessee, 2015**



**Figure 24. Suicide Deaths among Children Ages 0-17 in Tennessee by Victim's Location, 2015**



**Table 18. Suicide Deaths among Children Ages 0-17 by Victim’s Age Groups and Cause in Tennessee, 2015**

Cause	10-14 yrs	15-17 yrs	Total number of deaths
Motor vehicle or other transport	0	1	1
Asphyxia	4	6	10
Weapon	9	9	18
Fall or crush	0	1	1
Poisoning, overdose or acute intoxication	1	2	3
Total	14	19	33

### **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Increase education targeted towards teens to help them understand warning signs of suicide.
- Increase training to help school staff identify and refer students at risk and respond to suicide or other crises in the school.
- Restrict access to lethal means of suicide, including removal of firearms in homes of high-risk teens.

Current prevention efforts in Tennessee include:

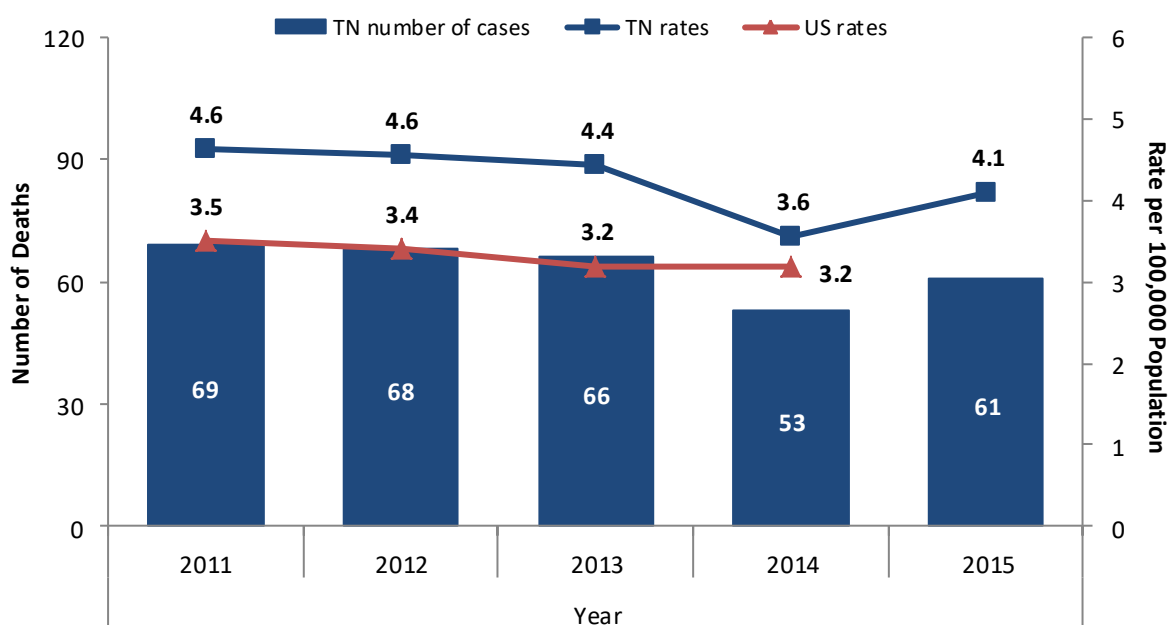
- In collaboration with the Jason Foundation and Tennessee Department of Mental Health and Substance Abuse Services, the Tennessee Department of Education offers a no-cost, web-based professional development training series on suicide prevention for schools.
- The Tennessee Suicide Prevention Network has a number of efforts aimed at reducing suicide, including:
  - Distribute resources on suicide grief across the state. These include, but are not limited to the pamphlet “Survivors of Suicide” and regional resource directories.
  - Provide postvention and debriefing services to schools affected by confirmed or suspected suicide death of a teacher or student.
  - Connect families who have recently experienced a suicide death with other survivors to guide them through the grief and recovery process.
  - Provide funeral homes across the state with materials to help survivors of suicide loss. These include the survivor pamphlet and [“Supporting Survivors of Suicide Loss”](#), a guide for funeral directors published by the U.S. Department of Health and Human Services.
  - Collaborate with other agencies to produce model policies for school to address suicide prevention and postvention efforts.



## Motor Vehicle and Other Transportation Deaths

Motor vehicle crashes are the number one cause of child deaths nationally.<sup>23</sup> In 2014, motor vehicle crashes resulted in 2,344 deaths among children 17 and under (as either occupants or drivers). Teenagers (age 15-17) and males make up the majority (44% and 62% respectively) of child motor vehicle fatalities.<sup>24</sup> Teens are more likely than older drivers to underestimate dangerous situations. In addition, teens have the lowest rate of seat belt use compared to other age groups.

**Figure 25. Motor Vehicle Related Deaths and Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**



In Tennessee, deaths related to motor vehicle incidents represent the second highest number of fatalities among all external causes of death. In 2015, **61 deaths** were related to motor vehicles and other transportation mortalities, representing **8 percent of all child fatalities in 2015**. This is a 15% increase in motor vehicle fatalities among children compared to the previous year. They occurred more frequently among males (N=45) than females (N=16), and among whites (N=46) than blacks (N=14).

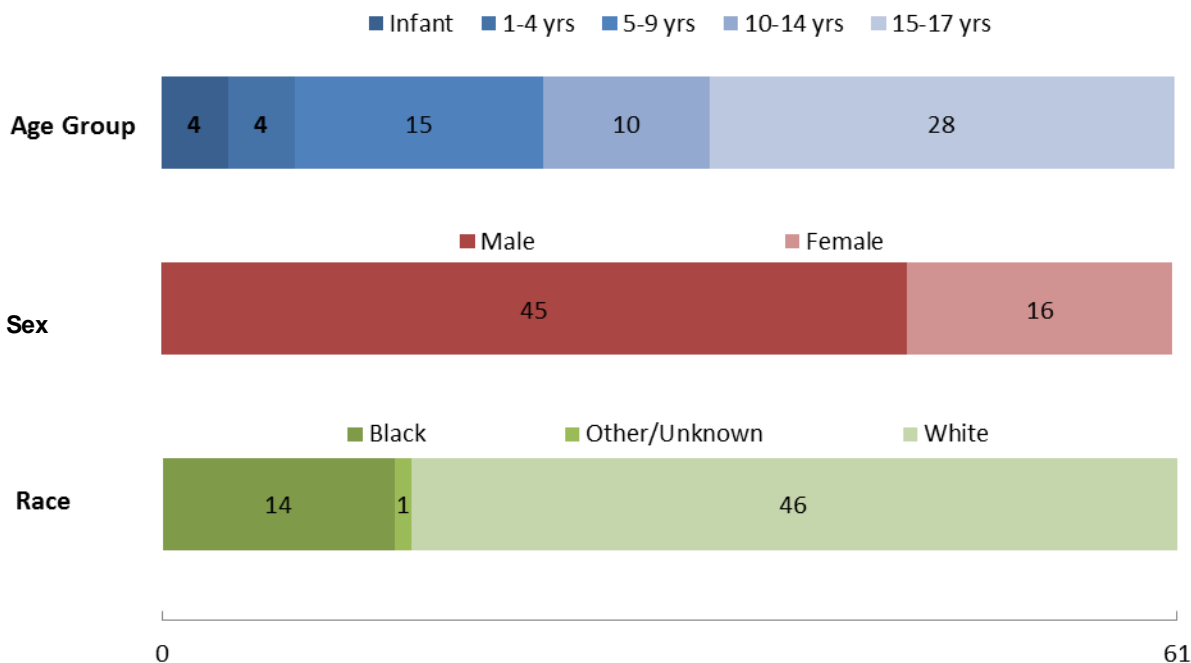
Motor vehicle deaths were experienced among every age category, although, predictably, those of driving age (within the 15-17 year age cohort) were affected most

<sup>23</sup> Centers for Disease Control and Prevention: Leading Causes of Death Reports, 1999-2014, for National, Regional, and States (Restricted). Accessed at <https://www.cdc.gov/injury/wisqars/fatal.html>

<sup>24</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)

frequently. Of the 28 teen (ages 15-17 years) fatalities, 54% (15 cases) were drivers in the accident. Table 19 summarizes the position of the children in the vehicle at the time of the accident. 80% of the motor vehicle related deaths (N=49) were victims of a motor vehicle crash. As shown in Table 20, forty-three percent (N=26) did not use any protective measure, such as a seat belt, helmet or a child/booster seat. An additional ten child fatalities were pedestrians.

**Figure 26. Demographic Distribution of Motor Vehicle Fatalities among Children Ages 0-17 in Tennessee, 2015**



**Table 19. Motor Vehicle/Other Transport Fatalities among Children Ages 0-17 by Age Groups and Position in Vehicle in Tennessee, 2014**

Position in Vehicle	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs	Total
Driver	0	0	1	1	15	17
Passenger	4	4	10	4	10	32
On bicycle	0	0	1	1	0	2
Pedestrian	0	0	3	4	3	10
Total	4	4	15	10	28	61

**Table 20. Motor Vehicle Deaths\* among Children Ages 0-17 by Vehicle Type and Protective Measure Not Used in Tennessee, 2015**

Vehicle Type	Protection Not Used	Protection Used	Total Deaths
Car, Truck, Sport Utility Vehicle (SUV), Van	21	23	44
All-Terrain Vehicle, Motorcycle, Other	5	0	5
Total	26	23	49*

\*Total deaths by vehicle type shown are lower than total motor vehicle deaths because pedestrian and bicycle deaths are excluded.

### **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Imposition of stricter nighttime driving restriction for teen drivers.
- Promotion of infant car seats and booster seats for toddlers and young children.
- Stricter enforcement of laws prohibiting texting and driving.
- Encourage school participation in a seat belt use awareness program such as “Battle of the Belt”.

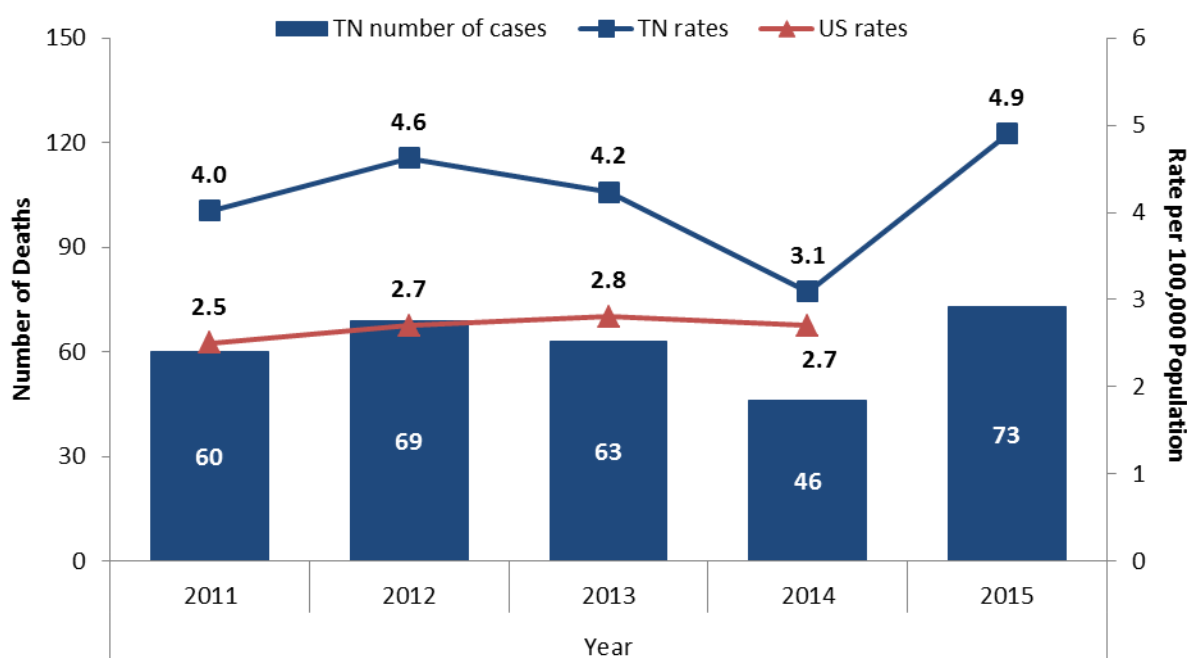
Current prevention efforts in Tennessee include:

- The Tennessee General Assembly passed a Graduated Driver’s License law in 2001.
- The Tennessee Department of Health, in conjunction with the regional trauma centers, sponsors “Battle of the Belt” and Checkpoints™ Program to increase teen driving safety.
- The Tennessee Department of Health provides funding to 28 agencies to purchase and distribute car seats and booster seats to families that cannot afford them.
- Safe Kids provides car seat checks in the community through their Buckle Up for Life Program.

## Asphyxia Deaths

Asphyxia is the leading cause of death of children under the age of one, and accounts for approximately 1,000 infant deaths nationally. Accidental suffocation rates have increased fourfold since 1984.<sup>25</sup> Nationally, males (vs. females) and black (vs. white) infants have higher rates of death due to asphyxia. While infant asphyxia deaths are closely linked to sleep environment factors, older children such as toddlers are more likely to suffocate from choking on food or toys.

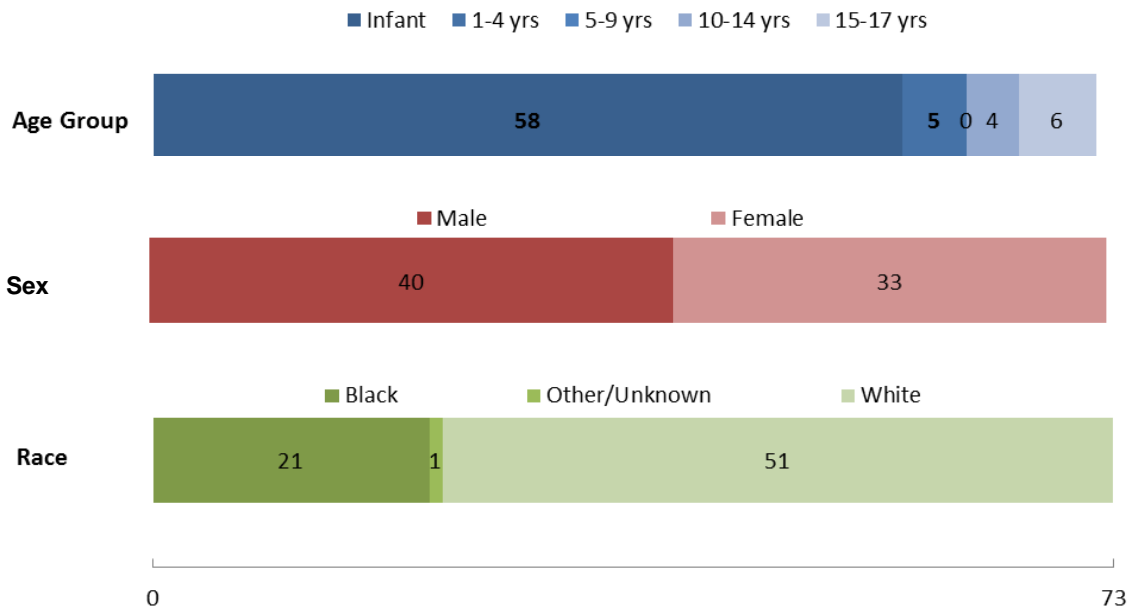
**Figure 27. Asphyxia Deaths and Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**



In Tennessee, deaths related to asphyxia represent the highest number of fatalities among all external causes of death. **Seventy-three** children died of asphyxia in 2015. This number represents **9 percent of all deaths** in 2015. Asphyxia cases may be related to either suffocation, strangulation, or choking. Fifty-six of the asphyxia cases were infants under the age of one year who died due to an unsafe sleep environment. **Ten** of the 73 who suffered an asphyxia fatality died due to self-inflicted strangulation.

<sup>25</sup> Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report. Suffocation Deaths Associated with Use of Infant Sleep Positioners. Accessed at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6146a1.htm>

**Figure 28. Demographic Distribution of Asphyxia Deaths among Children Ages 0-17 in Tennessee, 2015**



**Table 21. Asphyxia Cause and Manner of Death among Children Ages 0-17 by Age Groups Tennessee, 2015**

Cause of Asphyxia	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs	Total
Sleep-related (Strangulation, Suffocation, Other)	56	0	0	0	0	57
Suffocation	0	1	0	0	0	1
Strangulation	0	1	0	4	6	11
Choking	0	2	0	0	0	2
Other	2	1	0	0	0	2
<b>Total</b>	<b>58</b>	<b>5</b>	<b>0</b>	<b>4</b>	<b>6</b>	<b>73</b>
Manner of Asphyxia	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs	Total
Natural	2	1	0	0	0	3
Accident	52	4	0	0	0	56
Suicide	0	0	0	4	6	10
Homicide	0	0	0	0	0	0
Undetermined	3	0	0	0	0	3
Pending	1	0	0	0	0	1
<b>Total</b>	<b>58</b>	<b>5</b>	<b>0</b>	<b>4</b>	<b>6</b>	<b>73</b>

## **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Increasing education regarding the importance of a safe sleep environment for infants.
- Safer meal and play time education (importance of monitoring toddlers during meal and play time).
- Basic first aid and CPR education for child care professionals and parents to safely remove airway obstructions.
- Educate parents of young children on how to properly child-proof the home.

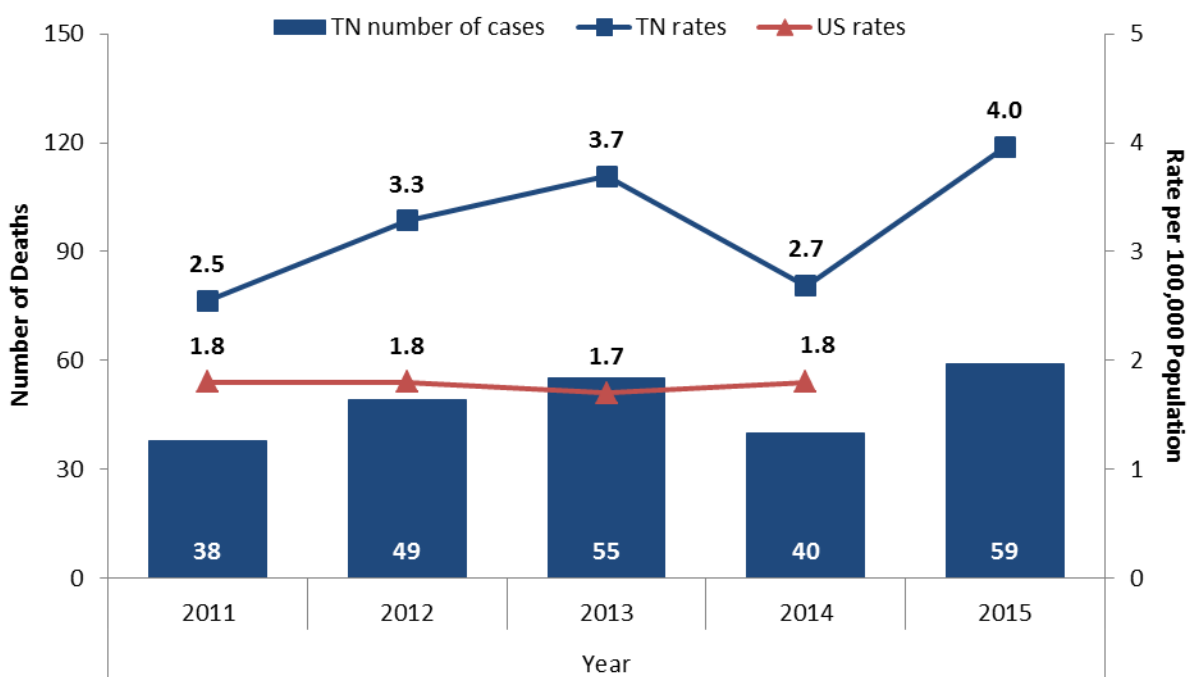
Current prevention efforts in Tennessee include:

- The Tennessee Department of Health’s “ABC’s of Safe Sleep” campaign educates parents on the dangers of asphyxia in the sleep environment.
- Safe Kids sends out a monthly email to alert parents and caregivers of recent safety recalls specific to children.
- Safe Kids works to educate community members on the ABCs of safe sleep at various outreach events across Middle Tennessee.

## Weapons-Related Deaths

In 2014, firearms alone accounted for 1,331 child deaths (1.8 per 100,000) of children ages 0 to 17 nationally. An additional 1,549 children (2.1 per 100,000) died from violence involving weapons other than firearms such as body parts, knives or other objects.<sup>26</sup> For classification purposes, body parts are included as weapons. Seventy-six percent (N=45) of all weapon fatalities were the result of firearms. Of the 45 deaths involving firearms, 29 were related to handguns, six were related to shot guns and the remaining were other guns.

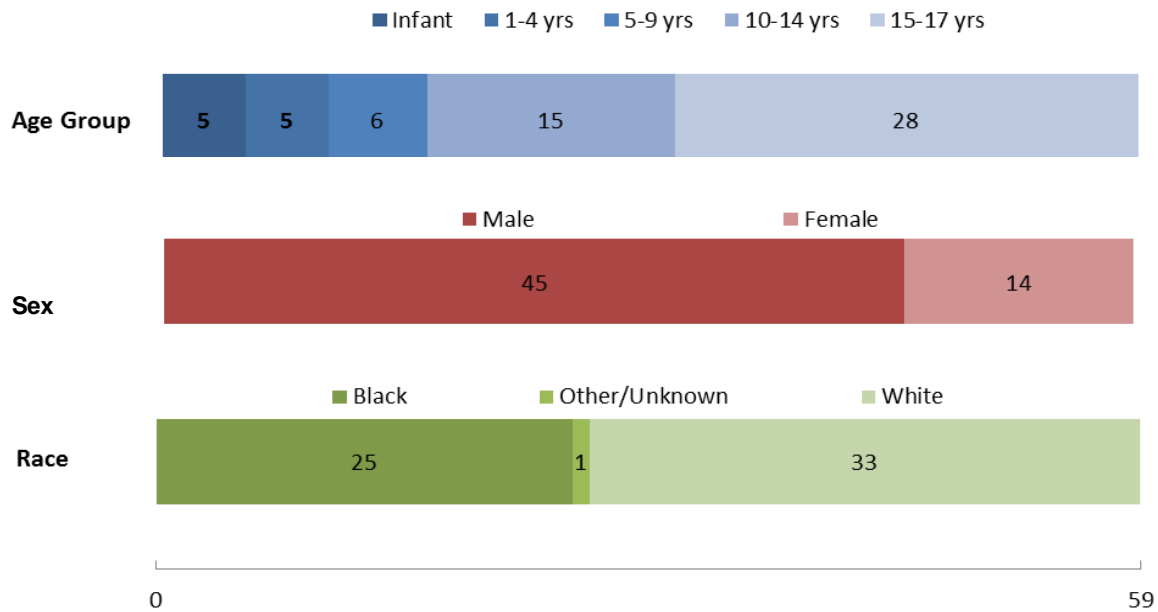
**Figure 29. Weapons-Related Deaths and Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**



In Tennessee, **fifty-nine** children died via weapon injuries in 2015, a 48% increase from 2014. This number represents approximately **7 percent of all deaths**. Of the 59 deaths, 45 were males and 14 were females. Although the number of white children who died from a weapon injury was greater than the number of black children who died, the rate of fatality is higher among black children. Most of the weapon-related deaths (58%) are due to homicide.

<sup>26</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)

**Figure 30. Demographic Distribution of Weapons-Related Deaths among Children Ages 0-17 in Tennessee, 2015**

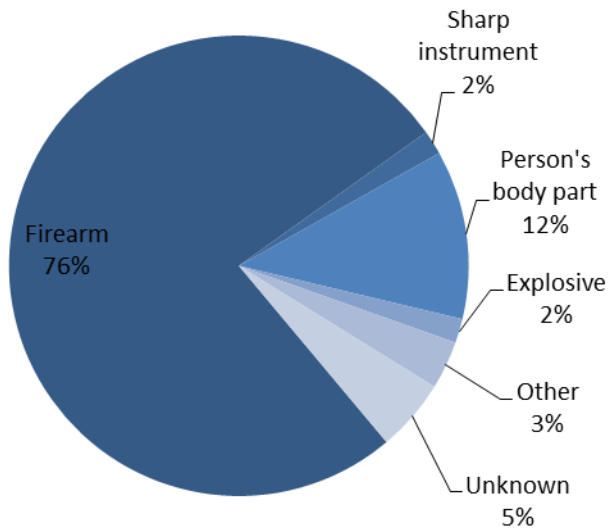


**Table 22. Weapon-Related Deaths among Children Ages 0-17 by Manner of Death and Age Groups Tennessee, 2015**

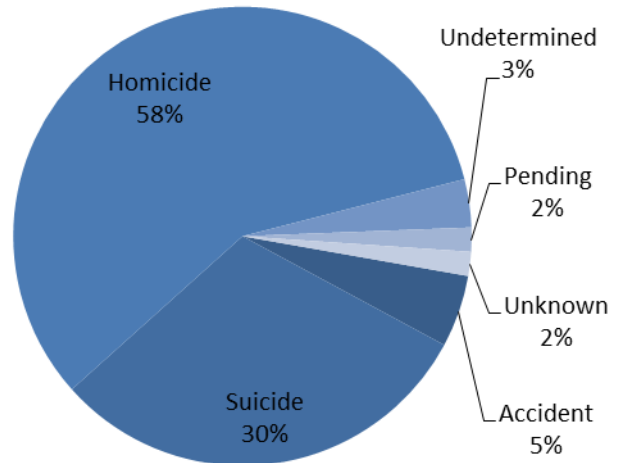
Manner of Death	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs	Total
Accident	0	1	0	2	0	3
Suicide	0	0	0	9	9	18
Homicide	5	4	6	3	16	34
Undetermined	0	0	0	0	2	2
Pending	0	0	0	1	0	1
Unknown	0	0	0	0	1	1
<b>Total</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>15</b>	<b>28</b>	<b>59</b>



**Figure 31. Weapons-Related Deaths among Children Ages 0-17 in Tennessee by Weapon Type,<sup>27</sup> 2015**



**Figure 32. Weapons-Related Deaths among Children Ages 0-17 in Tennessee by Manner of Death, 2015**



### **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Increase awareness of safer firearm handling and storage practices.
- Promote safety programs to encourage parental supervision to prevent unsafe child-weapon interactions.
- Promote safe gun and weapon storage to eliminate child access to weapons.

Current prevention efforts in Tennessee include:

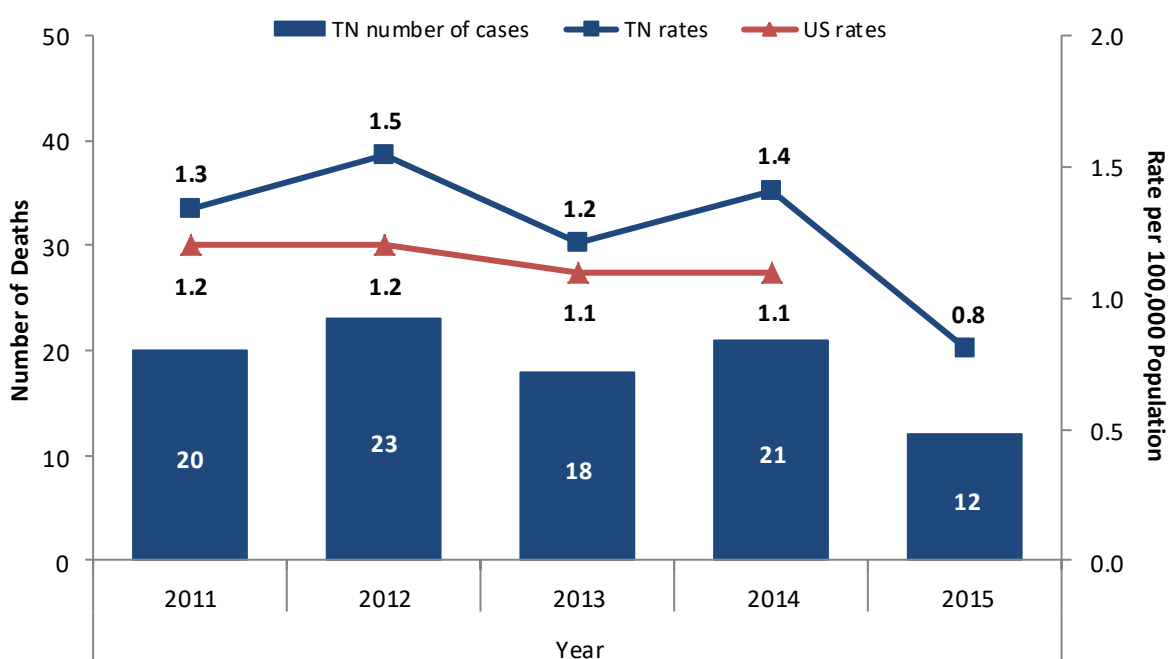
- The Tennessee Department of Safety requires firearm safety training and certification by a licensed trainer for all hand gun owners prior to carrying hand guns.
- The Tennessee Department of Safety distributes information on promoting safe firearm storage and practices among all firearm owners.
- The Tennessee Department of Health provides education in the schools on bullying and violence prevention.

<sup>27</sup> There are multiple cases, particularly for infants, where the exact weapon type is unknown. These may include cases where the medical records showed evidence of “blunt force trauma” but the source of the trauma is not evident by history or exam.

## Drowning-Related Deaths

Drowning ranks fifth among the causes of unintentional injury death in the United States.<sup>28</sup> Between 2011 and 2014, an average of 853 fatal drownings of children ages 0 to 17 occurred annually in the United States. From 2005 to 2014, drowning has become the leading cause of death for ages 1 to 4 from unintentional injury.<sup>29</sup> Nationwide, drowning occurred most often in a bath tub for infants and swimming pools for children ages 1 to 4.<sup>30</sup>

**Figure 33. Drowning Deaths and Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**



In Tennessee, **twelve** children perished by drowning in 2015. This number represents approximately **1.5 percent of all deaths**. Drowning deaths were more frequent in males (N=11) and black children (N=7) than females (N=1) and children of other races (N=5). Of the 12 drowning case reports, there were three cases with definitive acknowledgement that the child was able to swim.

Most of these deaths (N=11) occurred while children were playing and accidentally fell into the water, mainly by the pool (N=5), as shown in Table 23 and Figure 35. Of the five

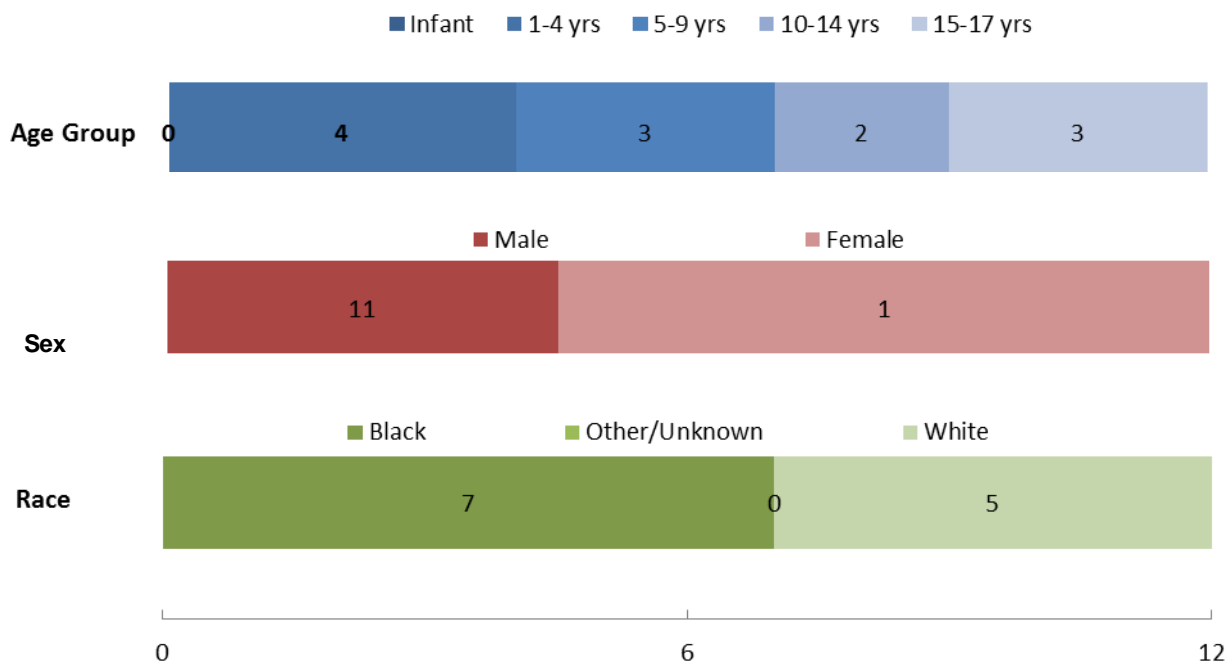
<sup>28</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention. Unintentional Drowning: Get the Facts. Accessed at <http://www.cdc.gov/HomeandRecreationalSafety/Water-Safety/waterinjuries-factsheet.html>

<sup>29</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)

<sup>30</sup> Control and Prevention: National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention. Unintentional Drowning Deaths in the U.S. (2016). Accessed at <http://www.cdc.gov/nchs/data/databriefs/DB149.pdf>

drowning deaths that occurred in a pool, only three had some kind of barrier/protection around the pool. One of the accidents occurred in a bathtub.

**Figure 34. Demographic Distribution of Drowning Deaths among Children Ages 0-17 in Tennessee, 2015**



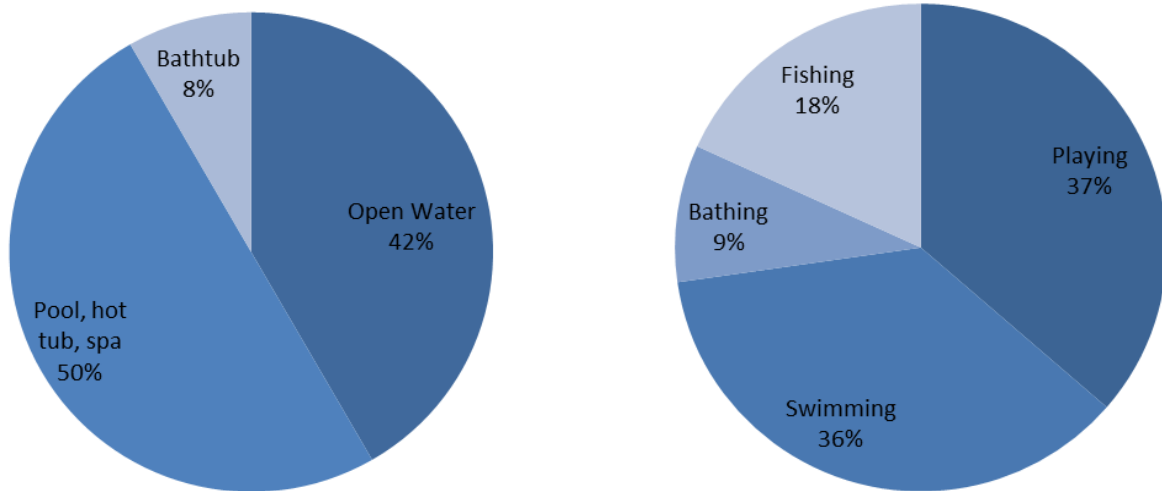
**Table 23. Drowning Deaths among Children Ages 0-17 by Location<sup>31</sup> and Age Groups in Tennessee, 2015**

Location of Accident	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs	Total
Open Water*	0	1	1	1	2	5
Pool, hot tub, spa	0	2	2	1	1	6
Bathtub	0	1	0	0	0	1
<b>Total</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>12</b>

\*Open water includes a river, lake or creek.

<sup>31</sup> Cases that occur in bathtubs among non-infants may be due to a medical condition that disabled the child at the time of death.

**Figure 35. Drowning Deaths among Children Ages 0-17 by Location and Activity at the Time of Death in Tennessee, 2015**



### **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Educational efforts to promote a buddy system when swimming.
- Promotion of formal swimming lessons for young children.
- Teaching CPR skills to children in school to reach those at the greatest risk for drowning.
- Installing four sided isolation fences around pools with self-closing and self-latching gates.

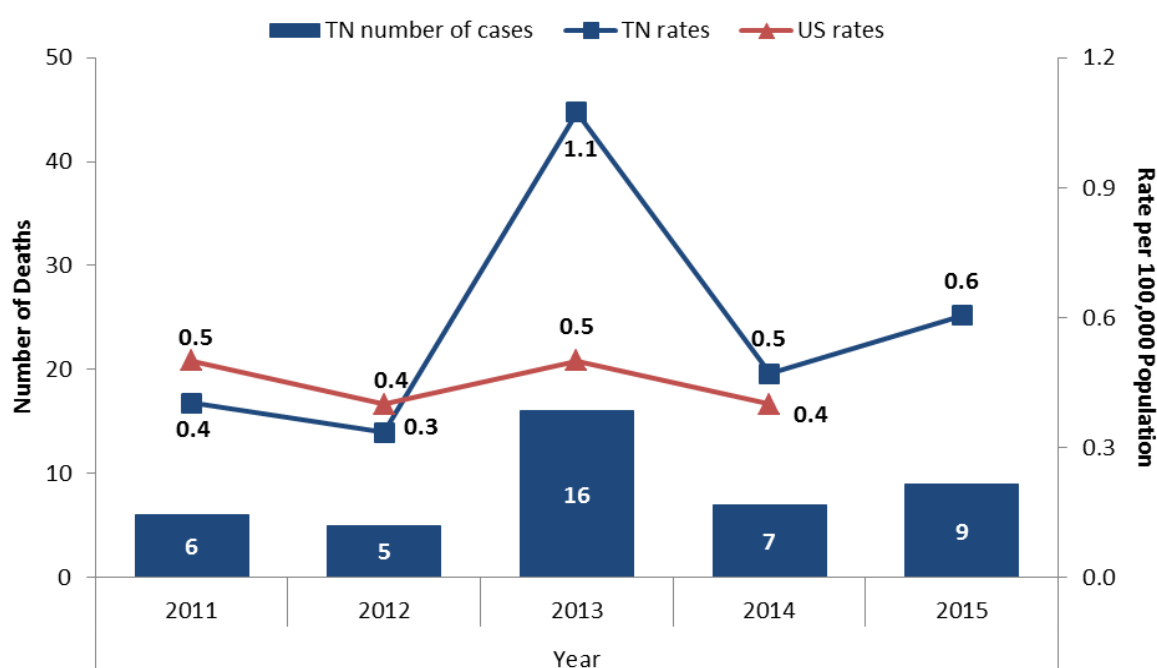
Current prevention efforts in Tennessee include:

- Safe Kids collaborates with many partners throughout the spring and summer to provide water safety education.

## Fire/Burn Deaths

Fire deaths in the U.S. have declined gradually over the past several decades; however fire deaths remain the third leading cause of fatal home injury.<sup>32</sup> In 2014, 266 children ages 0 to 17 (0.36 per 100,000) died from unintentional fires nationally, of which 255 occurred in residential structures.<sup>33</sup> Children ages 0 to 4 have the highest fire death rates compared to children of all ages.<sup>34</sup> Fire deaths are also more common among black (vs. white) children nationally. Cooking is the leading cause of residential fires overall; however most fires that result in deaths are a result of smoking.

**Figure 36. Fire/Burn Deaths and Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**



Tennessee had observed a gradual decline in fire/burn deaths until 2013 when there was an unusually high number of child fatalities (N=16); in 2015, that figure decreased to nine cases.

All age groups between ages 1-17 years were equally affected by this preventable death. Most were females (N=6). Black children are at a higher risk of dying from

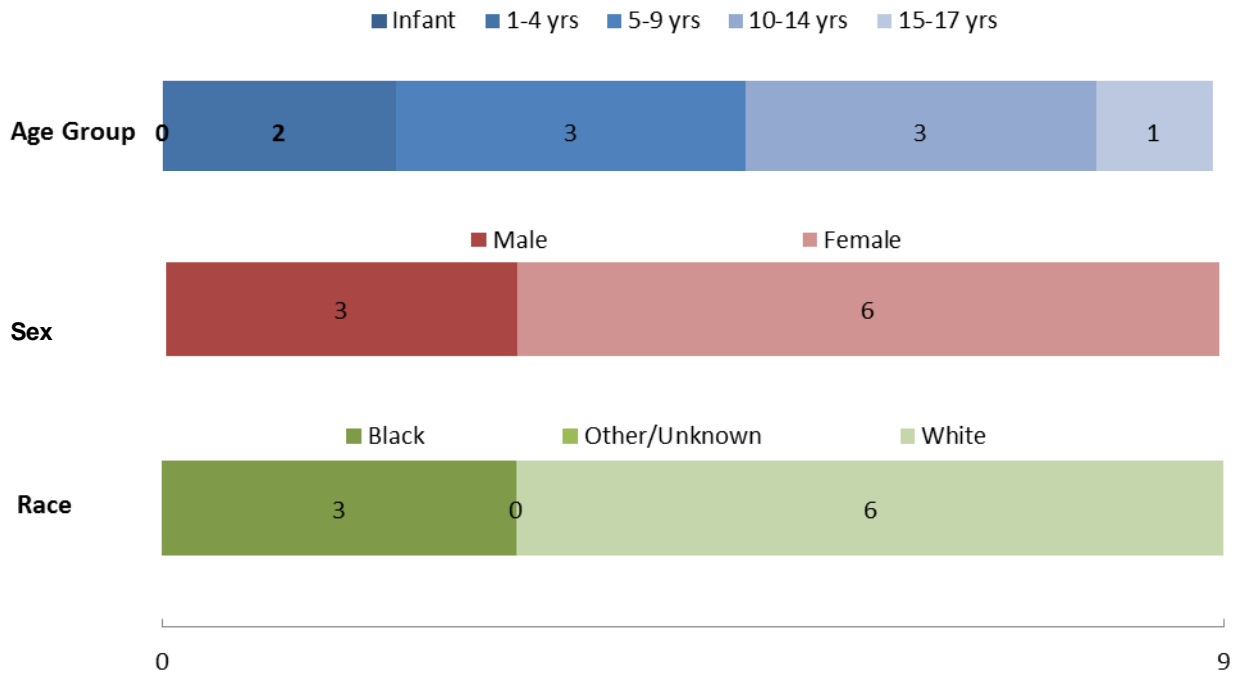
<sup>32</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Facts: Preventing Residential Fire Injuries. Available at <http://www.cdc.gov/Injury/pdfs/Fires2009CDCFactSheet-FINAL-a.pdf>  
[http://www.usfa.fema.gov/data/statistics/fire\\_death\\_rates.html](http://www.usfa.fema.gov/data/statistics/fire_death_rates.html)

<sup>33</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)

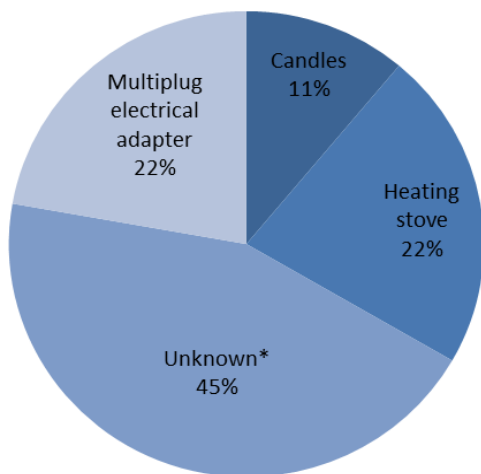
<sup>34</sup> Federal Emergency Management Agency: U.S. Fire Administration. Child Fire Death Rates and Relative Risk 2002-2011. Accessed at [https://www.usfa.fema.gov/data/statistics/fire\\_death\\_rates.html](https://www.usfa.fema.gov/data/statistics/fire_death_rates.html)

fires/burns in Tennessee in 2015. Most of these tragedies occurred in single homes. Out of the seven known sources of fire, four reported not having a smoke detector or a properly working one in the residence.

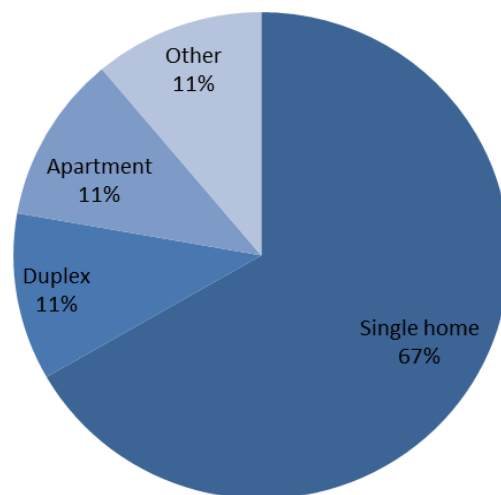
**Figure 37. Demographic Distribution of Fire/Burn Deaths among Children Ages 0-17 Tennessee, 2015**



**Figure 38. Fire/Burn Deaths among Children Ages 0-17 by Fire Source in Tennessee, 2015**



**Figure 39. Fire/Burn Deaths among Children Ages 0-17 by Structure Type in Tennessee 2015**



\*11% reported as probably cigarettes but cannot confirm.

## **FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Increased education to create awareness of fire safety and cost of fires.
- Incorporation of fire-safe features into high risk devices (ex. stoves, lighters).
- Distribution of smoke alarms to low income families.

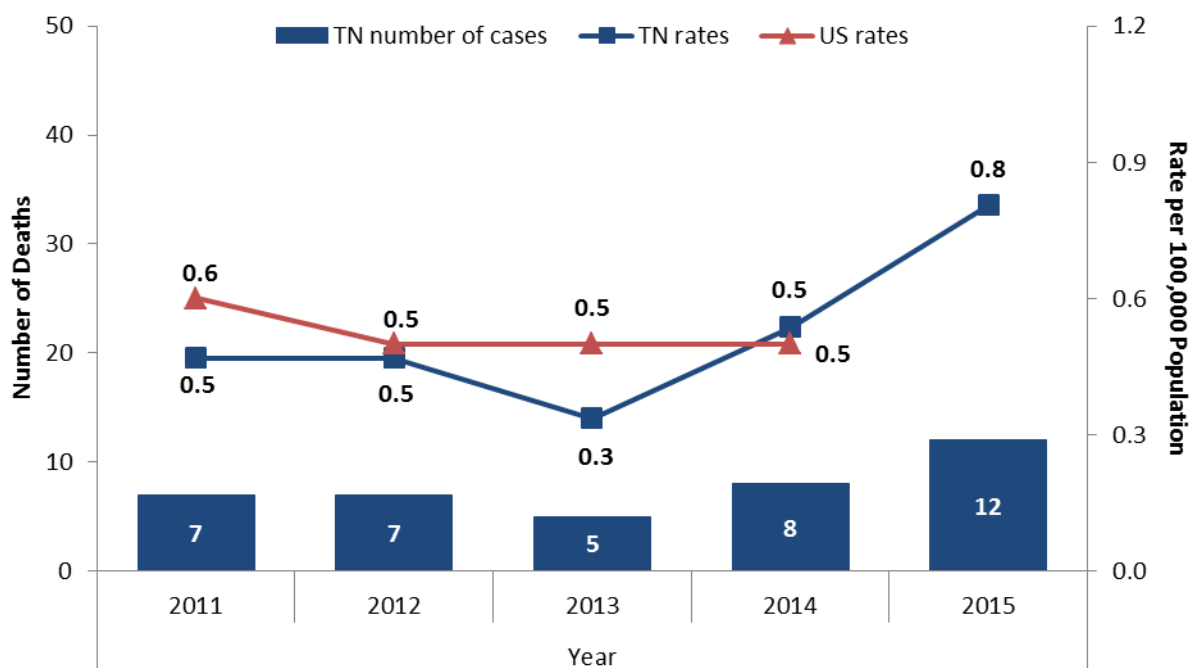
Current prevention efforts in Tennessee include:

- The Tennessee Department of Commerce and Insurance held a video contest asking participants to create a short video to draw awareness to the importance of fire safety.
- Several fire departments throughout Tennessee provide and install free smoke detectors for families that cannot afford them.
- The Tennessee Department of Commerce and Insurance Fire Prevention and State Fire Marshal's office conducts a "Close the Door!" campaign, teaching residents that if a room is on fire, simply closing the door can be a lifesaving event.

## Poisoning Deaths

Poisoning is the leading cause of injury death in the United States. Drugs - both pharmaceutical and illicit - cause the vast majority of poisoning deaths. Since 2000, the age-adjusted drug poisoning death rate more than doubled, from 6.2 per 100,000 in 2000 to 14.6 per 100,000 in 2014.<sup>35</sup> Unintentional poisoning deaths among children ages 0 to 17 increased by 94% from 1999 to 2009, but the rates have been decreasing since 2010. Opioid analgesic pain relievers are the most-frequently involved drug in drug poisoning deaths. Nationally, males (vs. females) and teens are more likely to die from unintentional poisoning.<sup>36</sup>

**Figure 40. Poisoning Deaths and Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**



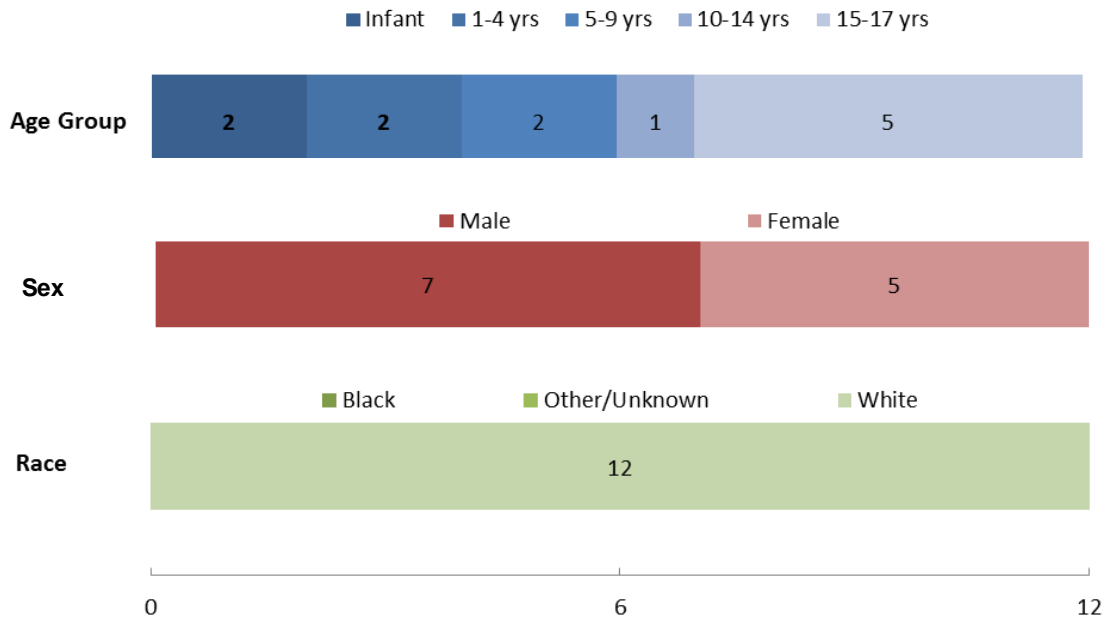
**Twelve** children died in Tennessee as the result of a poison-related incident in 2015, representing **1.5 percent of all child fatalities**. Most of the cases occurred among teenagers ages 15-17 years. Seven of the deaths were males, five were females, and all of them were white children. **Seven of twelve poisoning fatalities in Tennessee involved prescription drugs.**

<sup>35</sup> Centers for Disease Control and Prevention: National Center for Health Statistics. NCHS Fact Sheet: NCHS Data on Drug Poisoning Deaths. Accessed at [http://www.cdc.gov/nchs/data/factsheets/factsheet\\_drug\\_poisoning.pdf](http://www.cdc.gov/nchs/data/factsheets/factsheet_drug_poisoning.pdf)

<sup>36</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)



**Figure 41. Demographic Distribution of Poison-Related Deaths among Children Ages 0-17 Tennessee, 2015**



**Table 24. Poison-Related Deaths among Children Ages 0-17 by Substance and Age Groups Tennessee, 2015**

Type of Substances	Infant	1-4 yrs	5-9 yrs	10-14 yrs	15-17 yrs	Total
Prescription drug	2	2	0	1	2	7
Over-the-counter drug	0	0	1	0	1	2
Other substances	0	0	1	0	2	3
Total	2	2	2	1	5	12

**FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Educational campaign regarding prescription drug abuse and proper disposal of prescription drugs.
- Increase access to secure drop-off locations for unused medications.

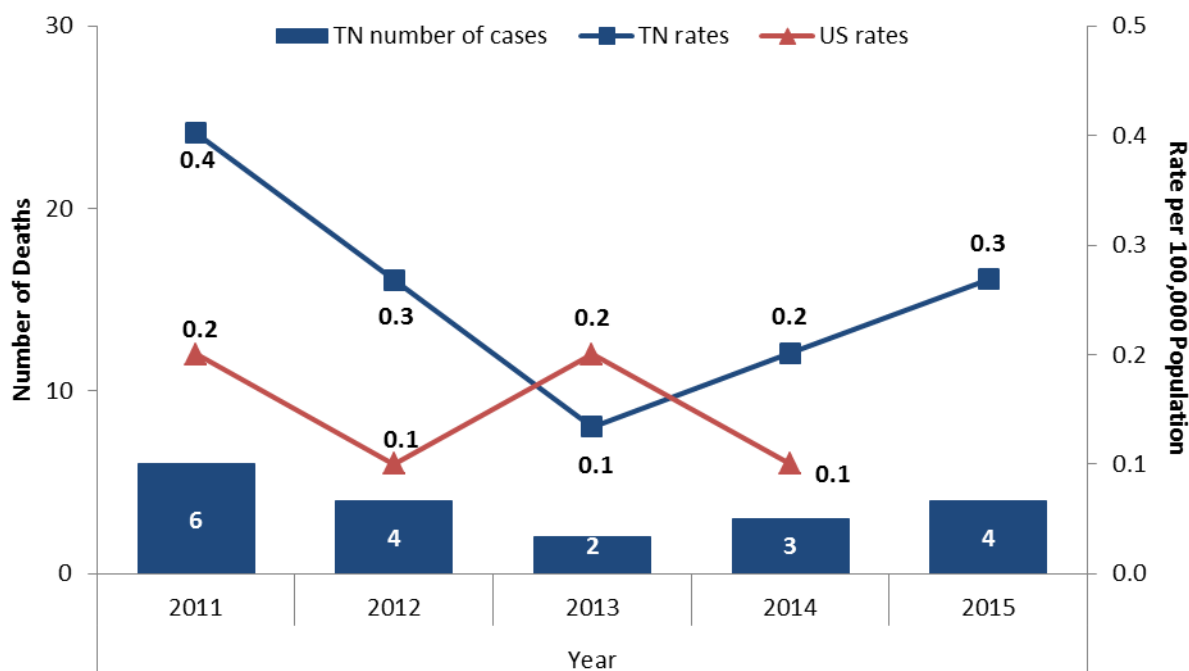
Current prevention efforts in Tennessee include:

- The Department of Health and Department of Environment and Conservation have partnered to place 208 secure drop-off boxes in all 95 counties in Tennessee. From August 2015 to July 2016, a total of 87,127 pounds of medicine was collected in the drop-off boxes.
- The Tennessee General Assembly passed Tenn. Code 53-11-308(e) (2014) which prohibits a prescription for any opioids or benzodiazepines from being dispensed in quantities greater than a thirty-day supply.
- The Bureau of TennCare has developed prior authorization requirements for long-acting narcotic medications.
- Throughout National Poison Prevention Week TDH posted 3 PSA messages about poison prevention.

## Fall/Crush Deaths

While falls are the leading cause of both fatal and non-fatal injuries among older adults, falls are the leading cause of non-fatal injuries among children ages 0 to 19.<sup>37</sup> Approximately 2.3 million children nationally are treated in emergency departments for fall related injuries. In 2014, 72 children ages 0 to 17 died nationally of unintentional fall injuries (0.10 per 100,000); males have higher rates of fall-related deaths than females.<sup>38</sup>

**Figure 42. Fall/Crush Deaths and Rates per 100,000 Children Population Ages 0-17 in Tennessee and the US, 2011-2015**

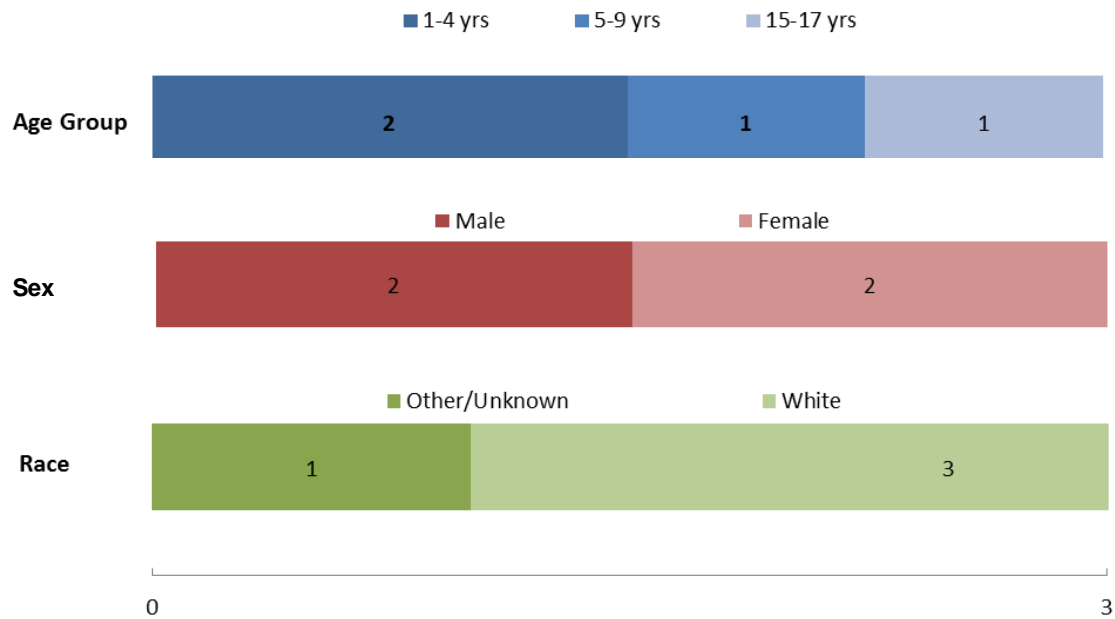


In Tennessee, four children died as the result of a fall or crush injury in 2015. Two of them were male and two female and three of them were white. **These four deaths represent 0.3 percent of all child fatalities.**

<sup>37</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Protect the Ones You Love. Falls: The Reality <http://www.cdc.gov/safechild/Falls/index.html>

<sup>38</sup> Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). 2016. Accessed at [http://www.cdc.gov/injury/wisqars/fatal\\_injury\\_reports.html](http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html)

**Figure 43. Demographic Distribution of Fall/Crush Deaths among Children Ages 0-17 in Tennessee, 2015**



**FOCUSING ON PREVENTION**



Potential prevention opportunities include:

- Safety checks on playgrounds to ensure that playground equipment is safe and well-maintained.
- Encourage child safety features in homes such as window guards, stair gates, and guard rails to prevent accidental falls.
- Increase awareness regarding importance of supervision in both the home and at play.

Current prevention efforts in Tennessee include:

- Safe Kids provides education for parents and the community around home safety.
- Safe Kids has published multiple media reports about fall/crush injuries over the last 2–3 years

A child's risk of injury and violence is impacted by many social, personal, economic and environmental factors. Some of these factors may include hazards in the community and home environment, stress caused by poverty and social exclusion, and lack of access to safety equipment, services and education. Understanding these social determinants of health and how they overlap to create risk for injury and violence is critical to improving the safety of Tennessee's children. The recommendations below address these underlying contributing factors as they relate to specific causes of death.

### **Safe Sleep**

The number of sleep-related deaths increased 43% from 2014-2015, from 99 to 142 deaths. Among sleep-related infant deaths there is a significant racial disparity. Black infants are 1.9 times more likely to suffer a sleep-related fatality as white infants. **The State Team recommends aggressively increasing efforts to increase the safety of infant sleep environment with an emphasis on developing new projects to target at-risk groups.**

To accomplish this, the Department of Health will partner with the Department of Children's Services, Prevent Child Abuse Tennessee (PCAT) and the Tennessee Commission on Children and Youth (TCCY) to distribute a minimum of 200,000 TDH educational materials to individuals responsible for the care of an infant. The Department will specifically collaborate with hospitals to implement a new hospital infant mortality-reduction program that will increase the percentage of birthing hospitals passing crib audits and ensure safe sleep education is provided to all new parents prior to hospital discharge. TDH will conduct focus groups with minority populations to determine strategies to best reach these populations and formulate messaging that is culturally effective. TDH will target minority populations through the dissemination of safe sleep information at faith-based organizations and daycare centers, as well as to generational caregivers. TDH will encourage incorporation of the National Culturally and Linguistically Appropriate Services (CLAS) standards when appropriate to facilitate full access to services and programs for all eligible participants.

TDH will ensure families participating in evidence-based home visiting programs have access to a safe sleep environment. In addition, TDH staff will ensure agencies contracted to do home visiting are utilizing the safe sleep flipchart to educate families.

TDH will engage additional partners in the community to ensure a safe sleep environment is provided to at risk populations. TDH will promote the new child care licensing rules regarding safe sleep practices. DCS will continue to assess all families

they work with to ensure the presence of a safe sleep environment in every living situation they encounter.

## **Motor Vehicle**

Motor vehicle-related fatalities are a substantial contributor to external causes of death among Tennessee's children. In 2015, 61 children (8% of all child deaths) died in motor vehicle crashes; an increase from 53 deaths in 2014. While resources exist to provide young drivers with education around motor vehicle safety, opportunities exist to increase participation in activities known to increase safe driving practices. **The State Team recommends increasing participation in evidence-based motor vehicle crash prevention efforts among schools, with an emphasis on the regions with the highest motor vehicle crash fatalities involving teens.**

The Departments of Education and Health will collaborate to engage schools located in high-risk counties in adopting an evidence-based or evidence-informed practice, such as "Reduce TN Crashes" (<http://reducetnrcrashes.org>), a Governor's Highway Safety Office traffic safety awards program. TDH will specifically expand the number of schools participating in the Checkpoints program to increase teen compliance with Graduated Drivers' License requirements. Efforts will be evaluated by tracking the number of schools that have registered with the website and completed activities. TDH will collaborate with the Department of Safety to promote existing programs and gather real-time data on motor vehicle crashes and deaths throughout the year. The success of these efforts will be measured by the number of motor vehicle fatalities among children in subsequent years.

## **Intentional Violence**

The number of suicide and homicide deaths among children increased from 2014 to 2015 (24 to 33 for suicide and 34 to 40 for homicide). The rate of suicide increased from 1.6 in 2014 to 2.2 in 2015 and the rate of homicide increased from 2.3 in 2014 to 2.7 in 2015.

Adverse childhood experiences (ACEs) have a significant impact on future violence victimization and perpetration, as well as lifelong health and opportunity. As such, early experiences are an important public health issue. Recognizing the impact of ACEs is critical if there is to be improvement in the health and wellbeing of Tennesseans. Therefore, **all state departments will be encouraged to participate in the *Building Strong Brains* training initiative addressing ACEs in order to build capacity in every agency to recognize and appropriately respond to ACEs.**

**The State Team recommends increasing the violence prevention work in schools** including: encouraging every school district to participate in Question, Persuade, Refer

(QPR) training; encouraging schools to participate in Youth Mental Health First Aid or a similar training focused on helping staff direct students and families to appropriate services when needed; and offering training on ACEs to school personnel. In addition, schools will be encouraged to include a school climate assessment in their school improvement planning process.

To accomplish this, the Tennessee Suicide Prevention Network, as well as the Departments of Education, Mental Health and Substance Abuse Services and Health, will collaborate to assist with training and resources for schools and other community agencies, especially in those communities at greatest risk for intentional violence. TDH will communicate directly with community stakeholders within historically high-risk communities to encourage the development of community-based plans that address intentional violence. TDH will continue to encourage central office employees to participate in the Question, Persuade, Refer (QPR) training. The Department of Education will encourage school personnel to participate in the QPR training, as well.

The success of these efforts will be measured by the number of suicide and homicide deaths among children in subsequent years.

## **Medical**

Prematurity is the leading cause of death among Tennessee infants. Addressing the risk factors for prematurity, including substance exposure, requires a focus on preconception/interconception health (a mother's health before she becomes pregnant). In Tennessee, nearly half of all pregnancies are unintended, putting the mother and baby at risk for adverse outcomes related to premature birth. Likewise, research has shown that spacing pregnancies more than 18 months apart decreases the risk of prematurity and infant mortality. Utilizing effective contraception can assist women of child-bearing age in avoiding unintended pregnancy, as well as provide a window of opportunity wherein risk factors for premature delivery may be identified and mitigated before a woman becomes pregnant. **The State Team recommends making Voluntary Reversible Long Acting Contraceptives (VRLACs) easily available to reduce unplanned pregnancies.**

In addition, 17 alpha-hydroxyprogesterone (17P) reduces the risk of repeat premature delivery when given to appropriate expectant mothers at appropriate intervals during pregnancy. It is recognized that there is room for improvement in the delivery of 17 alpha-hydroxyprogesterone (17P) to women at high risk for premature delivery. **The state team recommends wider access to 17P through collaborative partnerships with providers and payors in the state.**

To accomplish these recommendations, the Departments of Health, Children's Services, and Mental Health and Substance Abuse Services will collaborate to provide education

and increase access to VRLACs for women of child-bearing age. TDH will increase the awareness and training of pediatric and other healthcare providers in VRLAC procedures. In addition, TDH will provide outreach to prescribers of medication-assisted therapy regarding the importance of prescribing contraception when a woman of child-bearing age is treated with any controlled substance. TDH will conduct small PDSA (Plan, Do, Study, Act) cycles to shorten the time to prenatal care after the diagnosis of pregnancy and facilitate collaboration around access to 17P.

## **Poisoning**

Poisoning deaths among children increased from 8 deaths in 2014 to 12 deaths in 2015 (a rate of 0.5 vs. 0.8). **The State Team recommends promoting proper storage of medications to reduce access to medications by children.**

To accomplish this, the Departments of Mental Health and Substance Abuse Services and Health will collaborate with the Department of Environment and Conservation, local drug coalitions, and local police departments to increase availability of secure medication drop boxes. This will be measured by the number of secure medication drop boxes available throughout the state and the amount of medications collected.

## DATA TO ACTION

### Statewide Activities

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In December 2015, the State Child Fatality Review Team met to review aggregate child death data from the 2014 death reviews and to consider recommendations from local teams. State Team members considered the latest trends in the causes of child deaths and contemplated strategies for reducing future fatalities. The State Team focused on a few key strategies for reducing child fatalities in Tennessee.

The State Team made the following recommendations in the 2016 report:

- Continue the safe sleep campaign with an emphasis on expanding projects already in place to educate families and caregivers.
- Expand motor vehicle safety educational efforts in schools with an emphasis on the regions with the highest motor vehicle crash fatalities among teens (Mid-Cumberland, East Tennessee, South Central and West Tennessee).
- Expand the current suicide prevention efforts by increasing education to students to include awareness of warning signs and available resources. Specific efforts will include:
  - Increasing education to students by including age appropriate suicide and other mental health related concerns in the Health and Lifetime Wellness Curricula available in schools
  - Identify barriers and address youth access to effective mental health services.
- Make Voluntary Reversible Long Acting Contraceptives (VRLACs) easily available to promote optimal birth spacing, reducing the number of babies exposed to prescription drugs and reducing unplanned pregnancies.
- Identify strategies to target racial disparities.

Tennessee Department of Health staff, in conjunction with colleagues from other state agencies, local child fatality review teams, and other community partners accomplished the following related to the priorities outlined above:

#### Safe Sleep

- The Tennessee Department of Health (TDH) partnered with several agencies across the state to distribute safe sleep educational materials to parents, healthcare providers, child care agencies, social services providers and other caregivers.
- Birthing hospitals continued to implement their safe sleep policies developed in 2014. As part of the safe sleep policy project, another 80,000 *Sleep Baby, Safe*



*and Snug* board books and other safe sleep educational materials were distributed to parents prior to being discharged from the hospital.

- TDH continues to promote the Direct on Scene Education (D.O.S.E.) program. When responding to an emergency or non-emergency call from a household with a pregnant woman or an infant, first responders are trained to look for unsafe sleep conditions and offer the residents a safe sleep kit with information on the ABC's of Safe Sleep. Over the past year two new first responder agencies, including all of Shelby County/Memphis, have implemented the D.O.S.E. program, increasing the total number of participating departments to 28. Since implementation, agencies have distributed over 1272 kits and 32 portable cribs.
- TDH implemented the safe sleep floor talker project in 2014 and continued to place those across the state in 2015. The floor talkers are large plastic decals designed to be placed on the floors of businesses, daycares, clinics and other agencies. To date, 678 floor talkers have been placed across Tennessee.
- Portable cribs and infant sleep sacks were supplied to the regional health departments to distribute a safe sleep environment to families that could not afford them.
- In FY2015, Prevent Child Abuse Tennessee (PCAT) served 882 first time parents through the Healthy Families Tennessee (HFTN) program. HFTN is an evidence-based home visiting program serving 20 counties in Tennessee. During the assessment process and initial home visit, families explore safe sleep information and options. In 2016, PCAT collaborated with TDH to implement a Baby Box pilot project. The project provides a baby box to families to use as a sleep environment. Information is being collected about whether the family uses the box for sleep.
- TDH created a safe sleep church bulletin insert that has been shared across the state for local churches to distribute to their members. The church bulletin insert was designed using the American Academy of Pediatrics safe sleep recommendations and a personal story from a mother who lost a baby due to unsafe sleep.
- The TDH Women, Infants and Children (WIC) program developed an online educational module on safe sleep and breastfeeding for parents. The module was made available statewide in December 2015. In 2016, almost 2000 WIC parents completed the educational module.

## **Motor Vehicle**

- TDH continues to collaborate with the Department of Education and the Trauma Centers to promote involvement in the "Battle of the Belt" seat belt program. 40 adult advisors were educated in the last year.

- TDH has implemented a pilot of the Checkpoints™ Program. This program promotes the use of a parent-teen driving agreement and shows parents what they can do to help teens be safer drivers. The Checkpoints program educates parents and teens about teen driving risks, Graduated Driver License requirements, and how compliance with GDL requirements helps reduce teen driving risks.
- A teen driving task force with representation from the Department of Health, Department of Education, Governor’s Highway Safety Office, Tennessee Highway Patrol, Vanderbilt Trauma Center and UT Trauma Center continues to meet. The goal of this task force is to increase teen motor vehicle crash prevention education taking place in schools. In particular, the task force is looking at the schools in the counties with the highest rates of teen motor vehicle accidents and encouraging them to participate in motor vehicle prevention activities.
- The Governor’s Highway Safety Office website promotes teen driving prevention activities among the schools. The website allows anyone to click on a county and view a list of motor vehicle prevention activities that are available in that particular county. Each school can also input prevention activities in which they are participating. As of October 2016, 157 schools completed 415 activities in 87 of 95 counties.
- Graduated Driver License Education has been promoted through press releases, social medial and the TDH website. Over 600 students and 100 adults were educated at a TN Teen Institute Conference providing 20,000 “Tennessee Graduated Driver License-Steps for Success” wallet brochures.

## **Suicide**

Tennessee Department of Mental Health and Substance Abuse Services (TDMHSAS):

- From FY2014 to 2015, there was a 27% increase statewide in the number of children receiving services through mobile crisis and a 19% increase of face-to-face interventions. The goal of face-to-face contact between a mobile crisis representative and the patient within 2 hours was met without an increase in funding.
- TDMHSAS has been in contact with Community Mental Health Centers and other agencies across the state, confirming their availability to provide access and resources to the local CFR teams.
- The Suicide Prevention and the Black Faith Communities Initiatives Committee continues to expand its initiatives in faith communities by providing trainings on suicide prevention, bullying, and mental health and distributing suicide prevention resource material.

#### Tennessee Suicide Prevention Network (TSPN):

- The Jason Flatt Act was expanded, requiring all school staff to be trained in suicide prevention. Additionally, each school must adopt a policy for handling suicidal ideations and when a student or staff member completes suicide.
- Staff and volunteers provided some form of suicide prevention training to 3,730 educators in Tennessee through 46 presentations at schools or conferences. These included presentations of the “Question, Persuade, Refer” curriculum, TSPN’s curricula on substance abuse and suicide and on the risk of suicide among LGBTQ youth.
  - In all trainings to school staff, participants were encouraged to consider training on the Columbia Suicide Severity Rating Scale (C-SSRS). Information about this tool was also included in the participants’ resource directories. It is worth noting that 100% of psychologists, counselors, and mental health workers within Metro Nashville Public Schools were trained on the C-SSRS.
- TSPN distributed resources and materials on suicide prevention at all events, (including the Lifeline number). The Lifeline number was also printed on all of TSPN’s new brochures, flyers, and handouts.

#### Tennessee Department of Education (TDOE):

- TDOE received a five-year, \$9.75 million demonstration grant from the Substance Abuse and Mental Health Services Administration (SAMHSA) to enhance mental health awareness and access to services. This is year two of the grant. Tennessee Advancing Wellness and Resilience Education (AWARE) has two broad areas of focus: 1. Funding to three pilot school districts to provide school-based mental health services, develop and identify best practices, and support indicated policy changes; and 2. Delivery of Youth Mental Health First Aid Training to school staff and other adults who regularly interact with adolescents. A significant portion of the Youth Mental Health First Aid Training focuses specifically on youth suicide.
- TDOE coordinated with TSPN on the dissemination of Suicide Postvention Guidelines. These guidelines were with school and district-level emergency response plans and other traumatic response protocols/guidance including the Tennessee Providing Support Reaching Educators, Parents, Students and Restoring Community with Effective Interventions (PREPARE) training. Also, this year, the Department began including procedures for suicide prevention, intervention, and postvention in emergency operations training for districts.

#### **Voluntary Reversible Long Acting Contraception (VRLACs)**

- TDH provided funding for family planning clinics and federally qualified health centers to provide VRLACs to women.
- TDH provides support for educating inmates on effective contraception (including VRLACs), Neonatal Abstinence Syndrome, and reducing unwanted pregnancies.

## Racial Disparities

A racial disparity clearly exists among children and infant fatalities in Tennessee. Although the majority of deaths are comprised of white children, black children suffer a higher rate of mortality than whites or other races. Last year, the State Team recommended identifying strategies to target racial and ethnic disparities. To accomplish this, TDH analyzed and presented child and infant mortality data to the state team in order to identify where the greatest racial disparities existed.

The regions with the significant racial disparities are Davidson, Hamilton, Madison, Mid-Cumberland, Northeast, Shelby, South Central and West. Table 25 summarizes the 2014 child death data in Tennessee by race and region.

**Table 25. Racial Disparity in Child Fatality Ages 1-17 in Tennessee by Region, 2014**

Region	Number of Deaths	Mortality Rate per 100,000 Population	Number of Deaths by Race		Mortality Rate per 100,000 Population by Race		Rate ratio (Black/White)
			Black	White	Black	White	
Davidson*	96	66.0	48	33	97.0	40.0	2.4
East	91	57.7	3	86	65.6	59.0	1.1
Hamilton*	36	48.1	16	20	90.7	38.6	2.3
Knox	50	51.5	9	35	81.6	44.5	1.8
Madison*	20	86.7	14	4	136.9	34.3	4.0
Mid-Cumberland*	131	43.7	22	95	65.9	39.1	1.7
Northeast*	51	73.5	5	42	223.7	65.7	3.4
Shelby*	192	80.7	138	34	99.9	39.6	2.5
South Central*	54	60.3	8	42	119.7	54.0	2.2
Southeast	41	57.8	3	36	99.2	55.9	1.8
Sullivan	8	25.9	0	7	0.0	24.6	0.0
Upper-Cumberland	37	50.6	2	30	114.5	43.9	2.6
West*	76	64.1	22	52	98.6	57.3	1.7

\* Difference between race rates is considered statistically significant at the 0.05 level.

\*\* Rates for less than 20 cases are unstable and must be used with caution.

Data source: Tennessee Department of Health, Division of Policy, Planning and Assessment, Death Statistical System.

Table 26 compares racial disparity in infant deaths in Tennessee by region. It was observed that regions with statistically significant racial disparities are Davidson, East, Hamilton, Madison, Mid-Cumberland, Northeast, Shelby, South Central and West. There were no deaths among black infants in Sullivan County.

**Table 26. Racial Disparity in Infant Deaths in Tennessee by Region, 2014**

Region	Number of Deaths	Mortality Rate per 1,000 Live Births	Number of Deaths by Race		Mortality Rate per 1,000 Live Births by Race		Rate ratio (Black/White)
			Black	White	Black	White	
Davidson*	70	6.8	35	25	11.6	3.7	3.1
East*	53	6.6	3	48	20.1	6.2	3.2
Hamilton*	23	5.6	11	12	11.2	4.0	2.8
Knox	32	6.1	6	23	10.6	5.1	2.1
Madison*	12	9.6	8	2	14.7	2.9	5.1
Mid-Cumberland*	80	5.1	16	55	9.3	4.1	2.3
Northeast*	35	10.2	3	30	28.6	9.2	3.1
Shelby*	133	9.6	101	20	12.1	4.0	3.0
South Central*	30	6.2	5	23	16.3	5.2	3.1
Southeast	33	6.4	1	20	8.2	5.9	1.4
Sullivan	2	1.3	0	2	0.0	1.3	0.0
Upper-Cumberland	22	5.7	1	18	21.3	4.8	4.4
West*	47	8.0	17	28	15.5	6.0	2.6

\* Difference between race rates is considered statistically significant at the 0.05 level.

\*\* Rates for less than 20 cases are unstable and must be used with caution.

Data source: Tennessee Department of Health, Division of Policy, Planning and Assessment, Birth Statistical System, Death Statistical System.

Table 27 lists the number of total sleep-related infant deaths in 2014 by region. The region with the highest number of sleep related infant deaths was Shelby. The regions with the highest racial disparity of sleep related infant death rates are Knox, East, Shelby and Mid-Cumberland. Northeast, South Central and Sullivan regions of Tennessee did not have any black sleep related infant death in 2014.

**Table 27. Racial Disparity in Sleep-Related Infant Deaths in Tennessee by Region, 2014**

Region	Number of Deaths	Sleep-related Deaths Rate Per 1,000 Live Births	Deaths Rate by Race		Rate ratio (Black/White)
			Black	White	
Davidson	12	1.2	2.3	0.7	3.1
East	9	1.1	6.7	1.0	6.5
Hamilton	4	1.0	1.0	1.0	1.0
Knox	2	0.4	1.8	0.2	7.9
Madison	4	3.2	7.4	0.0	N/A
Mid-Cumberland	13	0.8	2.3	0.7	3.4
Northeast	7	2.0	0.0	2.1	0.0
Shelby	20	1.4	2.0	0.6	3.4
South Central	6	1.2	0.0	1.3	0.0
Southeast	8	2.2	8.2	2.1	4.0
Sullivan	0	0.0	0.0	0.0	N/A
Upper-Cumberland	3	0.8	0.0	0.8	0.0
West	11	1.9	4.6	1.3	3.6

After careful review of these data, the state team decided TDH needed to conduct focus groups in the communities with highest risk to develop strategies for prevention. TDH is developing a plan to conduct focus groups with parents and caregivers to determine strategies to effectively reach disparate populations throughout the state.

## ***Local Prevention Activities***

As part of the CFR process, the review of each case and the discussions that follow identify opportunities for preventing future child deaths. In addition to submitting recommendations for state-level policy or program changes, local teams also engage in prevention efforts in their own communities.

Examples of local prevention activities implemented over the past year by local CFR teams include:

- Judicial District 1 and 3 in Northeast Tennessee are educating female inmates on Neonatal Abstinence Syndrome family planning, including the use of Voluntary Reversible Long-Acting Contraceptives. They are also providing contraception to interested inmates.
- Judicial District 3 collaborated with local hospitals to implement a “Cribs for Kids” program for mothers that give birth in their facility. It will provide a portable crib to any family with an infant that does not have a safe sleep environment.
- Judicial District 4 collaborated with the local sheriff’s department to provide safe sleep education to community members through various outreach events.
- Judicial District 5 collaborated with local school districts to implement policies on bullying and cyber bullying to improve youth mental health services and character building.
- Judicial District 5 electronically distributed the safe sleep church bulletin insert to local congregations.
- Judicial District 6 implemented a workgroup around suicide prevention and reaching out to private schools for education on suicide prevention and creating a suicide intervention policy.
- Judicial District 6 helped implement and promote the “Strong Baby” campaign. This campaign shows ways to help infants have a healthy start, and has messages about healthy eating, safe sleep, and staying active..
- Judicial District 7 provided mental health training to all school system staff and community clergy. Training included education on suicide, QPR model, having a plan in the event of someone who is suicidal, and utilizing resources.
- Judicial District 8 provided a safe sleep presentation for local WIC staff. In addition an audit was completed with the breastfeeding program that concluded there was excellent work with combining a message of both safe sleep and breastfeeding.

### Local Prevention Activities (continued)

- Judicial District 9 hosted immunization presentations that emphasized the importance of disease prevention through vaccines.
- Judicial District 20 reviewed the use of their Central Referral System to connect families to appropriate services. They found it was not being utilized to full capacity and they are addressing gaps for missed opportunities.
- Judicial District 26 hosted a Grief Conference for families that have experienced loss.
- Judicial District 30 hosted a 3-day DOSE training, which included an invitation to expand the DOSE program to include local housing authorities in high risk areas and other community partners that are interested in participating.



## **CONCLUSION**

The goal of child fatality review is to better understand the causes of death to children in Tennessee and to identify strategies for preventing future deaths. As indicated in this report, there has been a significant reduction in the child fatality rate in Tennessee—11% over the last five years. However, our child fatality rate remains above the national average, leaving important work to be done by all of us in order to protect our children.

Several key areas identified in this report warrant further attention, as recommended by the state team. We encourage all who read this report to utilize the data contained herein to explore opportunities for improving the health and well-being of children in your own community.

## APPENDICES

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## ***Appendix B—Glossary***

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**Asphyxia** – Oxygen starvation of tissues. Asphyxia is a broad cause of death that may include more specific causes, such as strangulation, suffocation, or smothering.

**Autopsy** – Medical dissection of a deceased individual for the purpose of determining or confirming an official manner and cause of death.

**Birth Certificate** – Official documentation of human birth, filed with the Tennessee Office of Vital Records.

**Cause of Death** – The effect, illness, or condition leading to an individual's death: Medical Condition or External Cause (Injury). A different classification from Manner of Death.

**Child Fatality Review (CFR) Team**– Tennessee's local/regional groups, comprised of such agencies as public health, law enforcement, social services, etc., that examine the deaths of children aged 17 and under with the ultimate goal of preventing future fatalities.

**Child Maltreatment** – Intentional injury of a child, involving one or more of the following: neglect, physical harm, sexual abuse or exploitation, or emotional abuse.

**Circumstances** – Situational findings.

**Commission (Act of)** – Supervision that willfully endangers a child's health and welfare.

**Congenital anomaly** – A medical or genetic defect present at birth.

**Contributing Factors** – Behavioral actions that may elevate the potential risk of fatality.

**Coroner** – Jurisdictional official charged with determining the manner and cause of death for individuals perishing in sudden, violent, or suspicious circumstances. Performs much the same function as a Medical Examiner, but may or may not be a physician.

**Child Protective Services (CPS)** – Social service system engaged in protecting children from maltreatment.

**Children's Special Services (CSS)** – Tennessee Department of Health program that provides care coordination and payment for medical services to families with severely ill or disabled children under the age of 21.

**Death Certificate** – Official documentation of an individual's death, indicating the manner and cause of death.

**Death Scene Investigation** – Portion of the Child Fatality Review process that gathers relevant information and interviews at the site of a child's death for the purpose of determining or confirming the manner and cause of death.

**Exposure** – Cause of death directly related to environmental factors; typically death from hyper- or hypothermia.

**External** – Categorization of non-medical manners of death: i.e., accident, homicide, or suicide.

**Full-term** – A gestation of 37 or more weeks.

**Homicide** – Death perpetrated by another with the intent to kill or severely injure.

**Hyperthermia** – High body temperature.

**Hypothermia** – Low body temperature.

**Infant** – Child under one year of age.

**Manner of Death** – The intent of a death, i.e. whether a death was caused by an act carried out on purpose by oneself or another person(s): Natural, Accident, Suicide, Homicide, or Undetermined.

**Medical Examiner** – Physician charged with determining the manner and cause of death for individuals perishing in sudden, violent, or suspicious circumstances.

**Missing** – Case information or data that has not been included on the Child Fatality Review reporting form.

**Natural** – Categorization of deaths indicating a medical cause, such as congenital conditions, illness, prematurity, or SIDS.

**Neglect** – Failure to provide basic needs, such as food, shelter, and medical care.

**Omission (Act of)** – Supervision entirely absent or inadequate for the age or activity of the child.

**Pending** – Indication that an official manner of death awaits further investigation.

**Preterm** – Birth occurring at a gestation of less than 37 weeks.

**Preventability** – Indicates the likelihood that a death could have been averted with reasonable efforts on the part of an individual or community.

**Sudden Death in the Young (SDY)** – Refers to any death that occurs within 24 hours of symptoms or death in a hospital after cardiac resuscitation from cardiac arrest. The

decedent is someone who was believed to be in good health, someone who had a stable chronic condition, or someone with an acute illness which would not be expected to cause death.

**Sudden Infant Death Syndrome (SIDS)** – An exclusionary manner of death for children less than one year of age, indicating that all evidence (including an autopsy, death scene investigation, and review of the medical record) has failed to yield the specific cause of a natural death.

**Supervisor** – Individual charged with the care of a child at the time of his or her death.

**Undetermined** – Default manner of death when circumstances and/or investigation fail to reveal a clear determination.

**Unknown** – Case information or data that is unattainable or unavailable after review by the CFR team.

## Appendix C—Child Deaths by County of Residence

Table 28. Child Fatalities (Number and Rate) by County, 2015

County Name	Number of Child Deaths	Children Ages 0-17 Population	Rates per 100,000 Population
<b>Tennessee</b>	<b>890</b>	<b>1489467</b>	<b>59.8</b>
ANDERSON	12	15642	76.7
BEDFORD	6	12180	49.3
BENTON	2	3157	63.4
BLEDSON	0	2343	0.0
BLOUNT	17	26313	64.6
BRADLEY	10	23311	42.9
CAMPBELL	2	8139	24.6
CANNON	0	2873	0.0
CARROLL	7	6052	115.7
CARTER	11	10612	103.7
CHEATHAM	7	8984	77.9
CHESTER	3	3989	75.2
CLAIBORNE	4	6216	64.4
CLAY	0	1516	0.0
COCKE	5	7158	69.9
COFFEE	6	12836	46.7
CROCKETT	1	3486	28.7
CUMBERLAND	2	10334	19.4
DAVIDSON	119	146864	81.0
DECATUR	2	2399	83.4
DEKALB	6	4176	143.7
DICKSON	8	11883	67.3
DYER	2	9049	22.1
FAYETTE	5	7849	63.7
FENTRESS	3	3818	78.6
FRANKLIN	7	8715	80.3
GIBSON	5	11869	42.1



GILES	3	6027	49.8
GRAINGER	4	4680	85.5
GREENE	6	13590	44.2
GRUNDY	2	2866	69.8
HAMBLEN	11	14587	75.4
HAMILTON	37	74932	49.4
HANCOCK	0	1351	0.0
HARDEMAN	2	5017	39.9
HARDIN	4	5277	75.8
HAWKINS	4	11431	35.0
HAYWOOD	2	4163	48.0
HENDERSON	6	6411	93.6
HENRY	8	6589	121.4
HICKMAN	3	5186	57.8
HOUSTON	1	1737	57.6
HUMPHREYS	1	3872	25.8
JACKSON	1	2113	47.3
JEFFERSON	7	11033	63.4
JOHNSON	2	3044	65.7
KNOX	53	96969	54.7
LAKE	1	1132	88.3
LAUDERDALE	3	6060	49.5
LAWRENCE	5	10488	47.7
LEWIS	2	2536	78.9
LINCOLN	5	7429	67.3
LOUDON	9	10011	89.9
MCMINN	4	11230	35.6
MCNAIRY	2	5713	35.0
MACON	4	5604	71.4
MADISON	21	22757	92.3
MARION	3	5995	50.0
MARSHALL	6	7321	82.0
MAURY	13	20348	63.9
MEIGS	1	2397	41.7
MONROE	5	9887	50.6

MONTGOMERY	32	51555	62.1
MOORE	1	1245	80.3
MORGAN	7	4182	167.4
OBION	5	6584	75.9
OVERTON	2	4829	41.4
PERRY	1	1705	58.7
PICKETT	1	941	106.3
POLK	1	3360	29.8
PUTNAM	13	16142	80.5
RHEA	4	7472	53.5
ROANE	3	10096	29.7
ROBERTSON	11	16790	65.5
RUTHERFORD	40	74323	53.8
SCOTT	10	5335	187.4
SEQUATCHIE	3	3183	94.3
SEVIER	8	19986	40.0
SHELBY	168	235846	71.2
SMITH	0	4440	0.0
STEWART	1	2757	36.3
SULLIVAN	11	30551	36.0
SUMNER	18	41831	43.0
TIPTON	6	15453	38.8
TROUSDALE	0	1815	0.0
UNICOI	1	3328	30.0
UNION	1	4261	23.5
VAN BUREN	2	1083	184.7
WARREN	3	9491	31.6
WASHINGTON	13	25079	51.8
WAYNE	0	2917	0.0
WEAKLEY	2	6919	28.9
WHITE	1	5790	17.3
WILLIAMSON	20	58076	34.4
WILSON	8	30556	26.2

Data source: Tennessee Department of Health, Division of Health Statistics.

*Appendix D—Infant Deaths by County of Residence*

**Table 29. Infant Mortality (Number and Rate) by County, 2015**

County Name	Number of Infant Deaths	Live Births	Infant Mortality Rate per 1,000 Live Births
<b>Tennessee</b>	<b>569</b>	<b>81374</b>	<b>7.0</b>
ANDERSON	5	789	6.3
BEDFORD	4	586	6.8
BENTON	0	174	0.0
BLEDSON	0	136	0.0
BLOUNT	12	1232	9.7
BRADLEY	3	1147	2.6
CAMPBELL	1	431	2.3
CANNON	0	168	0.0
CARROLL	4	316	12.7
CARTER	6	531	11.3
CHEATHAM	4	443	9.0
CHESTER	1	160	6.3
CLAIBORNE	3	279	10.8
CLAY	0	80	0.0
COCKE	4	391	10.2
COFFEE	3	711	4.2
CROCKETT	0	162	0.0
CUMBERLAND	2	573	3.5
DAVIDSON	75	10322	7.3
DECATUR	2	112	17.9
DEKALB	3	246	12.2
DICKSON	4	636	6.3
DYER	1	471	2.1
FAYETTE	2	431	4.6
FENTRESS	0	185	0.0
FRANKLIN	4	379	10.6
GIBSON	1	621	1.6
GILES	2	359	5.6

GRAINGER	3	207	14.5
GREENE	4	646	6.2
GRUNDY	1	157	6.4
HAMBLEN	7	756	9.3
HAMILTON	29	4287	6.8
HANCOCK	0	67	0.0
HARDEMAN	1	265	3.8
HARDIN	1	306	3.3
HAWKINS	2	557	3.6
HAYWOOD	0	191	0.0
HENDERSON	4	312	12.8
HENRY	5	345	14.5
HICKMAN	3	288	10.4
HOUSTON	0	82	0.0
HUMPHREYS	1	207	4.8
JACKSON	1	104	9.6
JEFFERSON	3	531	5.6
JOHNSON	1	154	6.5
KNOX	43	5358	8.0
LAKE	1	70	14.3
LAUDERDALE	2	298	6.7
LAWRENCE	5	570	8.8
LEWIS	0	129	0.0
LINCOLN	5	377	13.3
LOUDON	6	526	11.4
MCMINN	3	576	5.2
MCNAIRY	1	254	3.9
MACON	3	351	8.5
MADISON	19	1250	15.2
MARION	0	331	0.0
MARSHALL	5	375	13.3
MAURY	6	1146	5.2
MEIGS	1	145	6.9
MONROE	4	485	8.2
MONTGOMERY	19	3441	5.5

MOORE	1	50	20.0
MORGAN	2	227	8.8
OBION	4	364	11.0
OVERTON	2	232	8.6
PERRY	1	84	11.9
PICKETT	0	54	0.0
POLK	1	150	6.7
PUTNAM	11	919	12.0
RHEA	3	379	7.9
ROANE	2	453	4.4
ROBERTSON	5	860	5.8
RUTHERFORD	28	3958	7.1
SCOTT	6	277	21.7
SEQUATCHIE	0	154	0.0
SEVIER	5	1058	4.7
SHELBY	110	13377	8.2
SMITH	0	210	0.0
STEWART	1	128	7.8
SULLIVAN	8	1525	5.2
SUMNER	12	2106	5.7
TIPTON	5	730	6.8
TROUSDALE	0	106	0.0
UNICOI	1	154	6.5
UNION	0	225	0.0
VAN BUREN	1	78	12.8
WARREN	1	463	2.2
WASHINGTON	10	1341	7.5
WAYNE	0	132	0.0
WEAKLEY	1	343	2.9
WHITE	1	291	3.4
WILLIAMSON	10	2263	4.4
WILSON	2	1468	1.4

Data source: Tennessee Department of Health, Division of Health Statistics.

## *Appendix E—State Level Success Stories*

### **Safe Sleep Online WIC Educational Module**

Sleep related infant death is defined as a baby found deceased from an accidental suffocation or strangulation in a sleeping environment. The number of sleep related infant deaths in Tennessee decreased 25% from 2012-2014, however the number of sleep-related deaths increased 43% from 2014-2015. Even one of these preventable deaths is too many. In 2014, TDH partnered with all birthing hospitals to provide safe sleep education to parents. Although all birthing hospitals are now providing education, the TDH explored additional strategies in 2016 to reach caregivers with the safe sleep message.

In 2015, the Child Fatality Review program collaborated with the Women, Infants and Children (WIC) program to create an online educational module focusing on safe sleep and breastfeeding. This module is one of several from which WIC parents can choose to complete. The module consists of a pre-test and post-test to measure current behavior and intent to practice safe sleep after completing the education. The pre-test measures caregivers' current sleep practices. This includes whether blankets, bumper pads, and pillows are used in the sleep environment and where the baby is placed to sleep. The post-test measures intent to practice safe sleep after the educational intervention is completed.

The educational intervention was piloted in two rural and two metro health departments. During the pilot, the education was given in person therefore the families filled out paper versions of the pre-test and post-test. The families were also given a onesie, nightlight, or diaper bag tag with a safe sleep message for completing the education. Feedback on the education was also collected from both the pilot sites and parent representatives.

After 6 months of providing the educational module in person, it was released online statewide. Since the release of the online module, nearly 2000 families have completed the education. The pre-test and post-test results show the intent to practice safe sleep increased after completing the education. The pre and post-test data demonstrate a statistically significant decrease in the number of participants that intend to continue to practice unsafe sleep behaviors such as bumper pad use, blanket use and pillow use. Likewise, an increase was demonstrated for parents that intend to practice safe sleep behaviors such as placing the infant on their back, always placing the infant to sleep alone and room sharing with the infant. In addition, there was a statistically significant knowledge increase for those participants that believed breastfeeding helps to reduce the risk of SIDS. In 2017, the module will be disseminated nationwide through [wichealth.org](http://wichealth.org).

Studies have shown that a multifaceted approach to safe sleep is most effective. Through the implementation and evaluation of additional initiatives beyond the hospital setting, the Tennessee Department of Health is well poised to decrease the number of sleep-related deaths.

### **Teen Suicide Prevention: Expansion of the Jason Flatt Act**

The number of suicide deaths among children has continued to rise over the past 5 years with 13 deaths in 2011 and 33 deaths in 2015. Suicide is recognized as a chronic epidemic yet despite the overwhelming numbers, the tragedy of suicide is hidden by stigma, myth and shame. The stigma surrounding suicide often has an impact on prevention and intervention efforts. Additionally, many people have the mistaken notion that talking about suicide causes it to happen. Experts agree that suicide is preventable. Schools are a key setting for suicide prevention.

In 2007, the Jason Flatt Act was passed in Tennessee and became the nation's most inclusive youth suicide awareness and prevention legislation pertaining to teacher in-service training. The Jason Flatt Act requires all teachers in the state to complete two hours of youth suicide awareness and prevention training each year in order to be licensed to teach in Tennessee. There is no typical suicide victim. No age group, ethnicity, or background is immune. Fortunately, many troubled individuals display behaviors deliberately or inadvertently that signal their suicidal intent. Recognizing the warning signs and learning what to do next may help save a life.

In July 2016, a bill was passed to expand the Jason Flatt Act. The new bill requires all school staff, not just teachers, to complete suicide prevention training. Studies have shown that students connect with several other school staff besides teachers including coaches, janitors and lunchroom staff. These school personnel who interact with students can play an important role in keeping them safe. This expanded law will provide additional resources and awareness to these other school staff that interact with children. The expanded act also required the Department of Education to develop materials for training school personnel about suicide prevention and to establish a model policy for suicide prevention. This model policy is to be used by each school district to create a policy addressing suicide prevention.

The Tennessee Department of Education collaborated with the Tennessee Suicide Prevention Network (TSPN), the Tennessee Department of Health (TDH), and the Tennessee Department of Mental Health and Substance Abuse Services to develop a model policy. The model policy outlines how annual training takes place, a process for when a student or staff member is suicidal, and a process to handle the death of a staff member or student by suicide.

School personnel spend a lot of time with students throughout the year. It is critical for these staff to be trained to recognize the warning signs of suicide. Providing school staff training and a model policy may help save children's lives.

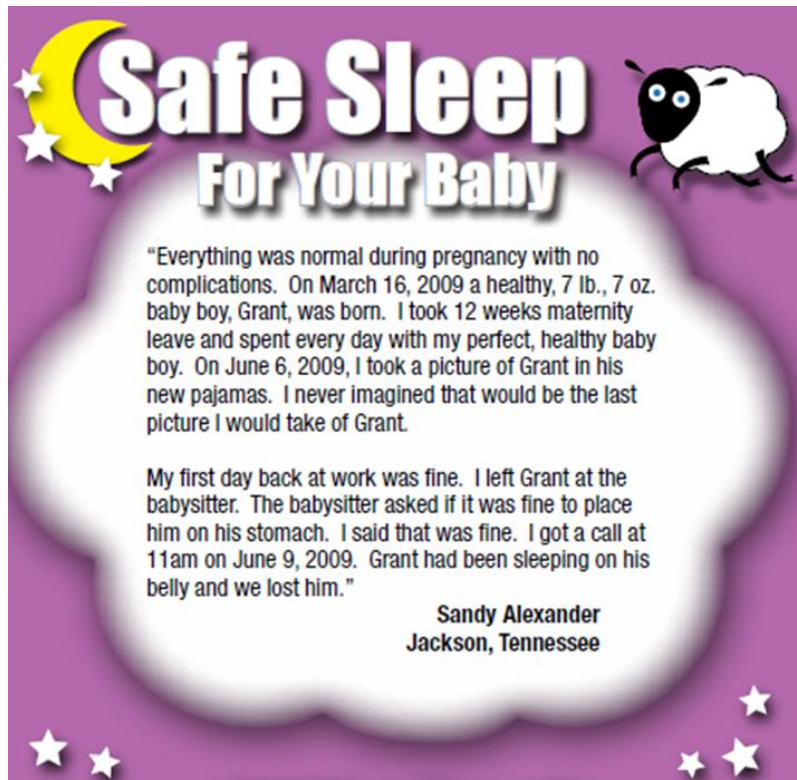
## Addressing Racial Disparities through the Faith Based Community

A racial disparity exists among child and infant fatalities. Although the majority of deaths are comprised of white children, black children suffer a higher rate of mortality than whites and other races. Among sleep-related infant deaths there is a significant racial disparity. The rate of sleep-related deaths for black infants increased from 2.4 deaths per 100,000 in 2014 to 2.9 in 2015. Black infants are 1.9 times more likely to suffer a sleep-related fatality as white infants. This has led the Department of Health to develop new strategies to address these disparities.

Reaching out to the faith-based community provides an opportunity to reach a diverse group of people including minority populations. A church bulletin insert was created that included a personal story from a local mother in Tennessee who lost a baby due to unsafe sleep. The insert was made available in two different sizes in addition to a one and two sided version.

The church bulletin insert was initially made available to 57 churches in the Nashville area with an attendance of approximately 10,000 people. In addition, some churches included a link to the bulletin in their church newsletter.

Estimates show 42% of Tennesseans attends church. With a population of 6.6 million, with statewide distribution this intervention has the potential to reach 2.7 million people. Addressing infant mortality disparities is critical to reducing the overall infant mortality rate in Tennessee. Partnering with the faith based community is one strategy to reach this population.





### **Knox County CFR: Collaborative Efforts to Reduce Sleep-Related Fatalities**

Infant mortality affects the entire community and is often seen as a key indicator of a community's overall health. One of the most preventable causes of infant deaths is an unsafe sleep environment. To address these sleep-related deaths, the Tennessee Department of Health (TDH) collaborated with all birthing hospitals in 2014 to implement safe sleep policies. The policies had to include the following: modeling of safe sleep behavior, educating families and caregivers on safe sleep recommendations and educating staff on safe sleep.

The Knox County Child Fatality Review (CFR) team worked with the hospitals in their area to strengthen the hospital-based safe sleep efforts. These prevention efforts have been ongoing for several years; however, some new activities were implemented in the past year. A Knoxville CFR team member attended the National Cribs for Kids conference in 2015 and learned about an initiative another state was implementing. That initiative included feedback to the hospitals on infants that were born at their hospital and later died after discharge due to unsafe sleep conditions. The project involved sending letters to local hospitals to alert the birthing units an infant born in their facility had died in an unsafe sleep environment. The intent behind the letters was to give feedback to hospital staff about the infants that died after they left the hospital. The hospital could then look back at their discharge records to see if all patients had been educated or if they needed to strengthen their educational efforts before discharge.

The Knoxville CFR team implemented a similar version of this initiative. Data from all sleep related deaths from 2012-2014 for Knox County residents was analyzed. Each hospital was notified of the number of infants that were born at their hospital and later died after discharge due to an unsafe sleep environment. After receiving the letters some hospitals contacted the team to see what more they could do to prevent these deaths.

The Knoxville CFR team worked with one of the birthing hospitals in Knoxville to strengthen its safe sleep policy. The team was able to collaborate with the hospital to improve their policy. Changes that were made included additional information about education for parents, modeling safe sleep recommendations and educating staff. There were also changes to the newborn discharge paperwork to document whether education was completed with families.

The Knoxville CFR team also created a partnership with some of the local hospitals to ensure that every family that is discharged has a safe place for their infant to sleep. A CFR team member provided education to hospital staff to increase knowledge of community resources and ensure compliance with the hospital safe sleep policy. The portable cribs are stored at those hospitals to ensure the parents do not leave without having a safe sleep environment. Those families are also referred to home visiting programs.

Several studies show that parents place their babies to sleep the same way they observed in the hospital; therefore, it is critical for hospitals to model and teach safe sleep.

## Davidson County CFR: Building Community Partnerships

The Davidson County Child Fatality Review (CFR) team is always looking for innovative ways to build community partnerships. Other sections in the health department had collaborated with the housing authority to promote health related messages, therefore this seemed to be an ideal place to share the safe sleep message.



Few agencies have the ability to see the inside of a family's home; however, first responder agencies such as firefighters, police and emergency medical services often visit the home. Through this concept, the Direct On Scene Education (DOSE) program started, allowing for first responders that go into the home to see the sleep environment. Once the first responders have responded to the emergency for which they were called, they can then check to see if the family has a safe sleep environment.

Utilizing this same concept, the CFR team felt that they could collaborate with the local housing authority to educate a population that is often harder to reach. The goal was to have the housing authority staff, including managers, utility maintenance workers, and housing social workers, assess the homes for safe infant sleeping environments. They then provide safe sleep education to families, connect them to resources, and remove any unsafe sleep conditions.

This project has been successful because the housing authority staff has an established relationship with the residents in their building. In addition, they have the ability to see the inside of the homes, something that is not easily done through other community agencies. The housing staff is in these homes on a regular basis and is able to provide the information to prevent future sleep-related deaths.

Upon building this partnership, another aspect of safe sleep was discovered. Many of the older housing authority buildings do not have air conditioning. Because infant overheating is a risk factor for infant sleep related death, this was recognized as a problem. In 2015, the average summer temperature was 89 degrees Fahrenheit and if a family is unable to afford an air conditioning unit for their home, an infant could easily become over heated. The Davidson County CFR team has brought the lack of air conditioning to the attention of the housing authority and, as a result, the housing authority is now helping families either save to be able to purchase their own unit or providing priority housing with air conditioning to families with infants.

## East Region CFR: Local Outreach to Congregations

Estimates have shown that 42% of Tennesseans attend religious services with this percentage being even higher in the rural areas of Tennessee. One of the East Tennessee regional Child Fatality Review (CFR) teams is led by Rev. Martha Fairchild. Rev. Fairchild understands the importance of religion in Tennessee culture. She uses the knowledge gained through CFR to educate the faith based community about prevention efforts. She includes education with her home congregation in addition to outreach with other community churches.



In the spring of 2016, Rev. Fairchild attended a meeting at University of Tennessee Medical Center Pastoral Care. The meeting included education on suicide prevention in adults and youth. The meeting also included information on how to outreach to local faith based communities. The goal was to get local clergy to discuss mental health issues in their congregations. Rev. Fairchild had reviewed several deaths in Judicial District 8 that were teen suicides; therefore, she knew this was an issue that needed to be addressed in her community.

Rev. Fairchild took the information from the meeting back to her home congregation and started an open dialog with the teens in the congregation. Her church community outreach group placed information on a bulletin board about mental health awareness. Rev. Fairchild wanted to have teens engage other teens in conversations about mental health and suicide prevention.

She has also taken recommendations about safe sleep seriously by visiting each family with a newborn in her congregation to share the safe sleep message. She collaborates with the local health department to ensure the information she gives is as accurate and up to date as possible.

Rev. Fairchild shares, “child fatality is an issue that is always on her mind,” and she is “always looking for new ways to prevent child death.”

## Appendix G—Local Child Fatality Review Team Members and Staff

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(Team leaders are in **bold** print. JD=Judicial District)

### JD 1 (Carter, Johnson, Unicoi, and Washington Counties)

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Beth Bare	Ashley Fine	Darshan Shah
Inv. Christopher Bowers	Kim Garland	Lori Shields, EdS
Regina Bowman	Michelle Hansen, RN	Jack Stewart
Inv. Shawn Brown	Shawn Hollinger, MD	Edward Tester
Seth Brown, MD	<b>David Kirschke, MD</b>	Regan Tilson
Heidi Casey, RN	Nicole Masian, MD	Cynthia Thomas, DO
Tara Chadwell	Donna Pleasant	Fay Willis, RN
Capt. Mike Cooke	Sheree Pierce	
Inv. Deborah Dunn	Inv. Nicki Salyer	

### JD 2 (Sullivan County)

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Kathy Benedetto	William Harper, JD	Darrell Mears
Andrea Black	Pam Harr	Janice Miller
Justin Bush	Ray Hayes	Heather Mullins
Julie Canter, JD	Barry Honeycutt	Teresa Nelson, JD
Lt. Sean Chambers	William Hudson, MD	Jim Perry
Steven Combs, MD	Sgt. Darell Johnson	Debra Poston
Michael DeVoe, MD	Capt. Joel Jones	Jessica Ritchie
John Eanes	Ashley Justice	Barry Staubus, JD
Danielle Eller	<b>Stephen May, MD</b>	Michelle Steadman
Andy Hare	Gary Mayes	Myra Winters

### JD 3 (Hancock, Hawkins, Hamblin, and Greene Counties)

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Kristina Adams	Eddie Davis	Billy Love
Carmelia Alexander	Cynthia Doty	TJ Manis
Brenda Cannon	Kim Fox	Nicole Masian, MD
Terry Cannon	Calvin Hawkins	Julie Minton
Tara Chadwell	Deana Hicks	Susan Mitchell-Barnes
Russell Clark	Scott Hollenbeck	Christian Newman
Diane Cofield	Hannah Hunter	Laura Reneau-Dockery
Teddy Collingsworth	Rob Jacobs	Darshan Shah, MD
Rhonda Craft	<b>David Kirschke, MD</b>	Brandon Stipes
Betty Davis	Tiffany Latta	Cynthia Thomas, D.O.

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**JD 4 (Cocke, Grainger, Jefferson, and Sevier Counties)**

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Charles Arms	Joseph Gross	Atty. Charles Murphy
Don Best, BSE, ME	Rita Hillhouse, RN	<b>Tara Sturdivant, MD</b>
Amy Ball	John Holland, EMT-P	Capt. Derrick Woods
Susan Blair, RN	David McConnell, MD	
Kristin Dean, PhD	Teresa Moyers	

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**JD 5 (Blount County)**

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Jaclyn Anderson	Mike Flynn, JD	Det. Kris Sanders
Charles Arms	Joseph Gross	Det. Mike Seratt
<b>Lori Baxter, MD</b>	Det. Carlos Hess	Tara Sturdivant, MD
Mary Beth Blevins, RN	Amanda May	Michael Teague, MD
Tabitha Damron	Jonathon Rodgers	

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**JD 6 (Knox County)**

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Lt. Brad Anders	Rita Hillhouse, RN	Det. Heather Reyda
Mona Blanton-Kitts, LCSW	Paige Huggler	Rachel Russell, JD
John Brinkley	David Kitts, PhD	Joanie Stewart, JD
Kimberly Christensen	Amber Knapper, NP	David Teaster, MD
Laura Clabo	Melissa Massie	Alicia Verlinde, MPH
Tracy Davis	Ashley McDermott, JD	Lisa Wagoner, MSN, RN
Vickie Fox	Christopher McLain	Frances Wheatley
Chris Gregory	Darnika Mileusnic, MD	Capt. Mark Wilbanks
Amy Hawes	Charyl Nix	Zachary Young, RN
	<b>Mary Palmer, MD</b>	

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**JD 7 (Anderson County)**

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Emily Abbott	Margaret Durgin	Rodney Minor
Patty Campbell, RD	Joseph Gross	Angela Perez
<b>Thomas Clary, MD</b>	Bobbi Jo Henderson	Joe Pinkerton
Anthony Craighead	Darinka Mileusnic-	Tara Sturdivant, MD
Det. Kevin Craig	Polchan, MD, PhD	

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**JD 8 (Campbell, Claiborne, Fentress, Scott, and Union Counties)**

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Kerri Byrd-Hamby, RN	Joseph Gross	Bruce Perkins
Samantha Cardwell- Jennings	Kim Hammock	Kim Sanderson
Sara Coble	Det. Joshua Hill	Meredith Slemp
Trent Cross, MD	Det. Ricky Jeffers	Tara Sturdivant, MD
<b>Rev. Martha Anne Fairchild</b>	Creasha King, M. Ed	Zachary Young-Lutz, RN
	Det. Randy Lewallen	

JD 9 (Loudon, Meigs, Morgan, and Roane Counties)

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William Bennett, MD	Mary Harding, EdS	Mona William-Hayes, PhD
Melissa Denton	Judge Dennis	Tara Sturdivant, MD
Joseph Gross	Humphrey	Millicent Thomas
<b>James P. Guider, MD</b>	Alyson Kennedy	
Sherriff Tim Guider	Missy Layne	

JD 10 (Bradley, McMinn, Monroe and Polk Counties)

---

Keith Barker	Mark Gibson	Gayla H. Miller
Jeannie Bentley	Sheriff Joe Guy	Calvin Rockholt
Elisa Bishop, BSN	Janice Henson	Teresa Rogers
Sheriff Bill Bivens	Det. Cody Hinson	Lt. David Shoemaker
Deanna Brooks	Sandra Holder	Iris Snider, MD
Eddie Byrum	Capt. Frank E. Horning	Millicent Thomas
<b>Allyson Cornell, MD</b>	Danny Lawson	Eloise Waters
Det. Shaunda Efaw	Nita Jergian	Andy Wattenbarger
Tina Florey	Travis Jones	Laura Wittmaier
Roger Freeman	Debra Macon-Robinson	
Daniel Gibbs	Susan Merriman	

JD 11 (Hamilton County)

---

Beverly Allen	Amber Dennison	Shelley McGraw
Sharon Barker	Sheryl Fletcher, RN	James Metcalfe, MD
<b>Valerie Boaz, MD</b>	Jackie Jolley	Det. Henry Ritter
Barbara Breedwell	Atty. Leslie Longshore	Det. Mickey Rountree
Steven Cogswell, MD	Lisa Lowery-Smith, MD	Lt. Glenn Scruggs
Denise Cook	Lt. Henry McElvain	

JD 12 (Bledsoe, Franklin, Grundy, Marion, Rhea, and Sequatchie Counties)

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Charles Adcock	Dianne Easterly	Susan Merriman
Jamie Brown	Janice Henson	Charlene Nunley
Vicki Carr	Jessica Hill	Rhonda Sills
Beth Cassidy, DO	Sandra Holder	Inv. Kevin Snyder
<b>Allyson Cornell, MD</b>	Lt. Paul W. Howard	Lt. Coy Swanger
Rosalind Crockett	Nita Jergian	Mike Taylor
Kimberly A. Dean	Inv. Jodi Lockhardt	Elise Young

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JD 13 (Clay, Cumberland, DeKalb, Overton, Pickett, Putnam, and White Counties)

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Brandon Boone	Andrea Fox	David McKinney, MD
Greg Bowman	Lloyd Franklin, MD	Justice Medlin
James Breyer, MD	Pam Gannon	Lynn Mitchell
Lisa Bumbalough	John Garrett	Jim Morgan
JoAnn Clouse	Done Grisham, MD	Kristi Paling
Jean Coffee	Hoyte Hale	Greg Pauch
Tommy Copeland	Kendall Hargis	Billy Price
Casey Cox	Hazel Hubbard	Michael Railing
Michael Cox, MD	Jerry Jackson	Sheriff Patrick Ray
Pam Davis	Gayla Jestice	Sheriff Oddie Shoupe
<b>Tina Davis, RN</b>	Andy Langford	Sullivan Smith, MD
Linda Dennis	Tara LeMaire, MD	Ann Stamps
Doris Denton	Carline Knight	Carolyn Valerio, PsyD
Dana Dowdy	Larry Mason, MD	J.C. Wall, MD
Bryant Dunaway	Ralph Mayercik	Richard Williams
Eddie Farris	Mickey McCullough	

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JD 14 (Coffee County)

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LeeAnne Boeringer	Leanne Eaton	Clifford Seyler, MD
Michael Bonner	Susan Ferencei	<b>Lang Smith, MD</b>
Al Brandon, DO	Kellie Lusk	Ray Stewart
Debbie Broadway	Susan Minger	Frank Watkins
David Brumley, DDS	Shaun Noblit	L.B. Windley, Jr., DVM
Inv. Billy Butler	Atty. Jason Ponder	
Mike Clements	Darla Sain, RN	

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JD 15 (Jackson, Macon, Smith, Trousdale, and Wilson Counties)

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Alison Asaro, MD	Felicia Harris	Donald Nuessle, MD
Matt Batey	Angie Hassler	Kristi Paling
Robert Bryan	Marty Hinson	James Payne
Kimberly Brindley	Steve Hopper	Michael Railing
Darlene Brown	Heather Jefferies	Ray Russell
Patrick Cockburn	Gayla Jestice	Ricky Slack
Jean Coffee	Randall Kirby	Tom Swink
<b>Tina Davis, RN</b>	Jason Lawson	Tommy Thompson, JD
Mark Gammons	Nathan Miller	Sharice Williams
Scott Giles, DO	Christina Moody	Ashly Willis
Don Grisham, MD	Brian Newberry	

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**JD 16 (Cannon and Rutherford Counties)**

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Hugh Ammerman	Det. Andrea Knox	Will Pinson
<b>Alison Asaro, MD</b>	Jason Lamberth	Lt. Britt Reed
Jennifer Croft	Toni McDaniel	Det. Tommy Roberts
Tina Davis, RN	Capt. Nathan McDaniel	Audrey Sherer
Doris Denton	Lorraine MacDonald, MD	Det. Kevin Stolinsky
Dana Garrett	Nicole Miller	Dwight Stone
Don Grisham, MD	Sgt. Paul Mongold	Lt. Monty Terry
Carl Hudgens	Christina Moody	Michael Thomas, MD
Jennings Jones	Sheneka Morgan	

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**JD 17 (Bedford, Lincoln, Marshall, and Moore Counties)**

---

Tammy Anderson	Mike Clements	Jill Murdock, RN
Sarah Bates, RN	Danny Cupples	Shaun Noblit
LeeAnne Boeringer	Jason Deal	Elizabeth Osborne
Cindy Bolton, RN	Stephanie Dunn	Kenneth Phelps, MD
Det. Scott Braden	Angie Faulkner	<b>Lang Smith, MD</b>
Debbie Broadway	Jeremy Ezell	Kyle Spears, MD
Brian Bruce	Susan Ferencei	Richard Wright
Stefanie Brown, RN	Vickie Groce	
David Brumley, DDS	Penny Hawk	

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**JD 18 (Sumner County)**

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Chief Kenny Armstrong	Chief David Hindman	Sgt. Chris Shockley
<b>Alison Asaro, MD</b>	Chief Mark Jenkins	Ricky Troupe
Jay Austin	Tammy Lee	Det. Jim Vaughn
Amy Burke-Salyers	Jan Lovell	Ray Whitley, JD
Denney Coarsey	Morgan Radley	Tara Wyllie, JD
Cicely Dixon	Inv. Pete Ritchie	

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**JD 1901 (Montgomery County)**

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Maj. Amanda Antle	Mary Davila	Maj. Domenick Nardi
<b>Alison Asaro, MD</b>	John Downs, MD	Sabrina Sanford
Gregory Beebe	Menzo Faassen	Fred Smith
Eric Berg, MD	Patrice Jessie	Joey Smith
Col. David Brown, MD	Maj. Scott Leifson	Julie Webb
John Carney, JD	Kimberly Lund, JD	Sarah Wilkins
Stacey Coulter	David Mendoza, MD	Danette T. Woodcock

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**JD 1902 (Robertson County)**

---

<b>Alison Asaro, MD</b>	Det. James Kendrick	Cleatsa Pope
Hunter Butler, MD	Det. Elizabeth Leonard	Vanessa Watkins
Rebecca Chafatelli	James Kendrick	
Regina Duffie	Nicole Martin	



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**JD 20 (Davidson County)**

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D'yuanna Allen-Robb	Deborah Lowen, MD	Amanda Peltz, RN
Erin Carney, MD	Lillian Maddox-Whitehead, MS	Renee Pratt, MPA
Emily Dennison, MD	Brooke McKelvey, MPH	<b>William Paul, MD, MPH</b>
Det. Sarah Bruner	Atty. Tammy Meade	Scott Ridgeway
Susan Campbell, MD	Michael Meadors, MD	Sue Ross, RNC, PNP
Det. Ron Carter	Katy Miller, JD	Candice Sexton
Valerie Cook	Abraham Mukolo, PhD	Joaquin Toon
Monica Coverson	Janet Nielsen, MA	John Vick, PhD
Trevor Crowder		Jennifer Weatherly, RN
Charlsi Legendre		

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**JD 2101 (Hickman, Lewis, and Perry Counties)**

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Jim Bates	Susan Franks	Gary Rogers
LeeAnne Boeringer	Jennifer Harris	Sarah Russell
David Brumley, DDS	Zachary Hutchens, MD	<b>Lang Smith, MD</b>
Mike Clements	Felicia Love, RN	Jim Tanner
Robin Crowell, RN	Brandi Mackin, RN	Valerie Votaw
Danny Cupples	Fred Moore	Renee Whaley, RN
DeAnna Darden-Carroll	Shaun Noblit	Tabitha Whitehead
Stacey Edmondson	Charles Pierce	

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**JD 2102 (Williamson County)**

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Sgt. Charles Achinger	Sgt. Tommy Justus	Samuel Smith, MD
<b>Alison Asaro, MD</b>	Shannon Langford	Capt. Cindy Strange
Stokey Bourque	Feng Li, MD	Tamara Swinson
Det. Robert Cardan	Jeff Long	Lt. Monty Terry
Regina Duffie	Zannie Martin	Richard Westgate, RN
Robin Fairclough	Tamara Mick	Lt. John P. Wood
Alicia Hardemon	Peggy Phillips	Brittany Youngblood
Chris Holz	Det. Tameka Sanders	

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**JD 2201 (Giles, Lawrence, and Wayne Counties)**

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Pam Arnell	Susan Franks	Denise Sanders
LeeAnne Boeringer	Roy Griggs	<b>Lang Smith, MD</b>
Tracy Brumit	Lisa Hardison	Keith Tolar MD
David Brumley, DDS	Brigitte Massey	Devin Toms
Mike Clements	Janet McAlister	
Cindy English	Shaun Noblit	
Joe Fite, MD	Sherry Ray	

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**JD 2202 (Maury County)**

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LeeAnne Boeringer	Sgt. Jeff Duncan	Gayle Martin
David Brumley, DDS	Susan Ferencei	Shaun Noblit
Mike Clements	Jason Griggs	<b>Lang Smith, MD</b>
Danny Cupples	Barbara Heier, RN	Lisa Williamson
Det. Terry Dial	E. Ann Ingram	

JD 23 (Cheatham, Dickson, Houston, Humphreys, and Stewart Counties)

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Karen Anderson	Larina Corlew	Lawrence Jackson, MD
Michelle Angarita	Bryan DeRose	Venk Mani, MD
<b>Alison Asaro, MD</b>	Regina Duffie	Kay Marshock
Det. Mark Bausell	Christy Espey	Inv. Ken Miller
Sgt. J.D. Blackwell	Maggie Filson	Capt. Randy Starkey
Jo Brashers	Claudette Fizer	Timothy Stavelly
Comm. Eddie Breeden	Lt. Shannon Heflin	Kevin Suggs
Alana Carmical	James Hutcherson	

JD 24 (Benton, Carroll, Decatur, Hardin, and Henry Counties)

---

<b>Shavetta Conner, MD</b>	Ricky Inman	Inv. Gary Vandiver
Phillip Christopher	Diane Oman	Becky Butler White
Christy Espey	Trooper Ollie Parker	Johnny Wilson
Bruce I. Griffey	Kathy Smith	
Lt. Johnny Hill	James Vinson	

JD 25 (Fayette, Hardeman, Lauderdale, McNairy, and Tipton Counties)

---

Alyn Bryum	Richard Griggs	Kathy Smith
Falen Chandler	Ginny Jaco	Det. Sheri Wassel
<b>Shavetta Conner, MD</b>	Linda F. Moss	Inv. David Webb
Det. Scottie DeLashmit	Rives Seay	Tracy Worlds
Bob Gray	James Shelton	

JD 26 (Chester, Henderson, and Madison Counties)

---

Inv. David Dowdy	Sgt. Danielle Jones	Leighann Sutton
Amy Clanton	Rodger Jowers	Blair Weaver
Bradley Crouse	Sgt. T.J. King	Lt. Brad Wilbanks
Harlin Fesmire	Atty. Stuart Mills	Tina Williams, PhD
Kesha Harris	Lisa Piercey, MD	Annette Wilson
Tammy Hardee	Amanda Salas	
Donna Heatherington	<b>Shanna Shearon, MPH</b>	

JD 27 (Obion and Weakley Counties)

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<b>Shavetta Conner, MD</b>	Laura Toney	Chief Randall Walker
Christy Espey	Kathy Smith	Rick Workman
Lt. Phillip A. Gibson	Tommy Thomas	
Keith Jones		

JD 28 (Crockett, Gibson, and Haywood Counties)

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Gary Brown, JD	Chief Roger Jenkins	Maigon Shanklin
<b>Shavetta Conner, MD</b>	Inv. Dennis Mitchell	David Smith
John Copeland	Elashia Ramsey	Kathy Smith
Christy Espey	Tony Rankin	Det. Andrew Whitehead

JD 29 (Dyer and Lake Counties)

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Jerry Ballhagen	Chief James Medling	Brad Smith
Phil Bivens, JD	Calvin Johnson	Kathy Smith
<b>John Cummings, MD</b>	Jack Mauldin	Lisa Stanley, RN
Shavetta Conner, MD	Terry McCreight	Stephen Sutton
Christy Espey	James Melding	Capt. Billy Williams
Jessica Lamkin	Chad Sipes	

JD 30 (Shelby County)

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Patricia Bafford, Ed.D.	Dep. Chief Jim Harvey	Vanessa Roberts
Jamila Batts, RN	Susan Helms, RN	Col. Mike Ryall
Lee Branch	Gannon Hill	Andrea Sebastian
Sgt. D. Brunson	Ginny Hood	James Sewell
Mark Bugnitz, MD	Paula Humphrey	Carrie Shelton
Karen Chancellor, MD	Pamela Kiestler	Sam Sheppard
Eric Christensen, JD	Karen Lakin, MD	Ajay Talati, MD
Ronald Collins	Jim Logan	Michelle Taylor
Joshua Corman	Jason Martin	Det. Jason Valentine
Meg Harmeier	Katie McKinnie	Denise Webb
DeShawn Harris	<b>Helen Morrow, MD</b>	Brandi Willis
Sgt. Paula Harris	Jennifer Nichols, JD	
Chief Andrew Hart	Tully Reed	

JD 31 (Van Buren and Warren County)

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Faye Braxton	Don Grisham, MD	Kristi Paling
Eddie Carter	Brian Madewell	James Payne
Jean Coffee	Jackie Mathney	Jacquelin Powell
<b>Tina Davis, RN</b>	Thomas Miner	RosseAnn Riddle
Andrea Fox	Lynn Mitchell	Lisa Zavogiannis, JD
Pam Gannon	Charles Morgan, MD	

## ***Appendix H—SDY Advanced Review Team Members***

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### **Memphis Team**

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Alejandro Arevalo, MD  
Karen Chancellor, MD  
Amy McGregor, MD  
Helen Morrow, MD  
Glenn Wetzel, MD, Ph.D.

### **Nashville Team**

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Kevin Ess, MD, Ph.D.  
Prince Kannankeril, MD, MSCI  
Adele Lewis, MD  
William Walsh, MD

Statement of Compliance with 2012 Tenn. Pub. Acts, ch. 1061 (the “Eligibility Verification for Entitlements Act”) as required by Tenn. Code Ann. § 4-57-106(b)  
None of the department’s activities relative to the Child Fatality Review Teams involve the provision of services to individuals who are subject to the SAVE Act.