

Child Fatalities in Tennessee Review of 2012 Deaths

Understanding and Preventing Child Deaths



TENNESSEE
DEPARTMENT OF
HEALTH

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The Tennessee Department of Health, Division of Family Health and Wellness, 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, 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

2012 State Child Fatality Review Team Recommendations

The State Child Fatality Review Team met in December 2013 to review aggregate child death data and consider recommendations from local teams. State team members considered the latest trends in causes of child death and contemplated strategies for reducing future fatalities. The State Team decided to focus efforts in the coming year on four key priority areas in order to have the most impact on preventing child deaths.

Safe Sleep

The number of sleep-related deaths increased in 2012. A statewide safe sleep campaign was started in the second half of 2012 but a reduction in deaths is not yet evident. **The team recommends aggressively continuing the safe sleep campaign with an expanded emphasis on education for caregivers (grandparents, parents, and babysitters) and health care providers (pediatricians, family physicians, obstetricians, and nurse practitioners).**

To accomplish this, the Department of Health will partner with Prevent Child Abuse Tennessee, the TN Commission on Children and Youth, and the Departments of Human Services, Education and Children's Services to distribute a minimum of 80,000 TDH educational materials to caregivers and providers. The Department of Health will specifically collaborate with hospitals to provide education to staff and parents. The Department of Children's Services will provide education to caregivers of children in DCS custody. Prevent Child Abuse Tennessee, the TN Commission of Children and Youth, Department of Human Services and Department of Education will provide education to parents and caregivers. The success of these efforts will be measured by the number of sleep-related infant deaths in subsequent years.

Motor Vehicle

Motor vehicle related fatalities are a substantial contributor to external causes of death among Tennessee's children, particularly among children ages 15-17, who account for 61.8% of all childhood motor vehicle fatalities. **The State Team recommends education for parents and teens concerning proper restraints and distracted driving while in a motor vehicle.**

The Department of Education and the Tennessee Department of Health will collaborate to deliver educational interventions to children of all ages with a particular emphasis on teens. Schools in counties with the highest rates of motor vehicle accidents among teens will receive education by the end of 2014 on seat belt use and distracted driving, using programs such as the "Battle of the Belt." Educational efforts will be evaluated by tracking motor vehicle related deaths among children ages 0-17.

EXECUTIVE SUMMARY, PAGE ONE

Suicide

The number of suicide deaths among children increased from 13 in 2011 to 24 in 2012. **The State Team recommends exploring the possibility of expanding mental health services in the community, particularly in schools.**

To accomplish this, the Tennessee Suicide Prevention Network (TSPN), the Jason Foundation, TCCY and the Departments of Education and Mental Health and Substance Abuse Services will identify existing services, communicate services with key school personnel, and explore options for expanding those services.

Death Scene Investigation Procedures

In 2012, the cause of death was undetermined in 11.4% (95) cases and unknown in 3.4% (28) cases. **The team recommends increasing the number of Sudden Unexpected Infant Death Investigation (SUIDI) forms that are completed by the person conducting the death scene investigation and within 24 hours of the time of death.**

To accomplish this, the Department of Health's Child Fatality Review Program will collaborate with the State Medical Examiner's office to determine the current percentage of forms filled out within 24 hours of the time of death. The Department of Health will then collaborate with Middle Tennessee State University to target areas of the state with low SUIDI form completion rates. Increased education will be provided to first responders in targeted areas on death scene investigation and the information needed for the SUIDI form.

General

- **The overall mortality rate for Tennessee children increased slightly from 2011 to 2012.**¹ This increase appears to be attributable in large part to increases in preventable deaths from homicide, suicide, drowning, and asphyxia (including preventable sleep-related infant deaths). Despite the increase in the 2012 mortality rate, the overall mortality rate dropped by 16% for Tennessee children between 2008-2012 (statistically significant, p-value <0.001). Rates of death for children age 0-17 (per 100,000 population) for the last five years are shown in Figure 1. Tennessee’s child mortality rate still exceeds the national average of 52.4 per 100,000 in 2010², the latest year for which the national rate is available.

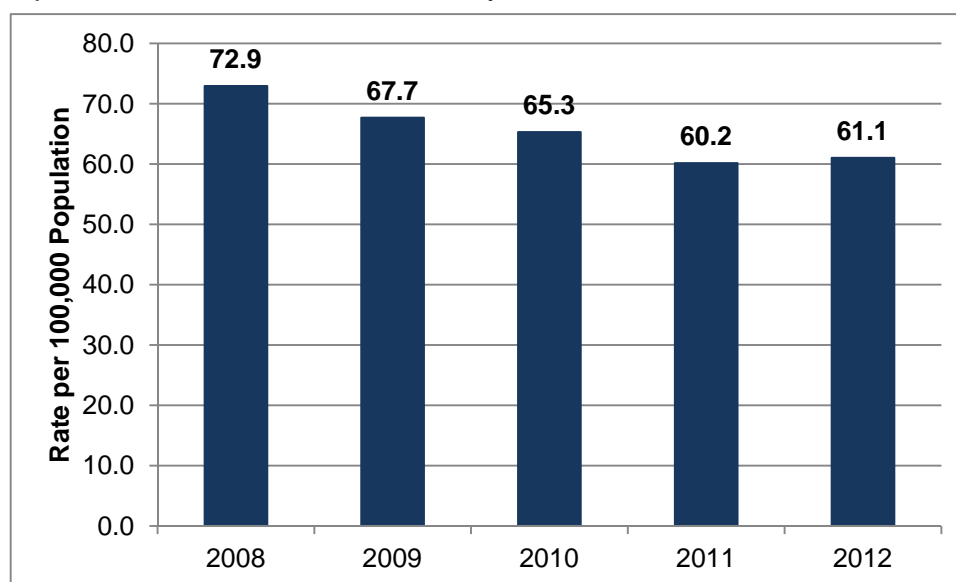


Figure 1—Rate of Death for TN Children Ages 0-17, 2008-2012

Table 1—Rate of Death for TN Children Ages 0-17, 2008-2012³

Year	Number of deaths	Number of children	Rate per 100,000
2008	1,067	1,462,691	72.9
2009	984	1,453,670	67.7
2010	977	1,496,001	65.3
2011	898	1,492,473	60.2
2012	911	1492072	61.1

¹ This increase is not statistically significant (p>0.05).

² Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2010 on CDC WONDER Online Database, released 2012. Accessed at <http://wonder.cdc.gov/ucd-icd10.html>.

³ Data source: Surveillance, Epidemiology, and Evaluation; Division of Policy, Planning and Assessment; Tennessee Department of Health.

- As expected, the first year of life continues to be the most perilous for Tennessee’s children, accounting for 60.6% of all deaths to those through the age of 17. Children between the ages of 1-4 and 15-17 suffered the second highest percentage of deaths at 12.9% and 14.7%, respectively.
- Tennessee’s male children, once again, died more frequently than females (58.6% vs. 41.4%, respectively). This pattern has been consistent for the past five years.
- A racial disparity exists among child fatalities, with Black children suffering a higher rate of mortality than their White counterparts. There has been a **statistically significant decline (p-value =0.02) in the mortality rate of Black children between 2008-2012** even while mortality rates among White children have remained stable.

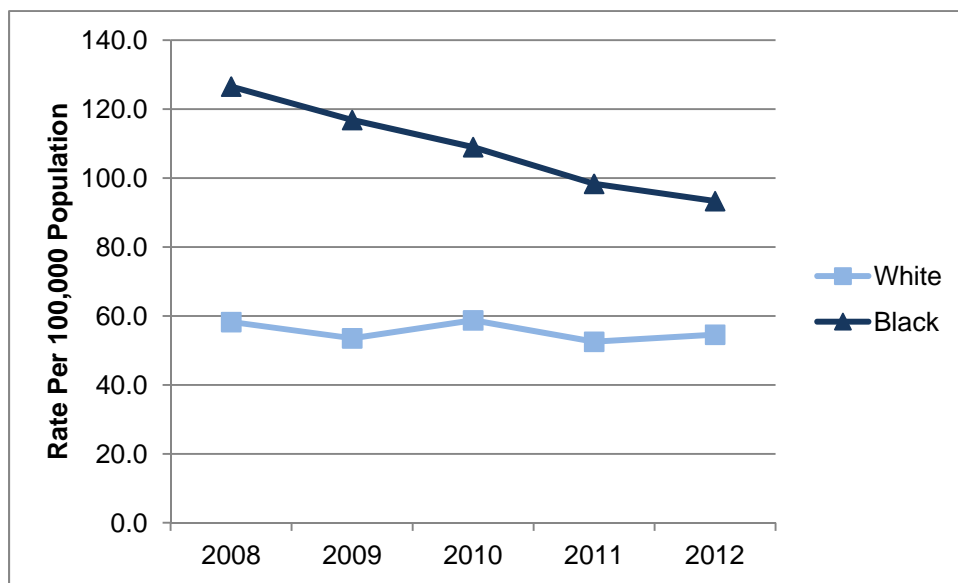


Figure 2—Rate of Death Among TN Children Ages 0-17, By Race, 2008-2012

Table 2—Rate of Death Among TN Children Ages 0-17, By Race, 2008-2012³

Year	White			Black		
	Number of deaths	Number of children	Rate per 100,000	Number of deaths	Number of children	Rate per 100,000
2008	646	1,108,729	58.3	398	314,463	126.6
2009	597	1,115,107	53.5	369	315,749	116.9
2010	621	1,057,151	58.7	329	301,823	109.0
2011	579	1,102,142	52.5	301	306,034	98.4
2012	600	1098938	54.6	285	305376	93.3

Infant Mortality

- 121 infants died from suffocation, strangulation, or other causes in the sleep environment. This represents an increase (11%) from the 109 infants who died in 2011. A statewide public awareness campaign started in late 2012 yet clearly much work remains to be done in order to eliminate these preventable deaths. An additional eight infant deaths were attributed to Sudden Infant Death Syndrome (SIDS).

Manner of Death

- Manner of death refers to the broad category used to classify a death (Natural, Accident, Suicide, Homicide, or Undetermined).
- 483 deaths (58.2%) were by natural manner (medical causes); 154 deaths (18.6%) were by an accidental manner. By comparison, 62.5% of deaths in 2011 were attributed to natural manner while 19.5% were attributable to accidental manner.
- 46 deaths of children in 2012 (5.5%) were the result of homicide. This is increased from the 39 homicide deaths in 2011.
- Twenty-four young people took their own lives during 2012 (2.9% of all deaths); this represents a sharp increase from the 13 deaths by suicide observed in 2011. One-third of all suicides involved a weapon; 71% occurred in the child's home.
- The analysis of manner of death is complex. Additional details are available in Table 4 on page 14.

Cause of Death

- Cause of death refers to the effect, illness, or condition leading to an individual's death (a narrower, more specific classification than revealed by Manner of Death). The cause may be medical or external.
- 224 child deaths (27%) were classified as due to external causes, including motor vehicle, weapons, asphyxia, fire/burns, poisoning or overdose, and fall/crush. This represents an increase from the 26% observed in 2011.
- Sixty-eight children (8.2% of all deaths) died in motor vehicle crashes in 2012, virtually unchanged from the 69 vehicular deaths (8.6% of all deaths) in 2011.
- Sixty-six children (8.0% of all deaths) died of asphyxia; forty-two of these children died in a sleep-related environment. This represents an increase of 10% from 2011, when there were 60 asphyxia deaths, 40 of which occurred in a sleep-related environment.
- Forty-nine children died from weapon injuries, which represents a 29% increase from the 38 children who died in 2011. 45% of weapons-related fatalities were due to firearms, 77% of which were handguns.
- Twenty-two children died by drowning, which represents a 10% increase from the 20 drowning fatalities in 2011.

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

	2011 Rate ⁴	2012 Rate
Categories Showing Improvement		
Fire/Burn	0.40	0.34
Fall/Crush	0.40	0.27
Categories Showing Relatively No Change		
Infant Mortality (<1 year of age)	7.4	7.2
SIDS and Sleep-Related Infant Deaths	1.52	1.62
Poison-Related	0.47	0.47
Natural (Medical)	33.4	32.3
Motor Vehicle	4.62	4.56
Drowning	1.34	1.47
Categories Showing Worsening Outcomes		
Homicide	2.61	3.08
Suicide	0.87	1.61
Asphyxia	4.02	4.42
Weapon-Related	2.55	3.28
Preventable Deaths	16.01	17.02

In Table 3 above, trends in death rates are clustered in three categories: those showing improvements from 2011 to 2012 (more than 10% improvement from year to year); those showing relatively no change from 2011 to 2012 (less than 10% improvement or worsening from year to year); and those showing worsening outcomes from 2011 to 2012 (more than 10% worsening from year to year).

The review of child fatalities in 2012 revealed substantial increases in preventable deaths related to homicide, suicide, drowning, and asphyxia (including preventable sleep-related infant deaths). At the same time, there have been improvements in the overall infant mortality rate and natural (medical) causes of death. The rise in 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.

⁴ Rates for infant mortality and SIDS/Sleep-Related deaths are expressed as rate per 1,000 live births. All other rates are expressed as rate per 100,000 population. Data source for the denominator comes from the Division of Policy, Planning and Assessment in the Tennessee Department of Health.

STATE CHILD FATALITY TEAM MEMBERS
(2012 CHILD FATALITY REPORT)

Chair

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

Co-Chairs

Karen Cline-Parhamovich, DO
State Chief Medical Examiner
Tennessee Department of Health

Michael D. Warren, MD MPH FAAP
Director, Division of Family Health and Wellness
Tennessee Department of Health

Members

Valerie Arnold, MD
Tennessee Medical Association

Linda O'Neal
Tennessee Commission on Children
and Youth

Howard Burley, MD
Tennessee Department of Mental
Health and Substance Abuse Services

Doug Overbey
Tennessee Senate

Senator Ophelia Ford
Tennessee Senate

Representative Antonio Parkinson
Tennessee House of Representatives

Rachel Heitmann
Tennessee Department of Health

Margie Quin
Tennessee Bureau of Investigation

Thomas Cheetham, MD
Tennessee Department of Intellectual
and Developmental Disabilities

Sue Sheldon
Attorney General's Office

Mike Hermann
Tennessee Department of Education

Representative Ryan Williams
Tennessee House of Representatives

Scott Modell, Ph.D.
Tennessee Department of Children's
Services

INTRODUCTION

The Child Fatality Review Process in Tennessee

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 States⁵. 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.⁶

The Child Fatality Review and Prevention Act of 1995 established the Tennessee Department of Health's Child Fatality Review (CFR). The mission of the Child Fatality Review 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, 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 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

⁵ Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2010 on CDC WONDER Online Database, released 2012. Accessed at <http://wonder.cdc.gov/ucd-icd10.html>.

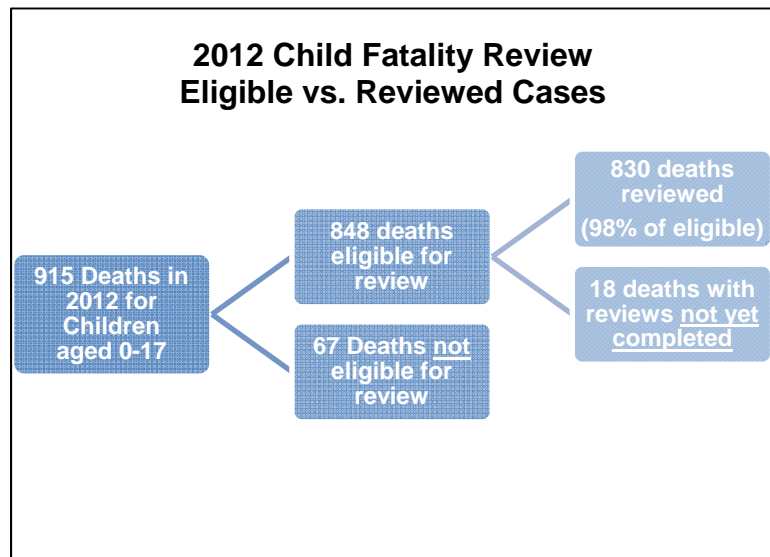
⁶ National Center for the Review and Prevention of Child Deaths. Keeping Kids Alive: A Report on the Status of Child Death Review in the United States, 2011. Available at: http://www.childdeathreview.org/reports/CDRinUS_2011.pdf.

recommendations to the Governor and General Assembly for their 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 848 deaths meeting review criteria in 2012, reviews were completed on 830 (98%) and are represented in this annual report. In spite of their best efforts, local CFR teams were not able to complete the review of 18 child deaths (2% of all eligible cases by the time of this report. These case reviews are ongoing, and await results of contributing information, such as legal investigations or autopsy results; however, it is unlikely that these cases (representing two percent of deaths eligible for review) would change the conclusions in this report.



Fetal deaths of less than 22 weeks' gestation and less than 500 grams in weight are not reviewed because these deaths occur before the currently-accepted limits of viability. 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 Child Fatality Review (CFR) as mandated in T.C.A. § 68-142-101 et. seq. The CFR process incorporates best practices identified by the National Maternal and Child Health (MCH) Center for Child Death Review, 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 Office of Policy, Planning, and Assessment are used in many of the analyses included in this report.

DATA OVERVIEW

Summary of Child Mortality Data

The overall rate of child fatalities for 2012 was 61.1 per 100,000 in the population of children less than 18 years of age⁷. Child deaths are classified by manner and cause of death.

Manner of death describes the broad categories of death under which specific causes of death are organized. The manner of death categories are natural, accidental, homicide, suicide, pending, undetermined, and unknown. For deaths being reviewed, the child fatality review (CFR) teams report the manner of death as indicated on the death certificate. In those instances where a 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 manner of death based on the sum of information available to them at the time of review. In some cases, an exact manner of death may not be known to the team. **Undetermined** cases are those in which the investigation of circumstances surrounding a death fail 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 natural or accidental causes. **Pending** cases are those in which further information is anticipated to be forthcoming. Cases in which the Manner of Death is marked as **“Unknown”** are those in which information necessary to determine the manner of death is unattainable or unavailable to the team.

Figures 3-6 summarize the manners of death for 2012 fatalities, as does Table 4 on the following page. Note that manner and cause of death are broad categories. Detailed information regarding specific manner/cause of death is contained later in the report.

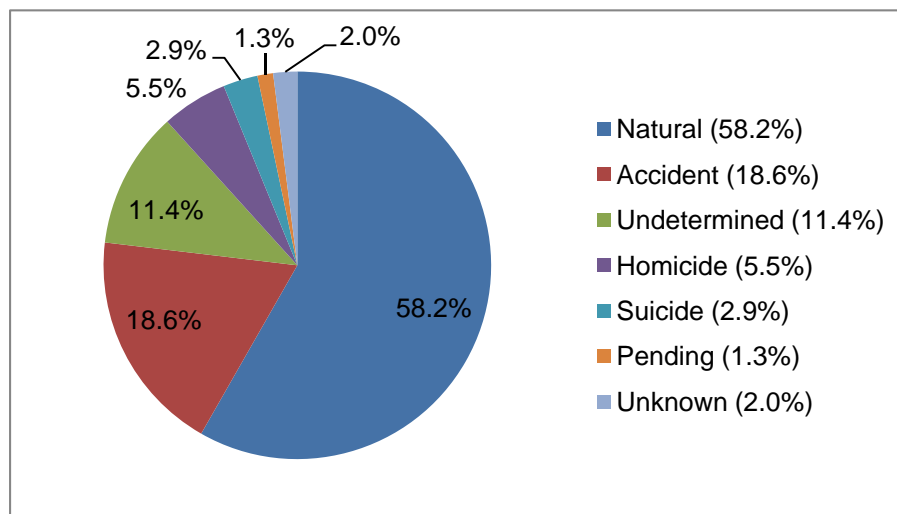


Figure 3—Manner of Death Summary, Age 0-17, 2012

⁷ Data source: Surveillance, Epidemiology, and Evaluation; Division of Policy, Planning and Assessment; Tennessee Department of Health.

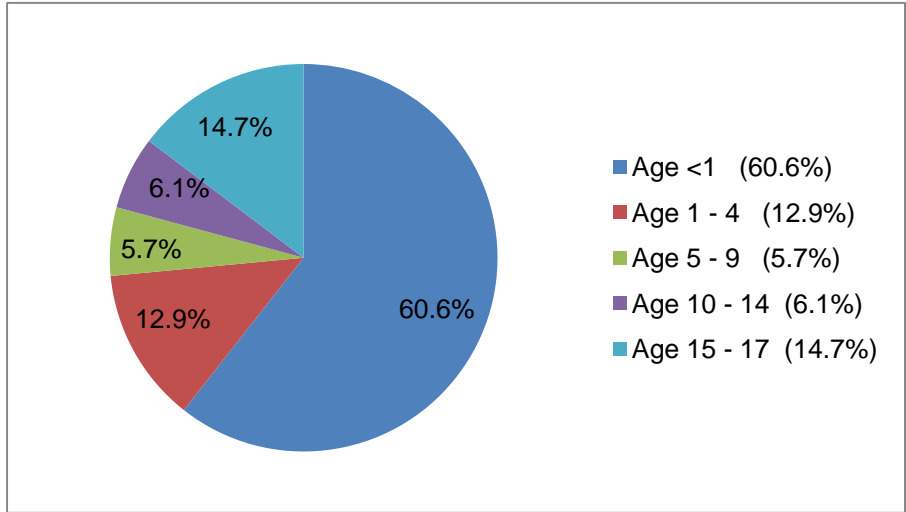


Figure 4—Death by Age, Age 0-17, 2012

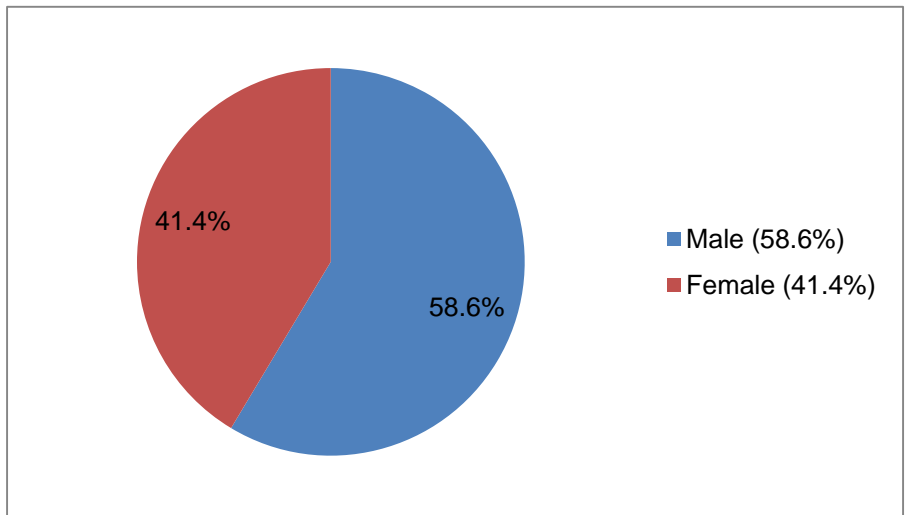


Figure 5—Death by Gender, Age 0-17, 2012

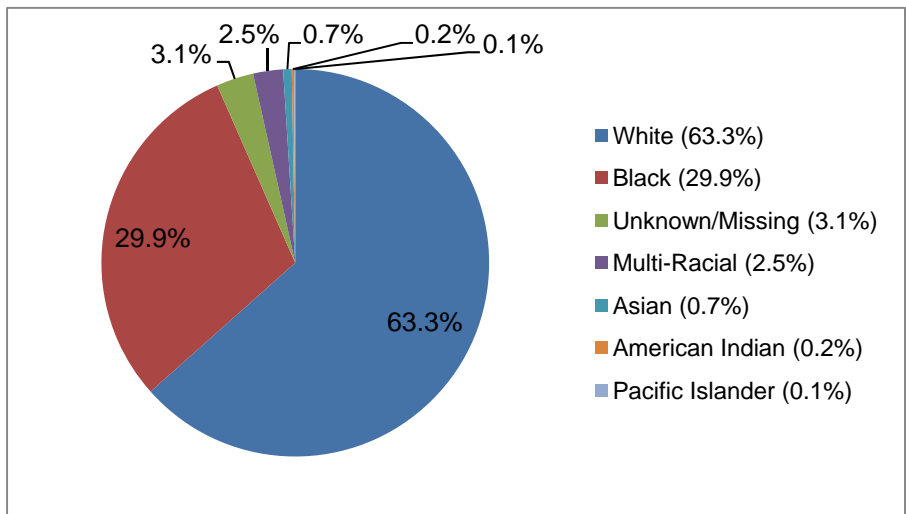


Figure 6—Death by Race, Age 0-17, 2012

Table 4—Manner of Death Summary

	Natural	Accident	Homicide	Suicide	Undetermined	Unknown	Pending	Total
Age								
<1 Year	344	49	14	0	80	12	4	503
1-4 Years	52	30	12	0	7	2	4	107
5-9 Years	30	12	3	0	0	1	1	47
10-14 Years	25	11	4	6	4	0	1	51
15-17 Years	32	52	13	18	4	2	1	122
Total	483	154	46	24	95	17	11	830
Race								
White	293	123	20	16	52	13	9	526
Black	149	25	24	7	39	2	2	248
Asian	5	1	0	0	0	0	0	6
American Indian	2	0	0	0	0	0	0	2
Pacific Islander	1	0	0	0	0	0	0	1
Multi-racial	12	4	0	0	4	1	0	21
Missing/Unknown	21	1	2	1	0	1	0	26
Total	483	154	46	24	95	17	11	830
Gender								
Male	268	96	33	16	59	10	4	486
Female	215	58	13	8	36	7	7	344
Total	483	154	46	24	95	17	11	830

Whereas the manner of death is a broad categorization, the **cause of death** is a more specific classification of the effect, illness, or condition leading to an individual's death. The child fatality review (CFR) case report tool classifies causes of death as either **medical** causes or **external** causes (accident, homicide, or suicide). Medical causes are then further delineated by specific disease entities, while external causes are further delineated by the nature of the injury. Of the 830 deaths reviewed by the CFR teams in 2012:

- 58.2 percent were due to **medical** causes.
- 27.0 percent were due to **external** causes.
- 14.8 percent of cases were **unknown or could not be determined** as a medical or external cause.⁸

⁸ Of 123 cases marked as "Undetermined," "Unknown" or "Pending," 96 (78%) were less than one year of age. This reflects the inherent complexities in determining the manner and cause of infant deaths.

Table 5 enumerates medical and external causes as they relate to age, race, and gender.

Table 5—Medical/External Causes of Death

	External Cause of Injury	Medical Condition	Undetermined if External or Medical ⁹	Unknown ⁹	Total
Age					
<1 Years	63	344	80	16	503
1-4 Years	42	52	7	6	107
5-9 Years	15	30	0	2	47
10-14 Years	21	25	4	1	51
15-17 Years	83	32	4	3	122
Total	224	483	95	28	830
Race					
White	159	293	52	22	526
Black	56	149	39	4	248
Asian	1	5	0	0	6
American Indian	0	2	0	0	2
Pacific Islander	0	1	0	0	1
Multi-racial	4	12	4	1	21
Missing/Unknown	4	21	0	1	26
Total	224	483	95	28	830
Gender					
Male	145	268	59	14	486
Female	79	215	36	14	344
Total	224	483	95	28	830

⁹ **Undetermined** cases are those in which the investigation of circumstances surrounding a death fail to reveal whether the cause of death is medical or external. Cases in which the Cause of Death is marked as **Unknown** are those in which information necessary to determine the cause of death is unattainable or unavailable to the team. The “Unknown” column in Table 5 also includes cases that were pending at the time of this report.

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 has steadily declined over the past five years, from 8.0 in 2008 to 7.2 deaths per 1,000 live births in 2012, a decrease of 10%.¹⁰ Tennessee still exceeds the national average for infant mortality (6.05 in 2011).¹¹

In 2011 (the most recent year for which national data is available), 23,910 infants died prior to their first birthday in the United States¹². While the overall infant mortality rate in the U.S. is 6.05 per 1,000 live births, two-thirds of infant deaths occur during the first twenty eight days, accounting for 4.04 per 1,000 live births. Child deaths in the first twenty eight days, known as neonatal mortality, are linked to shorter gestation, low birth weight, and other prematurity-related conditions. Post neonatal mortality (death between 28-364 days) is linked to Sudden Infant Death Syndrome (SIDS), unintentional injuries, and congenital malformations. The leading causes of infant mortality nationally in 2011 were congenital malformations, short gestation and low birth weight related disorders, and SIDS¹¹.

In 2012, **503** Tennessee infant deaths¹³ were reviewed by local child fatality review teams. Table 6 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 503 deaths.

¹⁰ Data source: Surveillance, Epidemiology, and Evaluation; Division of Policy, Planning and Assessment; Tennessee Department of Health.

¹¹ Hoyert DL, Xu JQ. Deaths: Preliminary data for 2011. National Vital Statistics Reports; Vol 61 No 6. Hyattsville, MD: National Center for Health Statistics. 2012.

¹² Health and Human Services: Maternal and Child Health Bureau. Child Health USA: Infant Mortality. Accessed at <http://mchb.hrsa.gov/chusa13/perinatal-health-status-indicators/p/infant-mortality.html>

¹³ Some reviews may be delayed until all legal investigations, autopsies, or prosecutions are completed. Some deaths occur outside the county of residence, thereby resulting in long delays in notification for the CFR team. Fetal deaths of less than 22 weeks' gestation and less than 500 grams in weight are not reviewed. Therefore, this number may differ from that published in other Departmental reports.

Table 6—Risk Factors Associated with Infant Death¹⁴

	Natural	Accident	Homicide	Undetermined	Pending	Unknown	Total
Deaths Reviewed	344	49	14	80	4	12	503
Premature (<37 weeks)	257	15	5	22	1	10	310
Low birth weight (<2500 grams)	239	14	6	23	1	9	292
Known Intrauterine Smoke Exposure	70	20	0	38	2	2	132
Known Intrauterine Alcohol Exposure	1	1	0	0	0	0	2
Known Intrauterine Drug Exposure	12	7	0	5	1	0	25
Late (>6 months) or No Prenatal Care	39	8	3	11	1	1	63

As indicated in Table 6, prematurity and low birth weight were risk factors associated with many infant deaths; this is consistent with other analyses that indicate prematurity and low birth weight are major contributors to Tennessee’s infant mortality rate. Additionally, 26% 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 at least 500 grams and at 22 weeks gestational age or greater.

¹⁴ Some reviews may be delayed until all legal investigations, autopsies, or prosecutions are completed. Some deaths occur outside the county of residence, thereby resulting in long delays in notification for the CFR team. Fetal deaths of less than 22 weeks’ gestation and less than 500 grams in weight are not reviewed. Therefore, these numbers may differ from those published in other Department reports.

Prevention Analysis

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.

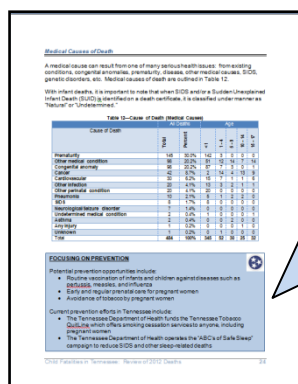
If an individual or the community could reasonably have done something that would have changed the circumstances leading to a child's death, that fatality is considered to have been **preventable**. CFR teams carefully examine each death in an effort to determine preventability.

Of the cases reviewed, CFR teams determined that **254 deaths (30.6%) could probably have been prevented**.

Table 7—Preventability of Child Deaths

Manner of Death	Probably Not Preventable	Probably Preventable	Could Not Determine ¹⁵	Unknown ¹⁵	Total
Natural	435	15	24	9	483
Accident	16	132	4	2	154
Homicide	1	42	2	1	46
Suicide	2	16	6	0	24
Undetermined	10	40	44	1	95
Pending	3	6	2	0	11
Unknown	12	3	1	1	17
Total	479	254	83	14	830

Prevention of future child deaths is the primary goal of Child Fatality Review. A new feature in this year's report underscores the importance of prevention. Spread throughout this year's 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
- Avoidance of tobacco by pregnant women

Current prevention efforts in Tennessee include:

- The Tennessee Department of Health funds the Tennessee Tobacco QuitLine which offers smoking cessation services to anyone, including pregnant women
- The Tennessee Department of Health operates the "ABC's of Safe Sleep" campaign to reduce SIDS and other sleep-related deaths

¹⁵ **Undetermined** cases are those in which the investigation of circumstances surrounding a death fail to reveal whether the death was preventable. Cases marked as **Unknown** are those in which information necessary to determine the preventability of the death is unattainable or unavailable to the team.

Acts of Child Abuse or Neglect

Child abuse or neglect represents a serious concern for the United States. In 2011, more than 680,000 children were estimated to have been victims of child abuse across the U.S, of whom approximately 1,750 children died¹⁶. Of the children who died from child abuse in the U.S, 71% experienced neglect and 48% experienced physical abuse. More than 80 % of child abuse fatalities occurred to children under the age of 4, with children 4-17 accounting for 18.4% of child abuse deaths.

In Tennessee, 9,243 children were determined to have been victims of child abuse in 2011 and 29 of those children died. Of the children who died from child abuse in 2011, 69% experienced neglect and 38% experienced physical abuse. The majority (79.3%) of child abuse fatalities occurred to children under the age of 4, with children ages 4-17 accounting for 20.6% of all child abuse deaths.¹⁷

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 8 below describes the cases¹⁸ for which review teams found there was poor or absent supervision, child abuse, child neglect¹⁹, or other negligence among 2012 deaths.¹⁹

Table 8—Acts of Child Abuse or Neglect

Age	Poor or absent supervision	Child Abuse	Neglect	Other Negligence
<1 Year	12	10	18	35
1-4 Years	11	5	3	9
5-9 Years	3	3	0	5
10-14 Years	2	0	0	3
15-17 Years	6	0	0	12
Total	34	18	21	64

¹⁶ Centers for Disease Control and Prevention, National Center for Injury Prevention and Control: Division of Violence Prevention. Child Maltreatment: Facts at a Glance, 2013. Available at: <http://www.cdc.gov/violenceprevention/pdf/cm-data-sheet--2013.pdf>

¹⁷ Source: Tennessee Department of Children's Services.

¹⁸ These data may vary from the data reported by DCS. Local Child Fatality Review Teams report based on information available to them from team members and organizations in making their determinations.

¹⁹ 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>

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Increased child abuse awareness and training in schools
- Educational and family support programs for lower income families to promote child social and cognitive development and increase parental participation.

Current prevention efforts in Tennessee include:

- The Tennessee Department of Health funds evidence-based home visiting programs in at-risk counties; these programs have been shown to reduce child maltreatment.
- The Department of Children's Services (DCS) established In Home Tennessee to build organizational and community capacity, improve access and quality of services, and enhance how DCS works with families.
- Prevent Child Abuse Tennessee implemented an abusive head trauma intervention in middle TN hospitals to inform new parents about handling stress of newborns and developing a plan to deal with the stress.
- The DCS Child Abuse Hotline improved significantly in 2013. In 2012, the Child Abuse Hotline handled 125,000 calls. In 2013, they are on track to handle over 150,000 calls. The current performance the hotline is meeting is an 80/20 standard. That is, 80% of calls are now answered in 20 seconds or less. Additionally, the Child Abuse Hotline has a call abandonment rate of under 5%. Compared to last year (2012), the hotline is now answering over 2,000 more calls per month.
- In 2013, DCS also made significant progress toward improving CPS Investigations. In November of 2013, the Department held the first ever CPS Investigator Training Academy. Developed in partnership with the Tennessee Bureau of Investigations (TBI), investigators graduating from the three week academy will leave with improved the skills in investigations, interviewing, statement analysis, human trafficking prevention, medical evaluation of child sexual and physical abuse, drug recognition, working with law enforcement, case file development, organization and presentation to name a few.

Deaths to Children with Special Circumstances

Nearly one-third of the deaths in 2012 involved children known to have suffered from a disability or chronic illness. Of those 270 children, 13 were enrolled in the Tennessee Department of Health’s Children’s Special Services program (CSS).

The families of 33 children were known by the local Child Fatality Review Teams to have been involved in an open Child Protective Services’ case at the time of their deaths.

Table 9—Children with Special Circumstances

Circumstance	Number of Deaths
Child had disability or chronic illness	270
If disabled, child was receiving Children’s Special Services (CSS)	13
Open child protective services (CPS) case at time of death ¹⁸	33

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Identification of high risk children through schools, clinics, and childcare centers to increase child abuse prevention.
- 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:

- Tennessee Department of Health staff receive in-service training on detection and reporting of child maltreatment, including human trafficking.
- 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.

DETAILED REVIEW: SPECIFIC CAUSES OF DEATH

The official manner of death includes two broad categories: medical causes and external causes. Within the medical classification, causes are further specified by particular conditions or disease entities. In 2012, **483 deaths were attributed to medical causes.**

Medical conditions 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 2012, 58.2% of reviewed deaths were attributed to medical causes; this represents a slight decrease from 62.5% in 2011.

Within the external classification, individual deaths are then further classified according to the nature of the injury. Within the external classification, individual deaths are then further classified according to the nature of the injury. In 2012, **224 deaths were attributed to external causes**, which fall into one of the following injury categories:

Motor Vehicle and Other Transport	Asphyxia
Weapons	Drowning
Fire or Burns	Falls or Crush
Poisoning or Overdose	“Other” Injuries
Undetermined	

In 2012, 27.0% of child deaths reviewed were classified as due to external causes, including motor vehicle, weapons, asphyxia, fire/burns, poisoning or overdose, and fall/crush. This represents a slight increase from the 26% observed in 2011.

Medical Causes of Death

A medical cause can result from one of many serious health issues: from existing conditions, congenital anomalies, prematurity, disease, other medical causes, SIDS, genetic disorders, etc. Medical causes of death are outlined in Table 12.

With infant deaths, it is important to note that when SIDS and/or a Sudden Unexplained Infant Death (SUID) is identified on a death certificate, it is classified under manner as “Natural” or “Undetermined.”

Table 10—Cause of Death (Medical Causes)

Cause of Death	All Deaths		Age				
	Total	Percent	<1	1 - 4	5 - 9	10 - 14	15 - 17
Prematurity	144	29.8%	141	3	0	0	0
Other medical condition	98	20.3%	51	12	14	7	14
Congenital anomaly	98	20.3%	87	7	3	0	1
Cancer	42	8.7%	2	14	4	13	9
Cardiovascular	30	6.2%	15	7	1	1	6
Other infection	20	4.1%	13	3	2	1	1
Other perinatal condition	20	4.1%	20	0	0	0	0
Pneumonia	10	2.1%	5	1	2	2	0
SIDS	8	1.7%	8	0	0	0	0
Neurological/Seizure disorder	7	1.4%	1	4	2	0	0
Undetermined medical condition	2	0.4%	1	0	0	0	1
Asthma	2	0.4%	0	0	2	0	0
Any injury	1	0.2%	0	0	0	1	0
Unknown	1	0.2%	0	1	0	0	0
Total	483	100%	344	52	30	25	32

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
- Avoidance of tobacco by pregnant women

Current prevention efforts in Tennessee include:

- The Tennessee Department of Health funds the Tennessee Tobacco QuitLine which offers smoking cessation services to anyone, including pregnant women
- The Tennessee Department of Health operates the “ABC’s of Safe Sleep” campaign to reduce SIDS and other sleep-related deaths

Sudden Infant Death Syndrome (SIDS) and Sleep-Related Infant Deaths

By definition, SIDS is an exclusionary manner of death for children under 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. When a baby is found deceased in a sleeping environment with a history of his or her head pressed into the mattress or pillow, when there is a co-sleeper, or when he or she is found wedged against an object, other causes (such as sleep-related asphyxiation) may be a factor in the death.

The manner of death in these cases is 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. In 2012, the manner of death in 80 fatalities to 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.

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 usually been moved, and accurately recreating the death scene may not be possible. Thus, despite autopsies and the effort of Child Fatality Review Teams, the exact cause of infant sleep-related deaths may never be known for some infants and their families.

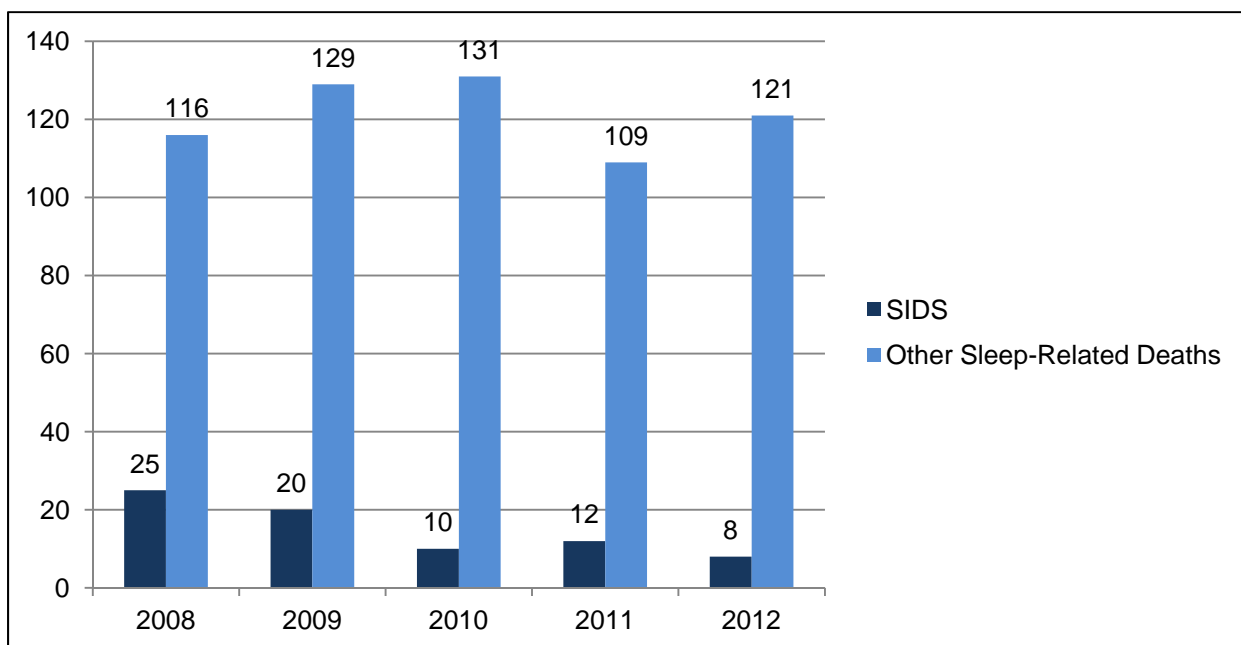


Figure 7—Summary of SIDS and Sleep-Related Deaths, 2008-2012

As Figure 7 displays, **eight deaths were reported as SIDS** in 2012, and an additional **121 infant deaths resulted from an unsafe sleep environment**.

- These eight deaths represent 2.3 percent of infant deaths due to medical conditions and 1.0 percent of all childhood deaths in 2012.
- Of all fatalities due to SIDS, four (50 percent) occurred from birth through one month of age.
- Forty-four deaths were confirmed as asphyxia in the sleep environment.

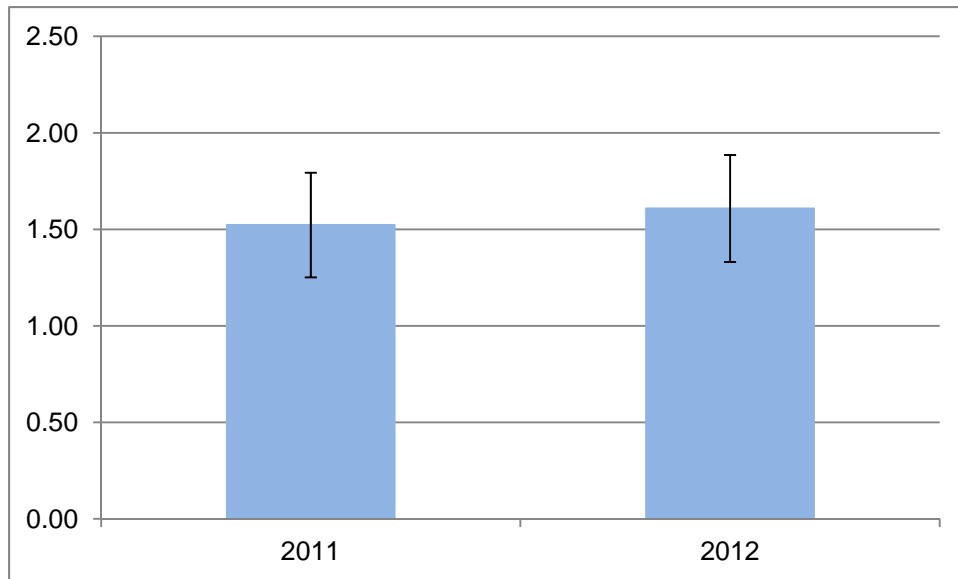


Figure 8—SIDS and Sleep-Related Deaths Per 1,000 Live Births, 2011-2012²⁰

Table 11—Contributing Factors in Sleep-Related Infant Deaths²¹

Circumstance	Year				
	2008	2009	2010	2011	2012
Infant not in a crib or bassinette	102	106	113	92	87
Infant sleeping with other people	67	77	100	73	69
Infant not sleeping on back	55	59	57	54	68
Unsafe bedding or toys in sleep area with infant	32	32	38	33	32
Obese adult sleeping with infant	10	4	13	9	8
Adult drug impaired sleeping with infant	2	2	8	11	5
Adult alcohol impaired sleeping with infant	3	2	5	6	3
Adult fell asleep bottle feeding	2	0	3	1	0
Adult fell asleep breast feeding	0	3	1	1	2

²⁰ Error bars represent 95% confidence intervals for the crude rate estimates.

²¹ 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 11, three main contributing factors are consistently present in sleep-related infant deaths: infant not sleeping alone (53.5% of cases), infant not sleeping on their back (52.7% of cases), and infant not sleeping in a crib or bassinet (67.4% 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

Current prevention efforts in Tennessee include:

- The Tennessee Department of Health has launched a hospital-based safe sleep project to promote the development of hospital safe sleep policies, modeling of safe sleep behavior by staff, and education of parents and caregivers
- The Department of Children's Services has piloted a safe sleep initiative to provide education to biological and resource parents and to provide cribs to families with limited resources

Homicide Deaths

Homicide is a serious problem nationally in the United States, affecting people across all stages of life, from infants to the elderly. In 2010, over 16,250 people were homicide victims²². Youth violence is the second leading cause of death for young people between 15 and 24; in 2010 4,828 aged 10 to 24 were homicide victims. African American children (vs. White) and boys (vs. girls) had higher homicide rates in 2010 nationally.

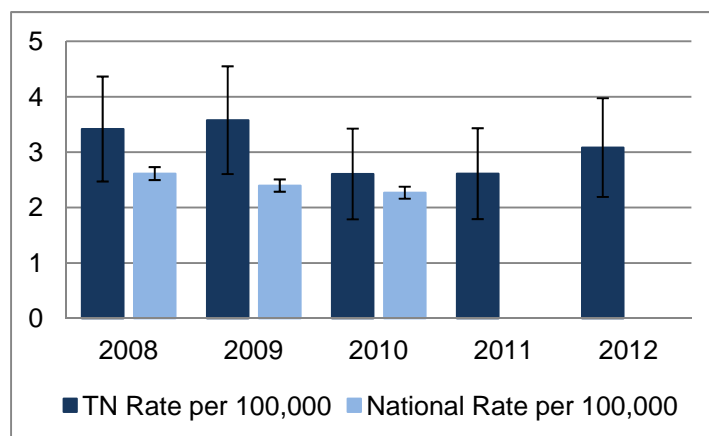


Figure 9—Homicide Deaths Per 100,000 Population, 2008-2012²³

In Tennessee, **forty-six** children died of homicide during 2012. This number represents **5.5 percent of all deaths reviewed**. Thirty-three homicide victims were male; 13 were female. Infants/toddlers, and older teens suffered the highest percentage of fatalities. One-quarter of all homicides involved firearms, and 63% occurred in the child's home.

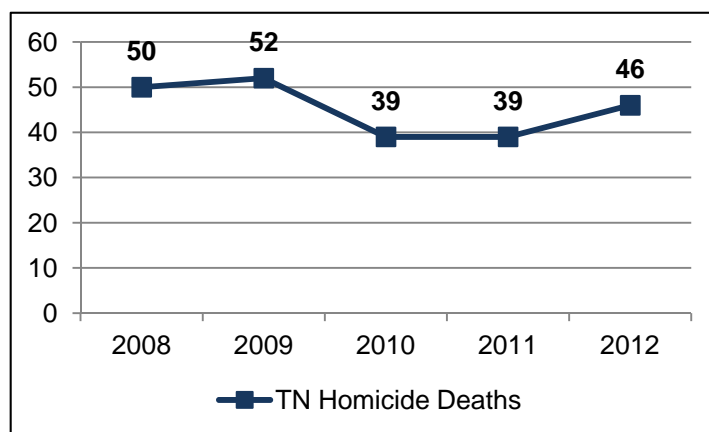


Figure 10—TN Homicide Deaths, Age 0-17, 2008-2012

²² Center for Disease Control and Prevention: National Center for Injury Prevention and Control. Understanding Youth Violence: Fact Sheet 2012. Accessed at http://www.cdc.gov/ViolencePrevention/pdf/YV_FactSheet2012-a.pdf

²³ Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011-2012.

Table 12—Homicide by Victim’s Age, Cause, and Location

Number of Deaths	
Age	
<1 Year	14
1-4 Years	12
5-9 Years	3
10-14 Years	4
15-17 Years	13
Cause	
Firearm	13
Sharp Instrument	2
Blunt instrument	1
Person’s Body Part	8
Rope	1
Asphyxiation	2
Other	8
Fire, burn, or electrocution	1
Unknown	10
Location	
Child’s Home	30
Relative’s Home	1
Friend’s Home	2
Roadway	1
Work	1
Sidewalk	3
Other	4
Unknown	4

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Increase domestic abuse prevention efforts such as penalties for domestic abuse, and domestic abuse education efforts.
- Increase school attendance rates for students with delinquent peers to decrease youth violence.

Current prevention efforts in Tennessee include:

- Shaken Baby Syndrome prevention education is being provided at several hospitals throughout Tennessee.
- Tennessee Department of Health provides presentations in schools on bullying and violence prevention among adolescents and teens.

Suicide Deaths

Nationally, suicide is a serious public health issue with complex causes and long lasting harms to individuals, families and communities. Suicide is the third leading cause of death for youth ages 10 to 24 nationwide²⁴. In 2010, 1,456 children between 0-18 died of suicide (1.85 per 100,000) throughout the United States²⁵. White (vs. Black) children and boys (vs. girls) had higher rates of suicide nationally in 2010.

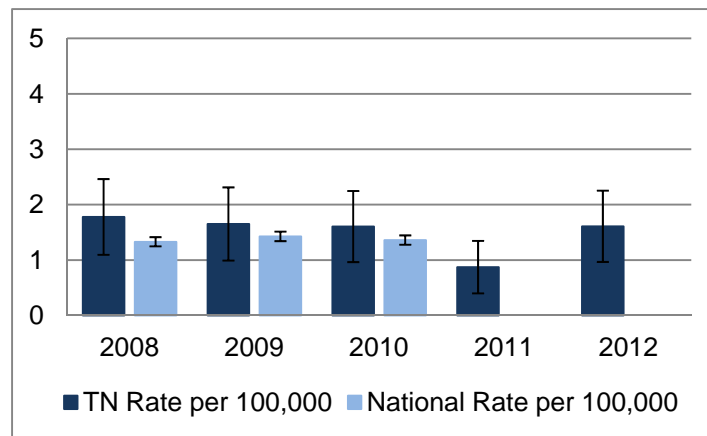


Figure 11—Suicide Deaths Per 100,000 Population, 2008-2012²⁶

In Tennessee, **twenty-four** young people took their own lives during 2012, a figure that represents **2.9 percent of all deaths reviewed for the year**. Just over one-third of all suicide cases involved a weapon. Seventeen (71%) occurred in the child's home.

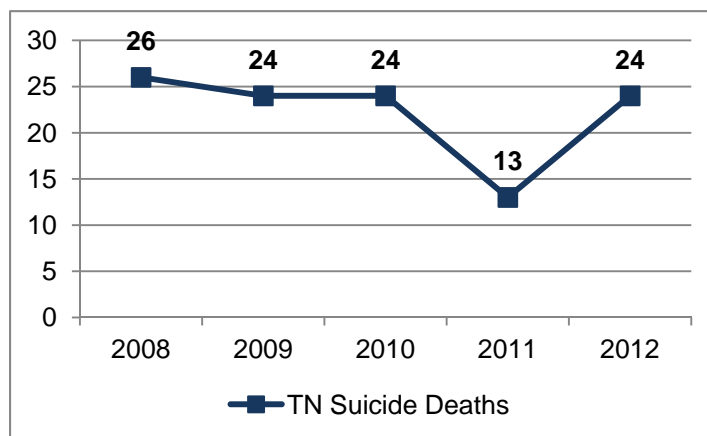


Figure 12—TN Suicide Deaths, Age 0-17, 2008-2012

²⁴ Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Suicide Prevention. Accessed at <http://www.cdc.gov/ViolencePrevention/suicide/index.html>

²⁵ Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). Accessed at http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html

²⁶ Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011-12.

Table 13—Suicide by Victim’s Age, Cause, and Location

	Number of Deaths
Age	
<1 Year	0
1-4 Years	0
5-9 Years	0
10-14 Years	6
15-17 Years	18
Cause	
Weapon	9
Asphyxiation	9
Poisoning, Overdose, or Acute Intoxication	2
Motor vehicle and other transport	1
Other	3
Location	
Child’s home	17
Relative’s home	1
Jail	1
Other (church, foster home, railroad track, tree near home)	4
Location missing	1

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Increase awareness of the warning signs of suicide
- Increase awareness of preventability of suicide
- Increase early detection of children at risk of suicide (by physicians, teachers, parents etc.)
- Limit access to self harm devices by children at risk for suicide

Current prevention efforts in Tennessee include numerous efforts by the Tennessee Suicide Prevention Network, such as:

- 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 and 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.

Motor Vehicle Deaths

Motor Vehicle crashes are the number one cause of child deaths nationally²⁷. In 2011, 3,311 children 19 and under died in motor vehicle crashes as either occupants or drivers. Teenagers and males make up the majority (75% and 62% respectively) of child motor vehicle fatalities. 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.

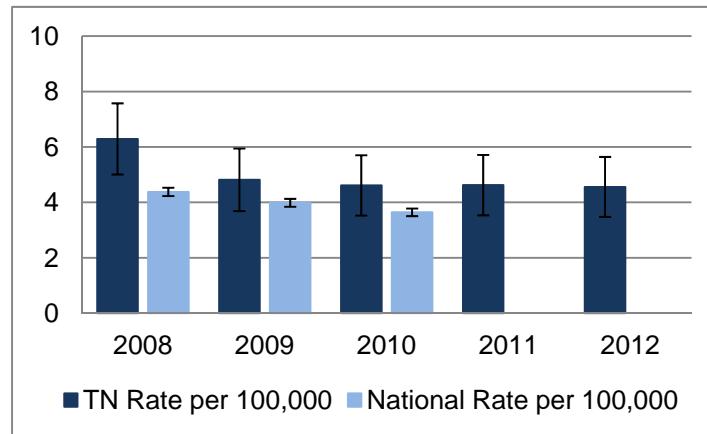


Figure 13—Motor Vehicle Deaths Per 100,000 Population, 2007-2012²⁸

In Tennessee, deaths related to motor vehicle incidents represent the highest number of fatalities among all external causes of death. In 2012, **68 deaths** were related to motor vehicles, representing **8.2 percent of all child fatalities reviewed in 2012**. 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 frequently. Motor vehicle deaths occurred more frequently among males (N=46) than females (N=22).

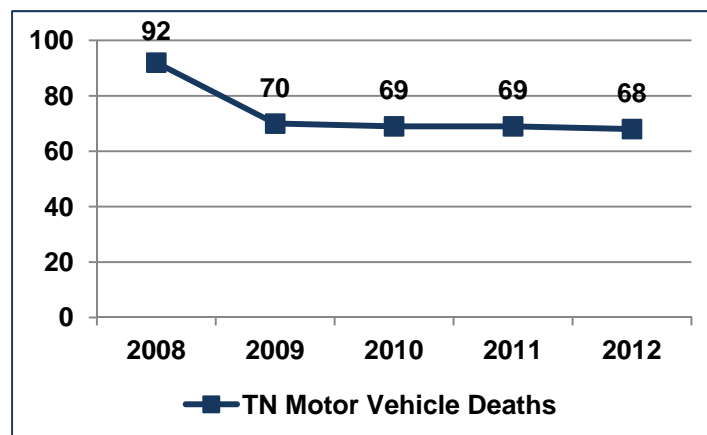


Figure 14—TN Motor Vehicle Deaths, Age 0-17, 2008-2012

²⁷ Safe Kids Worldwide. Motor Vehicle Safety Fact Sheet (2013). Accessed at <http://www.safekids.org/sites/default/files/documents/2013%20Motor%20Vehicle.pdf>

²⁸ Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011-12.

Table 14—Motor Vehicle/Other Transport Fatalities by Age and Position in Vehicle

Age	Position in Vehicle					TOTAL
	Passenger	Driver	Pedestrian	Bicycle	Unknown	
<1 Year	1	0	0	0	0	1
1-4 Years	6	2	6	0	0	14
5-9 Years	5	0	0	0	0	5
10-14 Years	4	0	1	0	1	6
15-17 Years	13	21	6	1	1	42
Total	29	23	13	1	2	68

Table 15—Motor Vehicle Deaths by Vehicle Type

Vehicle Type	Number of Deaths
Car	26
Truck	7
SUV	6
ATV	4
Motorcycle	4
Pedestrian	4
School bus	2
Bicycle	1
Other/Unknown	14

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Imposition of stricter nighttime driving restriction for teen drivers.
- Use of infant car seats and booster seats for toddlers and young children.
- Prohibition of texting while driving.

Current prevention efforts in Tennessee include:

- Tennessee was the first state in the country to have a child safety seat law, passed in the late 1970's. Tennessee still maintains strong laws for infant car seats and toddler/child booster seats.
- 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," a seat belt competition among Tennessee high schools. Twenty-five schools are participating in the 2013-14 school year.
- The Tennessee Department of Health provides funding to 29 community agencies to purchase and distribute car seats and booster seats to families that cannot afford them.

Asphyxia Deaths

Asphyxia is the leading cause of death of children under the age of one, and accounts for approximately 1,000 infant deaths nationally²⁹. Accidental suffocation rates have increased fourfold since 1984, with many infant deaths linked to sleep conditions. 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. Nationally, boys (vs. girls) and black (vs. white) infants have higher rates of death due to asphyxia.

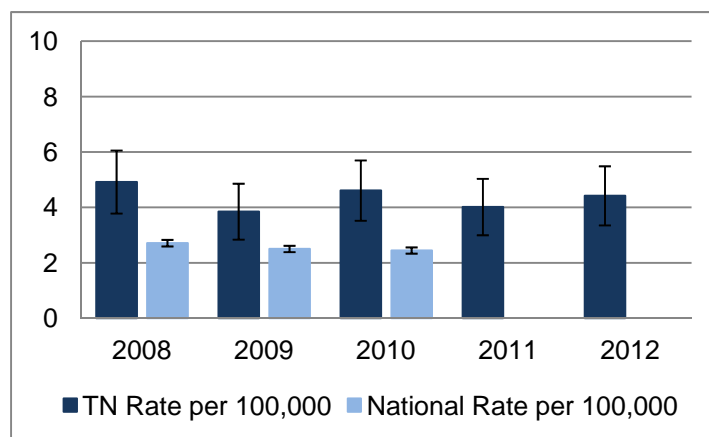


Figure 15—Asphyxia Deaths Per 100,000 Population, 2008-2012³⁰

In Tennessee, **sixty-six** children died of asphyxia in 2012. This number represents **7.9 percent of all deaths** reviewed in 2012. Asphyxia cases may be related to either suffocation, strangulation, or choking. Forty nine of the asphyxia cases were due to suffocation. Forty-four of these children were infants under the age of one year. **Forty-two of these 44 children expired in a sleep-related environment.**

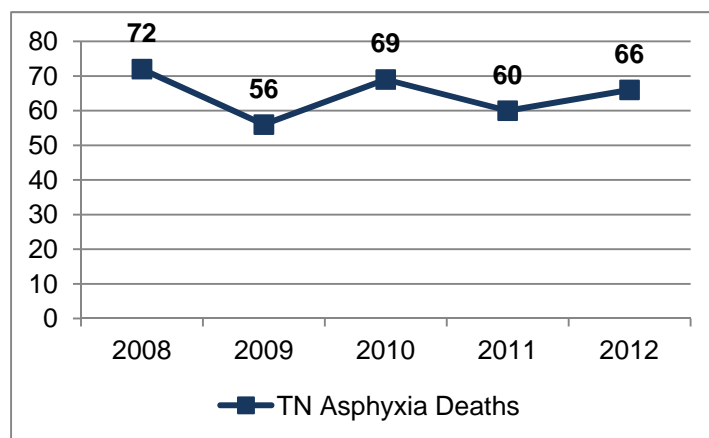


Figure 16—TN Asphyxia Deaths, Age 0-17, 2008-2012

²⁹ 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>

³⁰ Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011-12.

Table 16—Asphyxia Due to Suffocation By Age and Circumstance

Age	Sleep Environment	Covered in or fell into object	Confined in a tight space	Other	Total
<1 Year	42	2	0	0	44
1-4 Years	1	1	1	0	3
5-9 Years	0	0	0	1	1
10-14 Years	0	0	0	1	1
15-17 Years	0	0	0	0	0
Total	43	3	1	2	49

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Increased education regarding importance of 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

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 promotes a video on prevention of choking in children with special needs.
- Vanderbilt University Medical Center provided information through the media on the dangers of children participating in the “Choking Game.”

Weapon-Related Deaths

In 2010, firearms alone accounted for 1,970 child deaths (2.5 per 100,000) nationally of children 0 to 18³¹. An additional 1,483 children (2.0 per 100,000) died from violence involving weapons other than firearms such as body parts, knives or other objects; 97 child deaths (.13 per 100,000) were a result of being cut with knives or sharp objects²⁹.

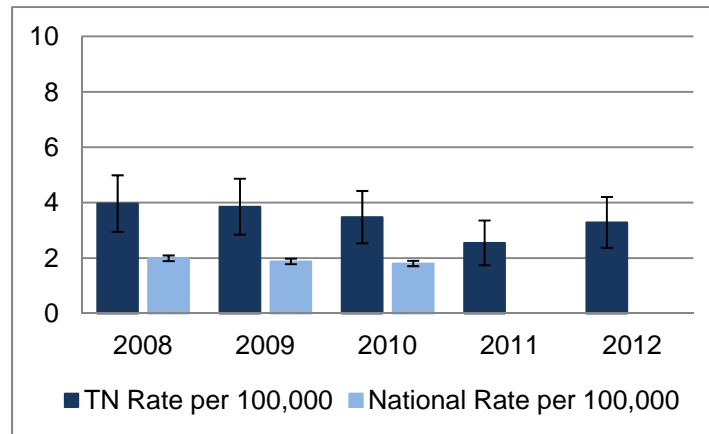


Figure 17—Weapon-Related Deaths Per 100,000 Population, 2008-2012³²

In Tennessee, **forty-nine** children died via weapon injuries in 2012. This number represents **5.9 percent of all deaths reviewed**. For classification purposes, body parts are included as weapons. Of the 49 deaths, 36 were to males and 13 to females. Forty-five percent (N=22) of all weapon fatalities were the result of firearms. Of the twenty-two deaths involving firearms, 17 were related to handguns, and four were related to a hunting rifle.

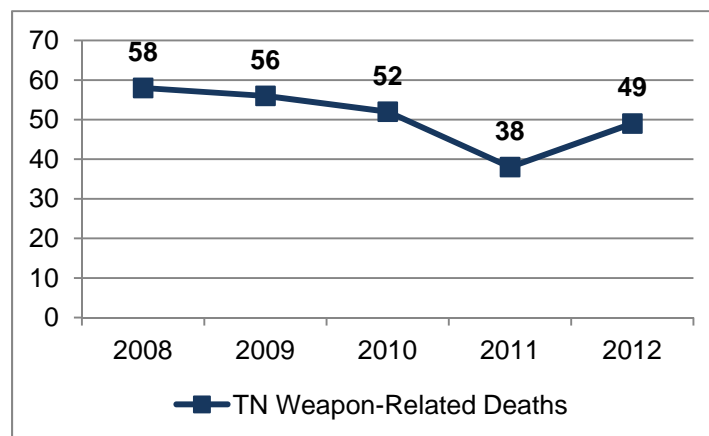


Figure 18—TN Weapon-Related Deaths, Age 0-17, 2008-2012

³¹ Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). Accessed at http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html

³² Error bars represent 95% confidence intervals for the crude rate estimates. National data are not available for 2011-12. National estimates for 2007-2010 are based on deaths due to firearms only.

Table 17—Weapon-Related Deaths By Weapon Type and Age

Age	Type of Weapon							Total
	Firearm	Sharp Instrument	Blunt Instrument	Human Body Part	Rope	Other	Unknown ³³	
<1 Year	0	0	0	4	0	3	5	12
1 – 4 Years	3	0	0	3	1	0	2	9
5 – 9 Years	1	0	0	1	0	0	0	2
10 – 14 Years	4	1	1	0	0	0	0	6
15 – 17 Years	14	1	0	0	2	3	0	20
Total	22	2	1	8	3	6	7	49

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Increase awareness of safer firearm handling practices
- Safety programs targeting parents to encourage supervision to prevent unsafe child-weapon interactions
- Promoting safe gun and weapon storage to eliminate child access to weapons.

Current prevention efforts in Tennessee include:

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

³³ 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 Deaths

Drowning ranks fifth nationally among the causes of unintentional injury deaths³⁴. Between 2005 and 2009, an average of 3,880 fatal unintentional drownings (1.29 per 100,000) occurred annually in the United States. Children between the ages of 1 and 4 have the highest drowning rates. In 2009, among children 1 to 4 who died from unintentional injuries, drowning accounted for 30% of deaths. Most of these drowning occur in home swimming pools.

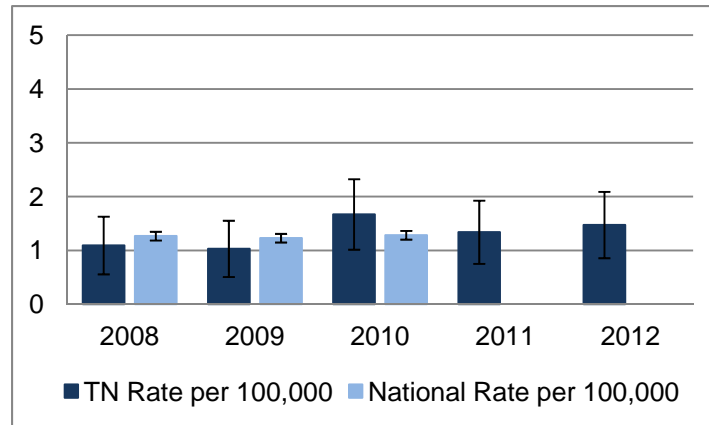


Figure 19—Drowning Deaths Per 100,000 Population, 2008-2012³⁵

In Tennessee, **twenty-two** children perished by drowning in 2012. This number represents **2.6 percent of all deaths reviewed**. Drowning deaths were more frequent in males (N=15) than females (N=7). Of the 22 drowning case reports, in only three cases was it definitively acknowledged that the child was able to swim.

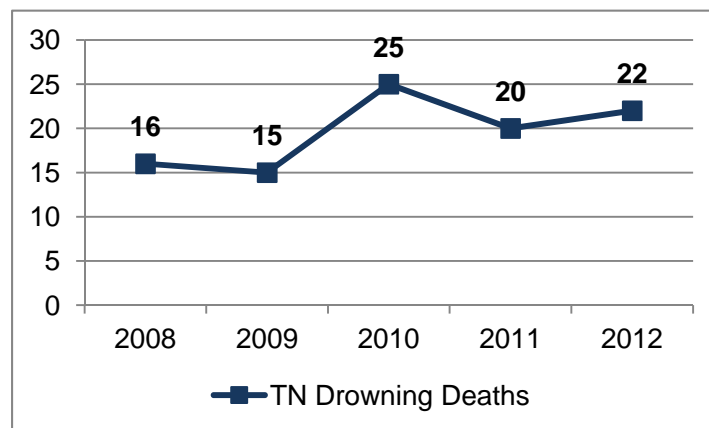


Figure 20—TN Drowning Deaths, Age 0-17, 2008-2012
Table 18—Drowning Deaths by Location and Age

³⁴ 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>

³⁵ Error bars represent 95% confidence intervals for the crude rate estimates. National data are not available for 2011-12.

Age	DROWNING LOCATION				Total
	Open Water (Lake, River, Pond, Creek)	Pool / Hot Tub / Spa	Bathtub	Other	
<1 Year	0	0	2	0	2
1-4 Years	1	4	0	0	5
5-9 Years	0	3	0	0	3
10-14 Years	3	0	0	1	4
15-17 Years	5	3	0	0	8
Total	9	10	2	1	22

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Educational efforts to promote “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
- Fencing pools with four sided isolation fences, with self closing and self latching gates

Current prevention efforts in Tennessee include:

- Safe Kids developed “Water Wise Middle Tennessee” community initiative in fall 2010.
- Safe Kids promotes a community awareness/marketing campaign each spring and fall to educate on water safety
- East TN Children’s Hospital Injury Prevention and Dollywood Splash Country held a water safety event at the water park with over 300 attendees participating in multiple stations learning about water safety.

Fire/Burn Deaths

Fire deaths have declined gradually over the past several decades; however fire deaths remain the third leading cause of fatal home injury³⁶. In 2010 328 children 1 to 18 (.44 per 100,000) died from unintentional fires nationally compared to 3,194 (1.03 per 100,000) deaths in the general population³⁷. Fire deaths are more common among black (vs. white) children nationally. Cooking is the leading cause of residential fires, however most fires that result in deaths are a result of smoking.

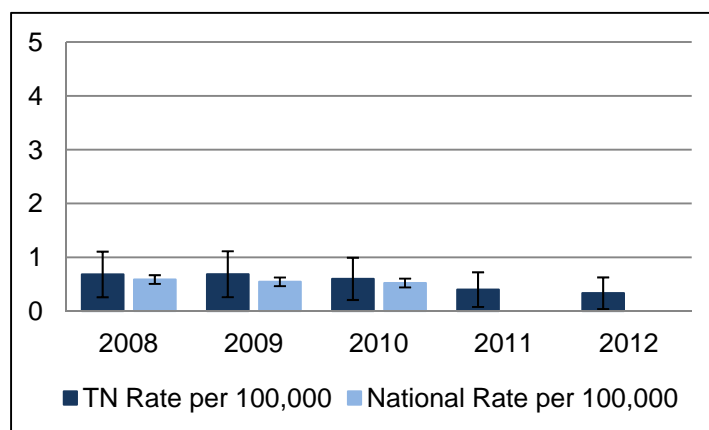


Figure 21—Fire/Burn Deaths Per 100,000 Population, 2008-2012³⁸

Fires claimed the lives of **five** children in 2012 in Tennessee. This number represents **0.6 percent of all deaths reviewed**. There has been a decreasing trend in fire/burn deaths over the past five years.

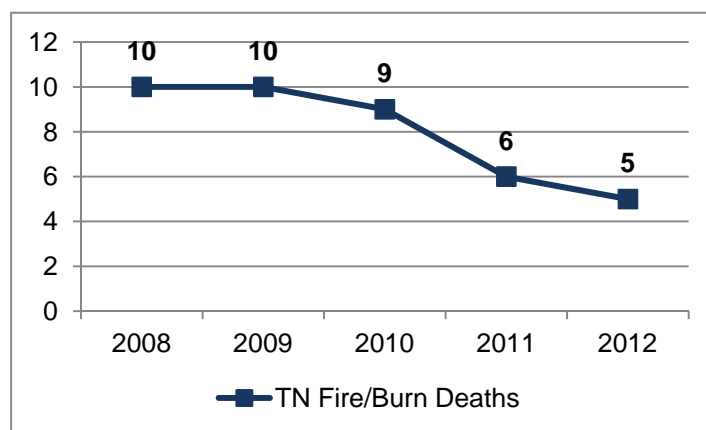


Figure 22—TN Fire/Burn Deaths, Age 0-17, 2008-2012

³⁶ Federal Emergency Management Agency: U.S. Fire Administration. Child Fire Death Rates and Relative Risk 2001-2010. Accessed at http://www.usfa.fema.gov/statistics/estimates/trend_child.shtm

³⁷ Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). Accessed at http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html

³⁸ Error bars represent 95% confidence intervals for the crude rate estimates. National data are not available for 2011-12.

Table 19–Fire/Burn Deaths by Structure Type and Age

Age	Type of Structure			Total
	Single Home	Duplex/apartment	Trailer/Mobile Home	
<1 Year	0	0	1	1
1-4 Years	0	0	3	3
5-9 Years	0	0	0	0
10-14 Years	0	0	0	0
15-17 Years	0	0	1	1
Total	0	0	5	5

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 holds an annual fire safety poster contest for school students.
- Safe Kids of the Greater Knoxville Area distributed over 6,000 fire safety packets to local fire departments during Fire Prevention Month in October.
- Several fire departments throughout Tennessee provide and install free smoke detectors to families that cannot afford them.

Poisoning Deaths

Poisoning deaths have increased in the United States, with legal and illegal drugs causing the majority of poisoning deaths³⁹. Unintentional poisoning deaths increased by 160% from 1999 to 2009. Opioid analgesic pain relievers were involved in the most drug poisoning deaths of any specified drugs. Nationally, boys (vs. girls) and teens are more likely to die than girls from unintentional poisoning⁴⁰.

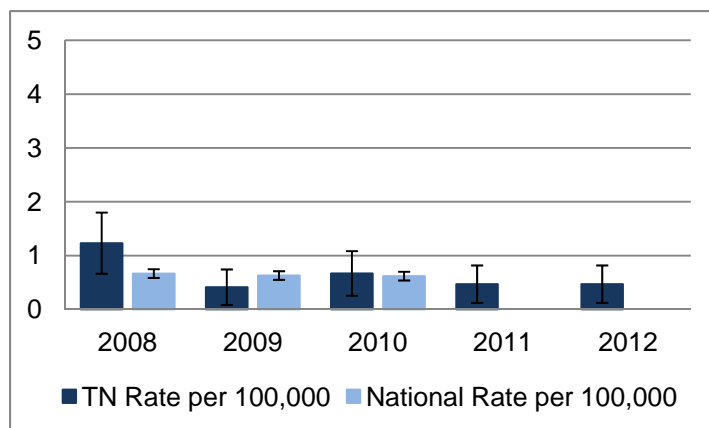


Figure 23—Poison-Related Deaths Per 100,000 Population, 2008-2012⁴¹

Seven children died in Tennessee as the result of a poison-related incident in 2012, representing **0.8 percent of all child fatalities reviewed**. Two of the deaths were to males, five were to females. **All seven poisoning fatalities in Tennessee involved prescription drugs.**

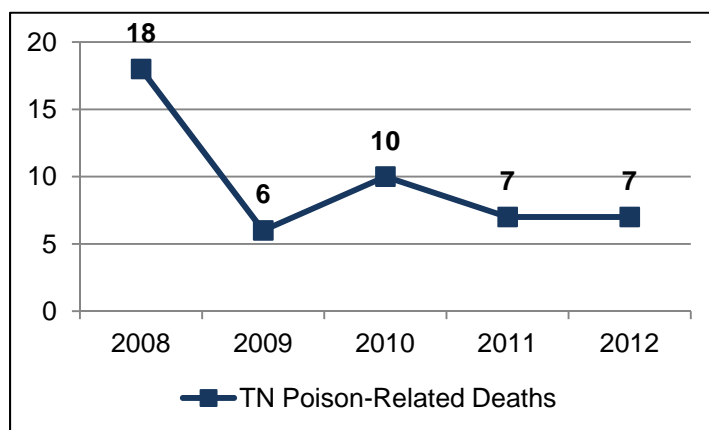


Figure 24—TN Poison-Related Deaths, Age 0-17, 2008-2012

³⁹ Centers for Disease Control and Prevention: National Center for Health Statistics. NCHS Fact Sheet: NCHS Data on Drug Poisoning. Accessed at http://www.cdc.gov/nchs/data/factsheets/factsheet_drug_poisoning.htm

⁴⁰ Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). Accessed at http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html

⁴¹ Error bars represent 95% confidence intervals for the crude rate estimates. National level data for 2011-12 are not available.

Table 20—Poison-Related Deaths by Substance and Age

Age	Number of Deaths	Prescription Drug	Over-the-Counter Drugs	Other
<1 Year	0	0	0	0
1-4 Years	1	1	0	0
5-9 Years	0	0	0	0
10-14 Years	1	1	0	0
15-17 Years	5	5	0	2
Total⁴²	7	7	0	2

FOCUSING ON PREVENTION



Potential prevention opportunities include:

- Educational campaign regarding prescription drug abuse
- Educational campaign regarding proper disposal of prescription drugs
- Secure drop-off locations for unused medications

Current prevention efforts in Tennessee include:

- The Tennessee Department of Health and Department of Environment and Conservation have partnered to place 80 secure drug drop-off boxes throughout Tennessee.
- The Tennessee General Assembly passed the Prescription Safety Act in 2012, enacting stricter requirements related to prescription of controlled substances.
- The Bureau of TennCare has developed prior authorization requirements for long-acting narcotic medications.

⁴² The total number of the various types of drugs/poisoning agents may exceed the number of deaths because multiple drugs/substances may have been involved in one death.

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 0 to 18⁴³. Approximately 2.8 million children nationally are treated in emergency rooms for fall related injuries. In 2010, 99 children between 0 to 18 died nationally of unintentional fall injuries (.13 per 100,000)⁴⁴; boys have higher rates of fall-related deaths than girls.

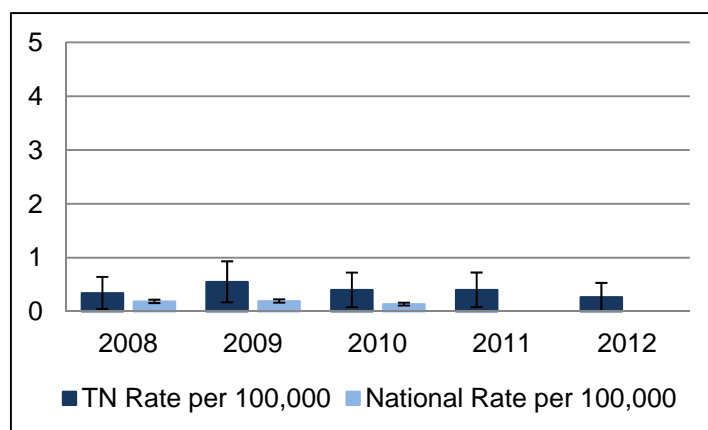


Figure 25—Fall/Crush Deaths Per 100,000 Population, 2008-2012⁴⁵

In Tennessee, four children died as the result of a crush or fall injury in 2011. **These four deaths represent 0.5 percent of all child fatalities reviewed.**

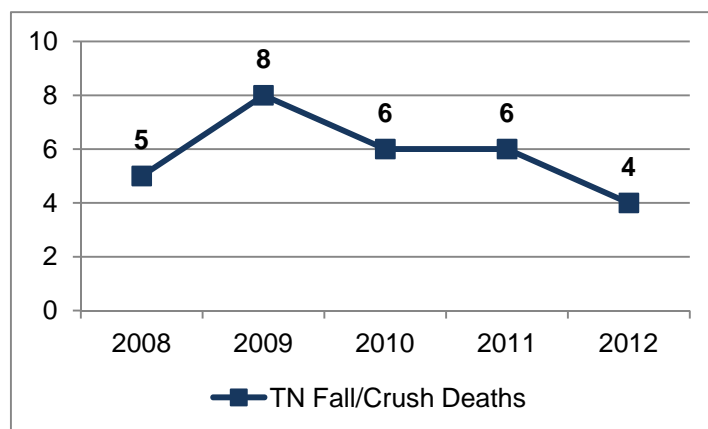


Figure 26—TN Fall/Crush Deaths, Age 0-17, 2008-2012

⁴³ 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/safecild/Falls/index.html>

⁴⁴ Centers for Disease Control and Prevention: National Center for Injury Prevention and Control. Injury Prevention Web-based Injury Statistics Query System (WISQARS). Accessed at http://www.cdc.gov/injury/wisqars/fatal_injury_reports.html

⁴⁵ Error bars represent 95% confidence intervals for the crude rate estimates. National level data for 2011-12 are not available.

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 TV/furniture tip-overs.
- Fall/crush prevention is included in a Refugee Safety education series provided by Safe Kids in Middle Tennessee.
- Safe Kids has published multiple media reports about fall/crush injuries over the last 2–3 years.

State-Level Activities

In December 2012, the State Child Fatality Review Team met to review aggregate child death data from the 2011 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. In contrast to previous years during which a longer list of recommendations was released, the State Team decided to focus on a few key strategies for reducing child fatalities in Tennessee. This decision reflected a potentially better practice identified during a series of national meetings aimed at strengthening state child fatality reviews.

The State Team made the following recommendations in the 2011 report:

- An aggressive campaign to educate infant caregivers in every county of the state on safe sleep practices, with a particular focus on reducing racial disparities.
- Incorporation of safety programs such as “Battle of the Belt” and the Tennessee 4-H ATV Safety Program into school-based presentations to middle- and high-school students.
- Active partnerships with local teams to minimize the amount of records with fields marked as “unknown” or left blank, to be accomplished by implementing training and quality improvement procedures.

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 partnered with agencies across the state to distribute over 80,000 educational materials to parents, healthcare providers, child care agencies, social services providers and other caregivers.
- The Department of Children’s Services developed a pilot project to educate new resource parents about safe sleep. Staff created a toolkit for assessing the sleep environment and developed processes for procuring a crib for the infant in the event that one is not available.
- The Tennessee Department of Health developed a hospital safe sleep policy project. The project provides an incentive for hospitals to develop a safe sleep policy. As part of that project, training materials were developed for providers.
- Cribs were distributed to the regional health departments to provide a safe sleep environment to families that could not afford one.
- Department of Health staff participated in the federal Collaborative Improvement and Innovation Network (CoIIN) project related to reducing Sudden Unexpected Infant Death (SUID) and Sudden Infant Death Syndrome (SIDS). Tennessee staff presented at the national level on state-level initiatives aimed at reducing SUID/SIDS.

Teen Driving

- The Department of Health collaborated with the Department of Education and the Trauma Centers to increase the involvement in the Battle of the Belt seat belt program. In the 2012–13 school year nine schools participated in the program and every school that completed the educational campaign showed an increase in seatbelt usage. In the current 2013-14 school year, 25 schools are participating in the competition; representing almost a three- fold increase in participation compared to 2012.
- A teen driving task force was developed 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. The goal of this task force is to increase the teen motor vehicle accident 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 developed a website to promote teen driving prevention activities among the schools. The website allows anyone to click on a county and get 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.

Child Fatality Review Procedures

- Tennessee Department of Health staff organized a training for local Child Fatality Review team members and leaders. Three trainings were held—one in each grand division. Approximately 153 individuals attended the training. Staff from the National Maternal and Child Health Center for Child Death Review assisted in facilitation of the training. Attendees learned about the purpose of Child Fatality Review, how to conduct an effective meeting, processes for reviewing cases, and strategies for engaging in community prevention activities.
- Tennessee Department of Health developed a new member orientation webinar. One webinar has been held and approximately 35 individuals attended.
- Tennessee Department of Health staff reviewed records submitted by the local Child Fatality Review teams. When missing or inconsistent data was found, the teams were notified and asked to submit data revisions. Staff created data queries to facilitate the identification of missing or inconsistent data.
- Tennessee Department of Health staff created a “Tennessee Child Fatality Guidelines” manual with information on the purpose of child fatality review, the process of reviewing a death and the role of each member of the team. Manuals were distributed at the training sessions and through local team meetings. Staff also created and presented an orientation webinar for new members of local Child Fatality Review teams. The webinar was archived for future use as needed by new local or state team members.
- The newly developed DCS Child Death Review (CDR) was implemented on August 29th, 2013. The purpose of the CDR is to promote learning from deaths and near deaths to support systemic changes that influence increasingly safe

outcomes for staff, children and families. In order to achieve this, the CDR utilizes investigative and analytical methods from the field of Safety Science and Qualitative Analysis for a comprehensive and systemic review of CDR data. An annual report will be distributed to the public following the first quarter of each calendar year and will include child death and near death data, CDR findings, and recommendations informed by the CDR process.

Local 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:

- Knox County developed the East Tennessee Safe Sleep Initiative (ETSSI); a group consisting of multiple professional representatives from hospitals, home visiting programs, childcare centers, and public health. The mission of the group is to prevent infant deaths due to unsafe sleep environment in the East Tennessee community. The group developed three goals:
 - Goal 1: Educate parents, child caregivers, and healthcare professionals in East Tennessee about the dangers of unsafe sleep environments for infants.
 - Goal 2: Create a policy to model safe sleep practices in our community hospitals.
 - Goal 3: Provide safe sleep environments for families unable to afford them.

Members of ETSSI have made progress on all three goals.

- Teams in the Mid-Cumberland region noted a pattern of sleep-related infant deaths in Dickson County and developed a plan to target that county for prevention. One team member approached the Dickson movie theater about running a safe sleep message on the screen before movies. The team was successful and the “ABC’s of Safe Sleep” message now plays before movies start at the Dickson theater.
- A team in the Southeast region identified an opportunity for community education related to preventing infant deaths. Members of the team planned an infant mortality summit in Bradley County for physicians and other healthcare providers. The goal of the summit was to provide education on some of the causes of infant death including unsafe sleep environments and early elective deliveries.
- After noting a cluster of suicide deaths, a local team in East Tennessee decided they needed to take action. Members of the local CFR team wrote a letter to the local school superintendent about warning signs of suicide.
- One of the local CFR teams in Northeast Tennessee assisted Niswonger Children's Hospital with its application to start a Safe Kids Northeast Tennessee

coalition. This region of Tennessee is the only one without Safe Kids representation, and the team believes establishing a coalition will allow greater collaboration among all the organizations in the region for childhood injury prevention.

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—20% 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. Reducing sleep-related infant deaths, motor vehicle collisions and suicides as well as improving death scene investigation documentation were all identified as priority areas for this year's recommendations to the Governor and General Assembly, as outlined below:

- Continue the safe sleep campaign with particular emphasis on education for caregivers (grandparents, parents, and babysitters) and health care providers (pediatricians, family physicians, obstetricians, and nurse practitioners).
- Partner with schools to educate parents and teens concerning proper restraints and distracted driving while in a motor vehicle.
- Identify current mental health services in the community, particularly in schools, communicate existing resources to key school personnel, and explore opportunities for expanding school-based mental health services.
- Increase the number of Sudden Unexpected Infant Death Investigation (SUIDI) forms that are completed by the person conducting the death scene investigation and within 24 hours of the time of death.

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.

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Appendix B—Glossary

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. (A narrower, more specific classification than revealed by Manner of Death.)

CFRT (Child Fatality Review 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.

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

CSS (Children's Special Services) – Tennessee Department of Health program that provides medical care and coordination 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 – Official classification of death, as identified by one of several broad categories: 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 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 CFRT.

Appendix C—Child Deaths by County of Residence

Table 21—Child Fatalities (Number and Rate) By County, 2012⁴⁶

County Name	Number of Deaths	Population 0-17 Yrs	Rate per 100,000
TENNESSEE	911	1,492,072	61.1
Anderson	9	15,912	56.6
Bedford	4	12,031	33.2
Benton	2	3,242	61.7
Bledsoe	0	2,640	0.0
Blount	9	26,554	33.9
Bradley	17	22,957	74.1
Campbell	3	8,545	35.1
Cannon	4	2,901	137.9
Carroll	4	6,295	63.5
Carter	9	11,329	79.4
Cheatham	9	9,429	95.5
Chester	1	3,997	25.0
Claiborne	3	6,458	46.5
Clay	3	1,588	188.9
Cocke	2	7,398	27.0
Coffee	6	12,638	47.5
Crockett	3	3,516	85.3
Cumberland	5	10,427	48.0
Davidson	96	143,189	67.0
Decatur	1	2,451	40.8
DeKalb	2	4,173	47.9
Dickson	6	12,054	49.8
Dyer	12	9,334	128.6
Fayette	2	8,555	23.4
Fentress	3	3,927	76.4
Franklin	6	8,755	68.5
Gibson	2	12,081	16.6
Giles	3	6,271	47.8
Grainger	3	4,894	61.3
Greene	7	14,296	49.0
Grundy	5	3,034	164.8
Hamblen	10	14,575	68.6

⁴⁶ Data source: Tennessee Department of Health, Division of Policy, Planning and Assessment, Office of Health Statistics. Death Statistical System, 2012. Nashville, Tennessee.

County Name	Number of Deaths	Population 0-17 Yrs	Rate per 100,000
Hamilton	48	74,487	64.4
Hancock	0	1,403	0.0
Hardeman	2	5,342	37.4
Hardin	4	5,428	73.7
Hawkins	10	12,067	82.9
Haywood	7	4,440	157.7
Henderson	6	6,601	90.9
Henry	4	6,811	58.7
Hickman	0	5,176	0.0
Houston	0	1,914	0.0
Humphreys	3	4,114	72.9
Jackson	0	2,187	0.0
Jefferson	7	11,361	61.6
Johnson	1	3,237	30.9
Knox	42	96,084	43.7
Lake	2	1,265	158.1
Lauderdale	7	6,527	107.2
Lawrence	9	10,370	86.8
Lewis	1	2,689	37.2
Lincoln	5	7,544	66.3
Loudon	3	9,832	30.5
McMinn	4	11,598	34.5
McNairy	2	5,934	33.7
Macon	7	5,511	127.0
Madison	17	23,859	71.3
Marion	6	5,991	100.2
Marshall	5	7,315	68.4
Maury	12	19,455	61.7
Meigs	2	2,458	81.4
Monroe	2	9,905	20.2
Montgomery	34	49,797	68.3
Moore	1	1,307	76.5
Morgan	3	4,349	69.0
Obion	4	6,979	57.3
Overton	4	5,023	79.6
Perry	0	1,734	0.0
Pickett	0	957	0.0
Polk	6	3,607	166.3

County Name	Number of Deaths	Population 0-17 Yrs	Rate per 100,000
Putnam	4	16,084	24.9
Rhea	9	7,450	120.8
Roane	9	10,689	84.2
Robertson	7	16,839	41.6
Rutherford	32	70,505	45.4
Scott	2	5,465	36.6
Sequatchie	2	3,269	61.2
Sevier	12	19,889	60.3
Shelby	208	242,156	85.9
Smith	2	4,482	44.6
Stewart	2	2,879	69.5
Sullivan	17	31,334	54.3
Sumner	11	40,422	27.2
Tipton	7	16,114	43.4
Trousdale	0	1,818	0.0
Unicoi	1	3,563	28.1
Union	8	4,433	180.5
Van Buren	3	1,084	276.8
Warren	6	9,488	63.2
Washington	16	25,150	63.6
Wayne	2	3,128	63.9
Weakley	5	7,266	68.8
White	4	5,725	69.9
Williamson	13	54,036	24.1
Wilson	8	28,700	27.9

Appendix D—Infant Deaths by County of Residence

Table 22—Infant Mortality (Number and Rate), By County, 2012⁴⁷

County Name	Number of Infant Deaths	Number of Live Births	Rate per 1,000 Live Births
TENNESSEE	576	80,202	7.2
Anderson	6	817	7.3
Bedford	3	619	4.8
Benton	0	152	0.0
Bledsoe	0	116	0.0
Blount	4	1,272	3.1
Bradley	9	1,169	7.7
Campbell	1	415	2.4
Cannon	2	155	12.9
Carroll	3	330	9.1
Carter	3	517	5.8
Cheatham	3	443	6.8
Chester	1	180	5.6
Claiborne	3	301	10.0
Clay	1	94	10.6
Cocke	1	387	2.6
Coffee	3	633	4.7
Crockett	2	192	10.4
Cumberland	3	573	5.2
Davidson	69	9,721	7.1
Decatur	0	101	0.0
DeKalb	2	230	8.7
Dickson	1	570	1.8
Dyer	10	496	20.2
Fayette	0	425	0.0
Fentress	3	185	16.2
Franklin	4	399	10.0
Gibson	2	607	3.3
Giles	2	294	6.8
Grainger	1	220	4.5

⁴⁷ Data source: Deaths: Tennessee Department of Health, Division of Policy, Planning and Assessment, Office of Health Statistics. Death Statistical System, 2012. Nashville, Tennessee. Births: TN Department of Health, Office of Health Statistics, Birth Statistical System. Statistics were for Tennessee residents only.

County Name	Number of Infant Deaths	Number of Live Births	Rate per 1,000 Live Births
Greene	6	601	10.0
Grundy	2	139	14.4
Hamblen	5	793	6.3
Hamilton	33	4,171	7.9
Hancock	0	84	0.0
Hardeman	1	266	3.8
Hardin	2	255	7.8
Hawkins	6	577	10.4
Haywood	5	223	22.4
Henderson	2	327	6.1
Henry	2	324	6.2
Hickman	0	270	0.0
Houston	0	74	0.0
Humphreys	1	219	4.6
Jackson	0	113	0.0
Jefferson	4	541	7.4
Johnson	1	131	7.6
Knox	29	5,285	5.5
Lake	1	65	15.4
Lauderdale	5	303	16.5
Lawrence	4	559	7.2
Lewis	1	147	6.8
Lincoln	3	375	8.0
Loudon	1	543	1.8
McMinn	3	559	5.4
McNairy	0	315	0.0
Macon	3	313	9.6
Madison	12	1,294	9.3
Marion	2	304	6.6
Marshall	4	353	11.3
Maury	11	1,060	10.4
Meigs	0	112	0.0
Monroe	1	469	2.1
Montgomery	19	3,620	5.2
Moore	0	49	0.0
Morgan	1	186	5.4
Obion	4	376	10.6

County Name	Number of Infant Deaths	Number of Live Births	Rate per 1,000 Live Births
Overton	2	235	8.5
Perry	0	87	0.0
Pickett	0	35	0.0
Polk	3	135	22.2
Putnam	1	880	1.1
Rhea	5	364	13.7
Roane	5	478	10.5
Robertson	6	921	6.5
Rutherford	15	3,631	4.1
Scott	0	275	0.0
Sequatchie	1	115	8.7
Sevier	6	1,023	5.9
Shelby	148	13,898	10.6
Smith	1	210	4.8
Stewart	1	137	7.3
Sullivan	10	1,596	6.3
Sumner	9	1,932	4.7
Tipton	5	738	6.8
Trousdale	0	80	0.0
Unicoi	1	160	6.3
Union	5	252	19.8
Van Buren	2	54	37.0
Warren	3	456	6.6
Washington	12	1,393	8.6
Wayne	2	177	11.3
Weakley	4	349	11.5
White	3	290	10.3
Williamson	7	1,933	3.6
Wilson	3	1,360	2.2

Appendix E—Local Child Fatality Review Team Members and Staff

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

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

Beth Bare	Gary Cutshall	Donna Pleasant
Christopher Bower	Dr. Mike DeVoe	Pat Rash
Randy Bowers	Deborah Dunn	Sam Rutherford
Regina Bowman	Ashley Fine	Lori Shields
Shawn Brown	Kim Garland	Dr. Melissa Snyder
Heidi Casey	Michelle Hansen	Joanna Swinehart
Dr. Sandra Castro	Dr. David Kirschke	Jared Taylor
Tony Clark	Rhonda Lindsay	Regan Tilson
Dr. Karen Cline-Parhamovich	Diane Mays	Fay Willis
Mike Cooke	William Monk	Pamela Winters
Diane Cupp	Shirley Odem	
	Sheree Pierce	

JD2 (Sullivan County)

Kathy Benedetto	Barry Honeycutt	Jim Perry
Julie Carter	Joel Jones	Bobby Russell
Reece Christian	Dr. Stephen May	Sam Rutherford
Dr. Steven Combs	Gary Mayes	Lib Sells
Dr. Michael DeVoe	Debbie McCauley	Dr. Mickey Spivey
John Eanes	Darrell Mears	Barry Stabus
Danielle Eller	Janice Miller	Michelle Steadman
Gigi Epps	Marjorie Miller	Chris Tincher
William Harper	Kristie Monds	Myra Hale Winter
Pam Harr	Heather Mullins	Chasty Zeolia
Cindy Hawkins	Teresa Nelson	

JD3 (Greene, Hamblen, Hancock, and Hawkins Counties)

Kristina Adams	Rhonda Craft	Christian Newman
Carmelia Alexander	Betty Davis	Michael O'Keefe
Michelle Arwood	Eddie Davis	Sheree Pierce
Berkeley Bell	Kim Fox	Pat Rash
Angie Bellamy	Jaime Green-Lamb	Laura Reneau- Dockery
Brenda Cannon	Johnny B. Gulley	Cathy Sandridge
Terry Cannon	Calvin Hawkins	Robert Sayne
Lori Carmichael	Deana Hicks	Joanna Swinehart
Dr. Karen Cline-Parhamovich	Dr. David Kirschke	Cynthia Trent Doty
Diane Cofield	Billy Love	Elizabeth Willis
Terry Collinsworth	Dr. Dale Lynch	
	Susan Mitchell-Barnes	

JD4 (Cocke, Grainger, Jefferson, and Sevier Counties)

Charles Arms
Don Best
Susan Blair
Susan Cook
Kristin Dean

John Holland
Dr. David McConnell
Teresa Moyers
Charles Murphy
Bill Ramsey

Sheri Smith
Dr. Tara Sturdivant
Cindy Vanover
Derrick Woods

JD5 (Blount County)

Dr. Lori Baxter
Mary Beth Blevins
Judy Cole
Cindy Crawford
Tabitha Damron

Mike Flynn
Amanda May
Sara Loudermilk Propst
Ronnie Pryor
Kris Sanders

Mike Seratt
Sheri Smith
Michael Teague
Dr. Tara Sturdivant

JD6 (Knox County)

Mona Blanton-Kitts
LeeAnn Brabson
John Brinkley
Dr. Kathleen Brown
Kimberly Christensen
Tracy Davis
Dr. Kristin Dean
Chris Gregory

Brad Hall
Rita Hillhouse
Kyle Hixson
Dr. David Kitts
Charm Knight
Alicia Mastronardi
Christopher McLain
Dr. Mary Palmer

Heather Reyda
Kit Rodgers
Robin Slattery
Gerald Smith
Miranda Spangler
Joanie Stewart
Lisa Wagoner
Connie Waters

JD7 (Anderson County)

Vaughn Becker
Patty Campbell
Dr. Thomas Clary
Kevin Craig
Sandra Donaghy

Bobbi Jo Henderson
Dr. Larissa Henderson
Darinka Mileusnic-
Polchan
Stacy Park

Angela Perez
Joe Pinkerton
Sheri Smith
Dr. Tara Sturdivant

JD8 (Campbell, Claiborne, Fentress, Scott, and Union Counties)

John Bond
Kerri Byrd-Hamby
Steve Carson
Susan Chambers-
Phillips

Martha Anne Fairchild
Christy Ferris
Shannon Follett
Kim Hammock
Ricky Jeffers

Andrea Meadows
Mary Lou Seaman
Sheri Smith
Dr. Tara Sturdivant
Barbara Williams

JD9 (Loudon, Meigs, Morgan, and Roane Counties)

Dr. William Bennett
Kristy Bledsoe
Julia Clevenger
Heather Cupp

Melissa Denton
Vickie Fox
Dr. James P. Guider
Tim Guider

Mary Harding
Sheri Smith
Dr. Mona William-Hayes
Dr. Tara Sturdivant

JD10 (Bradley, McMinn, Monroe, and Polk Counties)

Billie Ammons	Eddie Byrum	Jeffrey Miller
Steve Bebb	Randi Gibson	Gayla Miller
Jeannie Bentley	Joe Guy	Brian Pritchard
Dr. Jan BeVille	Vant Hardaway	Dr. Iris Snider
Elisha Bishop	Kenneth Higdon	BD Tharp
Bill Bivens	Sandra Holder	Eloise Waters
Eric Blach	Suzanne Jackson	
Deanna Brooks	Nita Jernigan	

JD11 (Hamilton County)

Beverly Allen	Jackie Jolley	Dr. Brent Morris
Denise Black	Henry McElvain	Bill Phillips
Dr. Valerie Boaz	Shelley McGraw	Sheryl Rogers
Barbara Breedwell	Ed Merritt	Dr. Lisa Lowery-Smith
Tami Chamberlain	Dr. James Metcalfe	
Dr. AnnaMaria Church	Charles Minor	

JD12 (Bledsoe, Franklin, Grundy, Marion, Rhea, and Sequatchie Counties)

Billie Ammons	Keith Herron	Rhonda Sills
Jeannie Bentley	Sandra Holder	Brenda Sowter
Dr. Jan BeVille	Paul Howard	Coy Swanger
Keith Brown	Nita Jernigan	Mike Taylor
Beth Cassidy	Jodi Lockhardt	EliseYoung
Kimberly Dean	Charlene Nunley	
Diane Easterly	Karen Shepherd	

JD13 (Clay, Cumberland, DeKalb, Overton, Pickett, Putnam, and White Counties)

Greg Bowman	Anne Stamps	Randall A. York
Dr. James Breyer	Dr. Fred Vossel	
John Rust	Dr. James Wallace	
Tonya Scott	Richard Williams	

JD14 (Coffee County)

Kelsie Adams	Robin Cutrell	Paul Tibbs
Dr. Al Brandon	Susan Minger	Elaine Williams
Dr. David Brumley	Deborah Molder	L.B. Windley, Jr.
John Cathey	Dr. Clifford Seyler	Jan Winters
Mike Clements	Dr. Langdon Smith	

JD15 (Jackson, Macon, Smith, Trousdale, and Wilson Counties)

Darlene Brown	Dr. Sandra Phillips	Dr. Fred Vossel
Steve Hopper	John Rust	Ashley Willis
Heather Jeffries	Robert Stafford	

JD16 (Cannon and Rutherford Counties)

Dr. Alison Asaro

Doris Denton
Dana Garrett
Lauren Hemenway
Carl Hudgens
Jason Lamberth
John Liehr

Toni McDaniel
Nathan McDaniel
Nicole Miller
Carrie Niederhauser
Mike Nunley
Britt Reed
Tommy Roberts

Kevin Stolinsky
Dwight Stone
Michael Thomas
Dr. Fred Vossel
Dr. Barton Warner
Rick Woodward

JD17 (Bedford, Lincoln, Marshall, and Moore Counties)

Cindy Abels
Brian Bruce
Dr. David Brumley
Michael Clements
Susan Ferencel
Mary Gordon

Shinar Hurd
Leigh Anne Jackson
Deborah Molder
Jill Murdock
William Reuter
Dr. Kyle Spears

Dr. Langdon Smith

Elaine Williams
Richard Wright
Jan Winters

JD18 (Sumner County)

Dr. Alison Asaro

Kenny Armstrong
Jay Austin
Amy Burke-Saylers
Denny Coarsey
Jayson Criddle
Billy Crook
Denise Etheridge
Mark Jenkins

Thomas King
Tammy Lee
Don Linzy
Jan Lovell
Mickey Miller
Jeff Mingledorff
Joe Palmer
John Ray Pinkston
Morgan Radley

Emily Renz
Lea Row
Scott Ryan
Angela Sadler
Alex Tangus
Al West
Ray Whitley
Ronnie Williams

JD1901 (Montgomery County)

Dr. Alison Asaro

Eric Berg
Dr. David Brown
John Carney
Stacey Coulter
Frederick Davidson
Mary Davila
Karmen Davis

Marianne Erdman
Eric Ewing
Menzo Faasen
Maurice Hobbs
Stephen Kent
Scott Leifson
Kimberly Lund
David Mendoza

Angel Miller
Domenick Nardi
Gary Perry
Justin Sterne
Joey Smith
Julie Webb
Sarah Wilkins
Danette T. Woodcock

JD1902 (Robertson County)

Dr. Alison Asaro

Dr. Hunter Butler
Rebecca Chafatelli
Deanna Groves

Dana Holt
J Scott Jordan
James Kendrick
Elizabeth Leonard

Dent Morris
Sandra Uhles
Vanessa Watkins

JD20 (Davidson County)

Maryann Abdallah
Vicki Beaver
Bonnie Beneke
Vickie Blair-Fleming
Verena Brown
Sarah Bruner
Allison Butler
Susan Campbell
Amy Campbell-Pitts
Ron Carter
Dawn Harper
Amanda Holley

Brian Holmgren
Carol Jones
Selene Julia
Timothy Langford
Tina Lester
Adele Lewis
Deborah Lowen
Brooke McKelvey
Michael Meadors
Katy Miller
Matthew Muenzen
Janet Nielsen

Danny Postiglione
Michelle Rikli
Carolyn Riviere
Sue Ross
Danielle Russell
Tom Sharp
Robert Taylor
Purnima Unni
Jennifer Weatherly
Kim Wyche-Etheridge

JD2101 (Hickman, Lewis, and Perry Counties)

Dr. David Brumley
Robin Crowell
Tammy Dixon
Jennifer Harris

Dr. Zachary Hutchens
Carol Mione
Elaine Williams
Dr. Langdon Smith

Mike Clements
Deborah Molder
Jan Winters

JD2102 (Williamson County)

Dr. Alison Asaro
Amy Baynes
Stokey Bourque
Eleanor Brantley
Priscilla Bright
Robert Carden
Terry Harris
Michael Jordan
Tommy Justus

Mark king
Feng Li
Jeff Long
Tamara Mick
Catherine Montgomery
Sharonica Nelson
Paul Rigsby
Lisa Robison
Tameka Sanders

Dr. Samuel Smith
Ashley Townsend
Michael Wallace
Richard Westgate
Justin Whitwell
Benjamin Williams
John Wood

JD2201 (Giles, Lawrence, and Wayne Counties)

Dustin Blade
Christie Brown
Dr. David Brumley
Elaine Russell Brunson
Michael Chapman

Joyce Green
Roy Griggs
Michael Clements
Laquita Lockridge
Scott Storey

Dr. Langdon Smith
Dr. Keith Tolar
Elaine Williams
Deborah Molder
Jan Winters

JD2202 (Maury County)

Dr. David Brumley
Mike Clements
Danny Cupples

Jenny Dudzinski
Jeff Duncan
Dr. Langdon Smith

April Tarpley
Elaine Williams
Jan Winters

JD23 (Cheatham, Dickson, Houston, Humphreys, and Stewart Counties)

Dr. Alison Asaro	Maggie Filson	Donna Nichols
Darell Allison	Shannon Heflin	Stacey Patterson
Marion Biggs	Brian Hooper	Glenn Dale Smith
JD Blackwell	Dr. Lawrence Jackson	Shayna Smith
Eddie Breeden	Robert Lee	Kim Stringfield
Alana Carmical	Ginger Lyle	Gail Tarpy
Chris Davis	Dr. Venk Mani	Evelyn Vaillencourt
Bryan DeRose	Kay Marshock	Vanessa Watkins
Regina Duffie	Daniel Martin	Judy Wilson
James Eubank	Vinny Morgano	

JD24 (Benton, Carroll, Decatur, Hardin, and Henry Counties)

Steve Cantrell	Diane Oman	Gary Vandiver
Dr. Shavetta Conner	Ollie Parker	James Vinson
Christy Espey	Kathy Smith	Becky Butler White
Johnny Hill	Danny Tucker	

JD25 (Fayette, Hardeman, Lauderdale, McNairy, and Tipton Counties)

Kinney Bridges	Richard Griggs	Catherine Walsh
Dr. Karen Codjoe	Linda Moss	Sheri Wassel
Dr. Shavetta Conner	Kaleb Sanders	David Webb
Scottie DeLashmit	Kathy Smith	

JD26 (Chester, Henderson, and Madison Counties)

Trista Davis	Amy Jones	Stuart Mills
Dr. Tony Emison	Roger Loftin	Dr. Lisa Piercey
Dr. Reggie Henderson	Curtis Manfield	David Woolford

JD27 (Obion and Weakley Counties)

Dr. Shavetta Conner	Angie Taylor	Candice Winstead
Philip "Andy" Smith	Thomas Thomas	Rick Workman
Kathy Smith	Laura Toney	
Debbie Tarkington	Randall Walker	

JD28 (Crockett, Gibson, and Haywood Counties)

Garry Brown	Tonika Noble	Brandon Ward
Dr. Shavetta Conner	Michael Phillips	Phyllis Webb
Dr. Tony Emison	Elashia Ramsey	
Roger Jenkins	Kathy Smith	

JD29 (Dyer and Lake Counties)

Phil Bivens	Jack Mauldin	Lisa Stanley
Jeff Box	Chad McNeill	Charles Stewart
Dr. John Cummings	James Medling	Phyllis Webb
Dr. Shavetta Conner	Chad Sipes	Nancy West
Joe England	Kathy Smith	Billy Williams

JD30 (Shelby County)

Maxine Bowles
Dr. Mark Bugnitz
Lee Branch
Dr. Karen Chancellor
Meg Harmeier
Paula Harris

Susan Helms
Danielle Hobbs
Dr. Karen Lakin
Jim Logan
Dr. Helen Morrow
Jennifer Nichols

Vanessa Roberts
Dr. Ajay Talati

JD31 (Van Buren and Warren Counties)

Peggy Bratcher
Jean Coffee
Doris Denton

Jackie Matheny
John Rust
Dr. Fred Vossel

Lisa Zavogiannis

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.