

CHILD FATALITIES IN TENNESSEE 2011



Tennessee Department of Health

Tennessee Department of Health Division of Family Health and Wellness Acknowledgements

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 Child Fatality Review Teams in the 31 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>

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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.

Approximately 40,000 children age 0-17 die annually in the United States¹. 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 has a system for reviewing child deaths.²

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.

A local CFR team exists in each of Tennessee's 31 judicial districts. Each team reviews all deaths of children 17 years of age or younger and makes 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.

The State CFR Team is composed of elected officials, commissioners, and other policy makers in the state of Tennessee as described in T.C.A. § 68-142-103. This team reviews the aggregate data from the local teams, analyzes statistics of the incidence and causes of child deaths, and makes recommendations to the Governor and General Assembly for their consideration in implementing laws, policies, and practices to prevent child deaths in Tennessee and to make improvements in protocols and procedures.

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.

¹ 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>.

² 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.

Of the 802 deaths meeting review criteria in 2011, reviews were completed on 799 (99.6%) and are represented in this annual report. In spite of their best efforts, local CFR teams were not able to complete the review of three child deaths (0.4% of all cases eligible for review). These case reviews are ongoing, and await results of contributing information, such as legal investigations or autopsy results; however, it is unlikely that these few cases (representing less than one half of one 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 data 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.

Specific efforts to improve the public health CFR process initiated in the past year include:

- The State Team started to meet quarterly (as opposed to annually) to follow up on recommendations outlined in the annual report.
- State-level TDH staff conducted quality reviews on reports from local teams to help identify opportunities for improving accuracy and completeness of reporting.
- Department of Health staff joined leadership from the Department of Children's Services in a series of national meetings sponsored by Casey Family Programs to identify strategies for strengthening the public health child fatality review process. One such strategy was to focus on a small number of key recommendations in the annual report, ensuring a concentrated effort on key priorities. This strategy was incorporated into subsequent State Team meetings and this annual report.
- The format was revised and the content expanded, using national CFR guidelines and incorporating more comparative information with national context.

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 which follow.

State Child Fatality Team Members (2011 Child Fatality Report)

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EXECUTIVE SUMMARY

Key Findings from the 2011 Child Fatality Review

General

- Fewer children died in Tennessee in 2011 as compared to previous years. Rates of death for children age 0-17 (per 100,000 population) for the last five years are shown in Figure 1. **The overall mortality rate dropped by 20% for Tennessee children between 2007-2011** (statistically significant, p-value <0.001). Tennessee's child mortality rate still exceeds the national average of 52.4 per 100,000 in 2010³, the latest year for which the national rate is available.

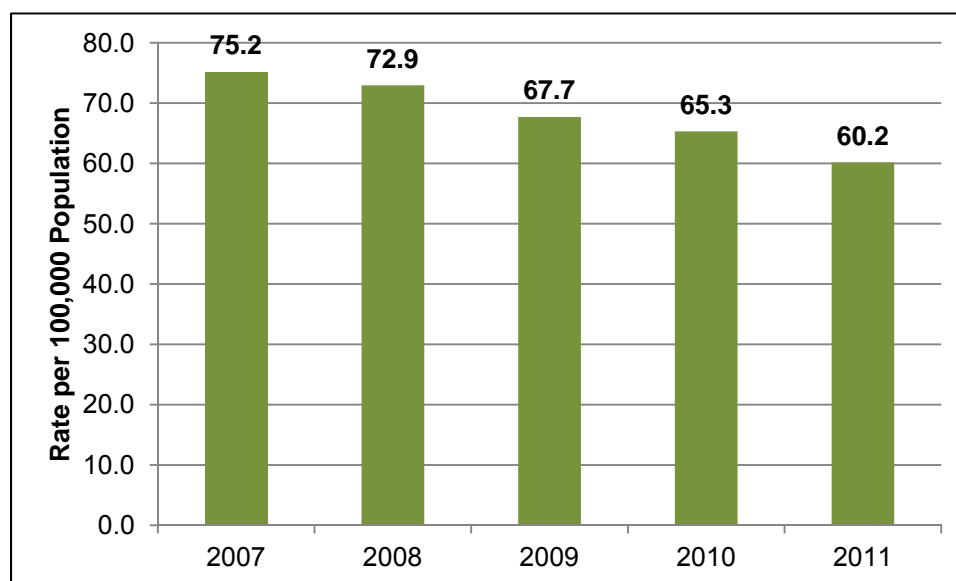


Figure 1—Rate of Death for TN Children Ages 0-17, 2007-2011

Table 1—Rate of Death for TN Children Ages 0-17, 2007-2011⁴

Year	Number of deaths	Number of children	Rate per 100,000
2007	1,087	1,445,006	75.2
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

- As expected, the first year of life continues to be the most perilous for Tennessee's children, accounting for 62.1% of all deaths to those through the

³ 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>.

⁴ Data source: Surveillance, Epidemiology, and Evaluation; Division of Policy, Planning and Assessment; Tennessee Department of Health.

age of 17. Children between the ages of 1-4 and 15-17 suffered the second highest percentage of deaths at 11.6% each.

- Tennessee’s male children, once again, died more frequently than females (54.7% vs. 44.5%, 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 2007-2011 but the rate remains substantially elevated and more rapid decreases are needed. There are ongoing efforts throughout the State to address racial disparities, with a specific emphasis on infant mortality. As an example, the Tennessee Department of Health has partnered with the University of Tennessee at Knoxville to provide cultural competency training for public health staff throughout Tennessee.

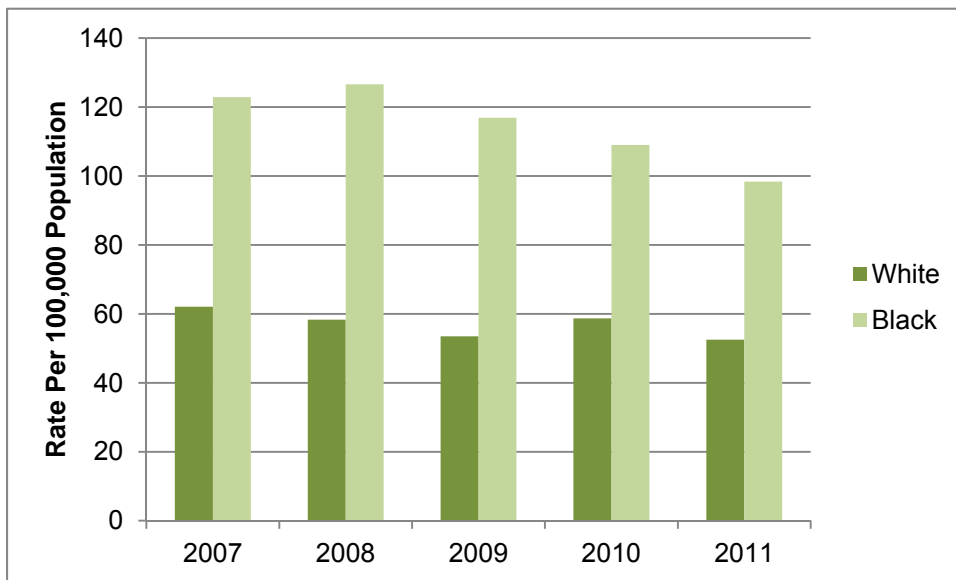


Figure 2—Rate of Death Among TN Children Ages 0-17, By Race, 2007-2011

Table 2—Rate of Death Among TN Children Ages 0-17, By Race, 2007-2011⁴

Year	White			Black		
	Number of deaths	Number of children	Rate per 100,000	Number of deaths	Number of children	Rate per 100,000
2007	685	1,102,543	62.1	385	313,271	122.9
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

Infant Mortality

- 109 infants died from suffocation, strangulation, or other causes in the sleep environment. This represents a marked decline (16.8%) from the 131 infants who died in 2010. Much effort has been made statewide in addressing the safe sleeping environment. An additional twelve 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).
- 499 deaths (62.5%) were by natural manner (medical causes); 156 deaths (19.5%) were by an accidental manner. By comparison, 60% of deaths in 2010 were attributed to natural manner while 21% were attributable to accidental manner.
- 39 deaths of children in 2011 (4.9%) were the result of homicide. This is unchanged from the 39 homicide deaths in 2010.
- Thirteen young people took their own lives during 2011 (1.6% of all deaths); this represents a sharp decline from the 24 deaths by suicide observed in 2010. Half of all suicides involved a weapon; two-thirds 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.
- 208 child deaths (26%) were classified as due to external causes, including motor vehicle, weapons, asphyxia, fire/burns, poisoning or overdose, and fall/crush. This represents a decline from the 29% observed in 2010.
- Sixty-nine children (8.6% of all deaths) died in motor vehicle crashes in 2011, virtually unchanged from the 68 vehicular deaths (7.8% of all deaths) in 2010.
- Sixty children (7.5% of all deaths) died of asphyxia; forty of these children died in a sleep-related environment. This represents a decline of 13% from 2010, when there were 69 asphyxia deaths, 48 of which occurred in a sleep-related environment.
- Thirty-eight children died from weapon injuries, which represents a 27% decline from the 52 children who died in 2010. 68% of weapons-related fatalities were due to firearms, 88% of which were handguns.
- Twenty children died by drowning, which represents a 20% decrease from the 25 drowning fatalities in 2010.

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

Category	2010 Rate⁵	2011 Rate⁵	2010-11 Trend
Infant Mortality (<1 year of age)	7.9	7.4	Improving
SIDS and Sleep-Related Infant Deaths	1.75	1.48	Improving
Natural (Medical)	35.1	33.4	Improving
Homicide	2.61	2.61	Stable
Suicide	1.60	0.87	Improving
Motor Vehicle	4.61	4.62	Stable
Asphyxia	4.61	4.02	Improving
Weapon-Related	3.48	2.55	Improving
Drowning	1.67	1.34	Improving
Fire/Burn	0.60	0.40	Improving
Poison-Related	0.67	0.47	Improving
Fall/Crush	0.40	0.40	Stable
Preventable Deaths	17.11	16.01	Improving

⁵ 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.

State Child Fatality Review Team Recommendations

The State Child Fatality Review Team met to review aggregate child death data and 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.

Safe Sleep

The number of sleep-related infant deaths declined in 2011. However, sleep-related infant deaths (20% of all infant deaths) remain a significant contributor to Tennessee's high infant mortality rate. **The State Team recommends 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.**

To accomplish this, the Department of Health will partner with Prevent Child Abuse Tennessee, the TN Commission on Children and Youth, UT Extension, and the Departments of Human Services, Education, and Children's Services to distribute a minimum of 80,000 Tennessee Department of Health educational materials (the "ABC's of Safe Sleep" campaign) by the end of 2013 to parents, healthcare providers, social service providers, child care agencies, parents, and other caregivers. The success of these efforts will be measured by the number of sleep-related infant deaths in subsequent years.

Teens

Motor vehicle-related fatalities are a substantial contributor to external causes of death among Tennessee's children, particularly among children ages 10-17, who account for 59.4% of all childhood motor vehicle fatalities. **The State Team recommends incorporating 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.**

The Department of Education, TBI, and the Tennessee Department of Health will collaborate to deliver educational interventions targeted to middle schools and high schools in the counties with the highest number of child deaths from external injuries. Schools will receive education by the end of 2013 concerning seat belt use, speeding, texting while driving, drinking and driving, riding in the back of pick-up trucks, and wearing helmets while using motorcycles, bicycles or ATV's. Educational efforts will be evaluated by tracking motor vehicle-related death rates among children ages 10-17.

Child Fatality Review Procedures

Data quality and integrity are paramount to a meaningful public health child fatality review. In order for the State and local teams to have the most robust information possible on which to base program and policy recommendations, **the State Team recommends 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.

To support continuous improvement of the Child Fatality Review process, The Tennessee Department of Health will convene stakeholders from the Department of Children’s Services, TBI, and the Tennessee Department of Health to identify ways to improve death reporting and investigation, including improving coordination of people involved in the death scene investigation and notification of DCS by law enforcement when appropriate, so that better information is available to local CFR teams during the review process.

These three key recommendations capture two critical domains of preventable child deaths and the third will better identify data trends and improve the process to identify other critical opportunities.

These three recommendations deliberately will guide and focus our efforts over the next year. We acknowledge and support the many other efforts and projects underway at the state and local levels to reduce preventable child deaths.

SUMMARY OF CHILD MORTALITY DATA

Manner 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.

The overall rate of child fatalities for 2011 was 60.2 per 100,000 in the population of children less than 18 years of age.

Figures 3-6, below, summarize the manners of death for 2011 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.

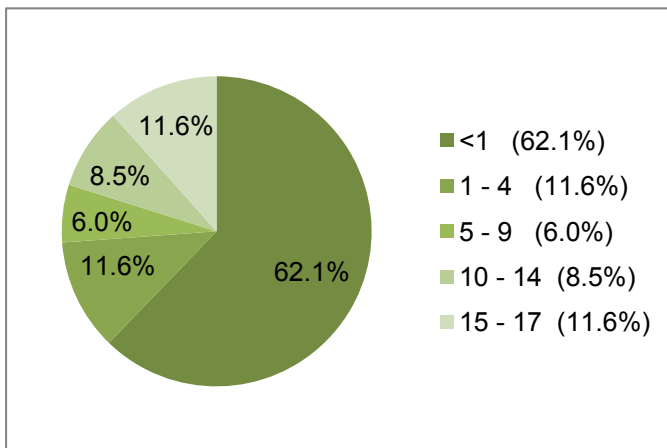


Figure 3—Death by Age

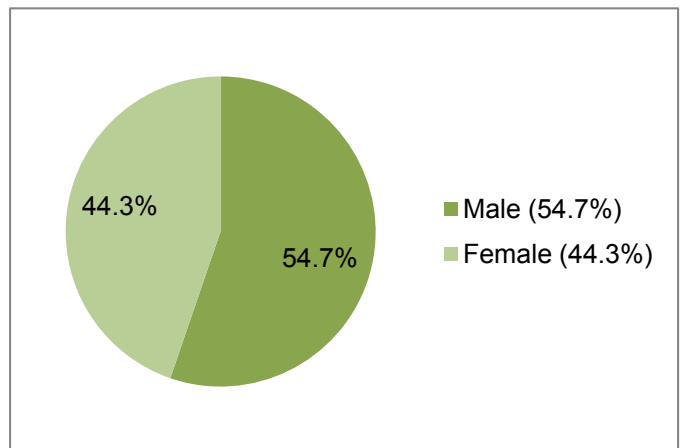


Figure 4—Death by Gender

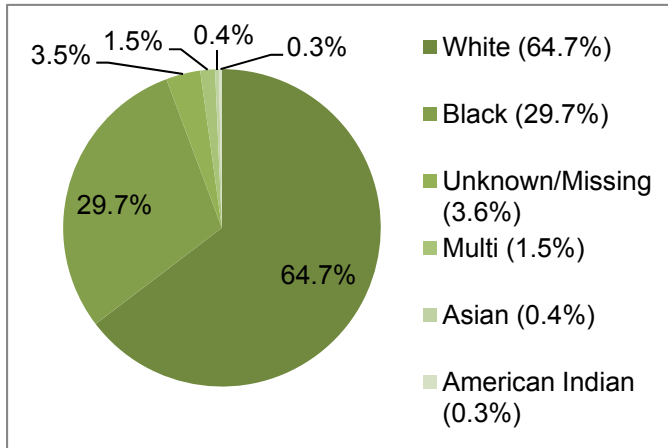


Figure 5—Death by Race

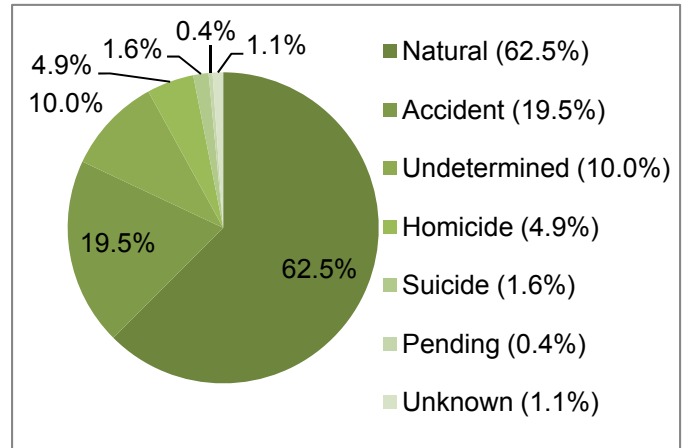


Figure 6—Manner of Death Summary

Table 4—Manner of Death Summary

	Natural	Accident	Homicide	Suicide	Undetermined	Unknown	Pending	Total
Age								
<1 Year	361	50	13	0	65	5	2	496
1-4 Years	48	27	6	0	9	2	1	93
5-9 Years	28	18	2	0	0	0	0	48
10-14 Years	39	25	1	1	2	0	0	68
15-17 Years	23	36	16	12	4	2	0	93
Unknown	0	0	1	0	0	0	0	1
Total	499	156	39	13	80	9	3	799
Race								
White	322	112	16	11	48	8	0	517
Black	144	38	21	1	29	1	3	237
Asian	3	0	0	0	0	0	0	3
American Indian	2	0	0	0	0	0	0	2
Pacific Islander	0	0	0	0	0	0	0	0
Multi-racial	10	1	0	0	1	0	0	12
Missing/Unknown	18	5	2	1	2	0	0	28
Total	499	156	39	13	80	9	3	799
Gender								
Male	262	84	26	8	49	7	1	437
Female	233	70	13	5	29	2	2	354
Unknown	4	2	0	0	2	0	0	8
Total	499	156	39	13	80	9	3	799

Cause of Death

The child fatality review (CFR) case report tool classifies causes of death as either **medical** causes or **external** causes. Medical causes are then further delineated by specific disease entities, while external causes are further delineated by the nature of the injury. Of the 799 deaths reviewed by the CFR teams in 2011:

- 62.5 percent were due to **medical** causes.
- 26.0 percent were due to **external** causes.
- 11.5 percent of cases were **unknown or could not be determined** as a medical or external cause.⁶

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

Table 5—Medical/External Causes of Death

Age	External Cause of Injury	Medical Condition	Undetermined if External or Medical ⁷	Unknown ⁷	Total
<1 Years	63	361	65	7	496
1-4 Years	33	48	9	3	93
5-9 Years	20	28	0	0	48
10-14 Years	27	39	2	0	68
15-17 Years	64	23	4	2	93
Unknown	1	0	0	0	1
Total	208	499	80	12	799

⁶ Of 92 cases marked as “Undetermined” or “Unknown,” 72 (78%) were less than one year of age. This reflects the inherent complexities in determining the manner and cause of infant deaths.

⁷ **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.

CHILD FATALITY REVIEW TEAM FINDINGS FOR ALL DEATHS

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 **239 deaths (29.9%) could probably have been prevented**.

Table 6—Preventability of Child Deaths (2011)

Manner of Death	Probably Not Preventable	Probably Preventable	Could Not Determine⁸	Unknown⁸	Total
Natural	420	26	28	25	499
Accident	6	130	9	11	156
Homicide	0	35	2	2	39
Suicide	3	7	1	2	13
Undetermined	11	37	27	5	80
Pending	0	2	0	1	3
Unknown	6	2	1	0	9
Total	446	239	68	46	799

⁸ **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

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 7 below reflects the 109 cases⁹ for which review teams found there was poor or absent supervision, child abuse, child neglect¹⁰, or other negligence.¹⁰

Table 7—Acts of Child Abuse or Neglect

Age	Poor or absent supervision	Child Abuse	Neglect	Other Negligence
<1 Year	10	6	5	33
1-4 Years	13	5	1	5
5-9 Years	1	0	0	3
10-14 Years	5	0	1	7
15-17 Years	5	0	0	9
Total	34	11	7	57

Deaths to Children with Special Circumstances

One-third of the deaths in 2011 involved children known to have suffered from a disability or chronic illness. Of those 258 children, 20 were enrolled in the Tennessee Department of Health’s Children’s Special Services program (CSS).

The families of 38 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 8—Children with Special Circumstances

Circumstance	Number of Deaths
Child had disability or chronic illness	258
If disabled, child was receiving Children’s Special Services (CSS)	20
Open child protective services (CPS) case at time of death ⁹	38

⁹ 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.

¹⁰ 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>

SUMMARY OF INFANT MORTALITY

Infant Mortality

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 8.3 in 2007 to 7.4 deaths per 1,000 live births in 2011, a decrease of 11%.¹¹ Tennessee still exceeds the national average for infant mortality (6.05 in 2011).¹²

In 2011, **496** Tennessee infant deaths¹³ were reviewed by local child fatality review teams. Table 9 provides a snapshot of the risk factors readily associated with infant mortality. It is important to note that, because the categories are not mutually exclusive, their total will exceed that of the 496 deaths.

Table 9—Risk Factors Associated with Infant Death¹³

	Natural	Accident	Homicide	Undetermined	Pending	Unknown	Total
Premature (<37 weeks)	252	12	4	12	0	2	282
Low birth weight (<2500 grams)	264	12	5	11	0	3	295
Known Intrauterine Smoke Exposure	76	17	2	27	1	2	125
Known Intrauterine Alcohol Exposure	1	0	0	0	0	0	1
Known Intrauterine Drug Exposure	15	4	0	4	0	0	23
Late (>6 months) or No Prenatal Care	25	3	5	8	0	0	41

As indicated in Table 9, 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, 25% of infant deaths were associated with known intrauterine smoke

¹¹ Data source: Surveillance, Epidemiology, and Evaluation; Division of Policy, Planning and Assessment; Tennessee Department of Health.

¹² 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.

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.

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.

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 2011, the manner of death in 65 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.

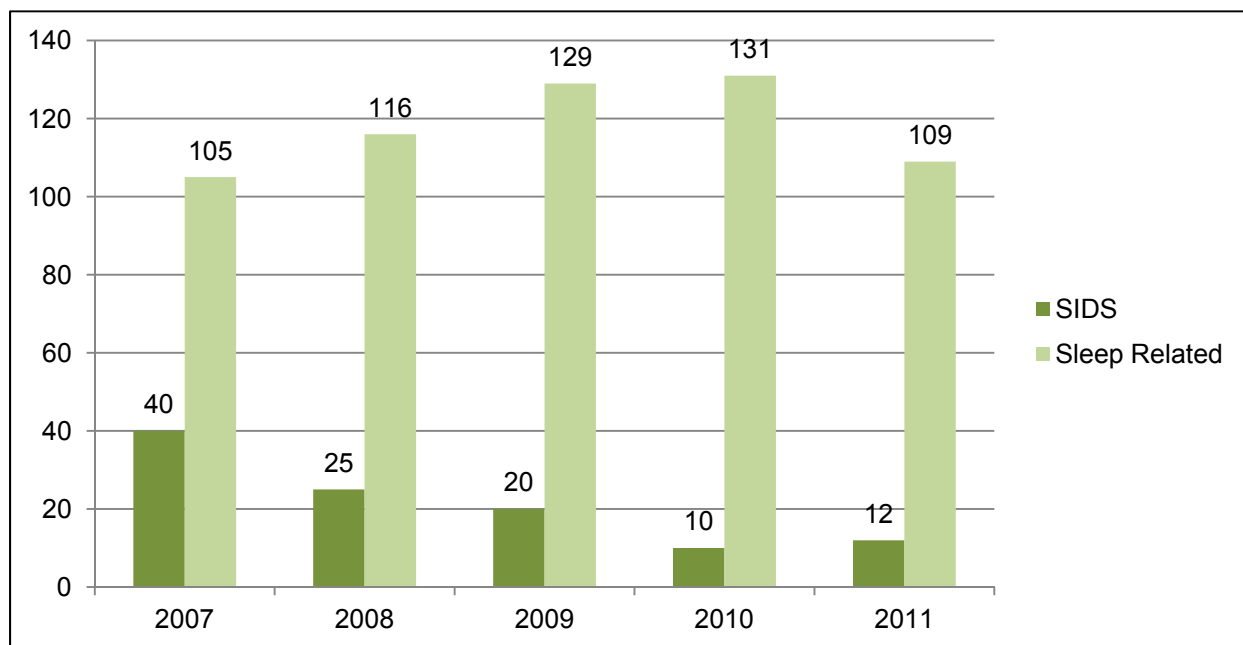


Figure 7—Summary of SIDS and Sleep-Related Deaths, 2007-2011

As Figure 7 displays, **twelve deaths were reported as SIDS** in 2011, and an additional **109 infant deaths resulted from an unsafe sleep environment**.

- These twelve deaths represent 3.3 percent of infant deaths due to medical conditions and 1.5 percent of all childhood deaths in 2011.
- Of all fatalities due to SIDS, four (33 percent) occurred from birth through one month of age.
- Forty-three (43) deaths were confirmed as asphyxia in the sleep environment.

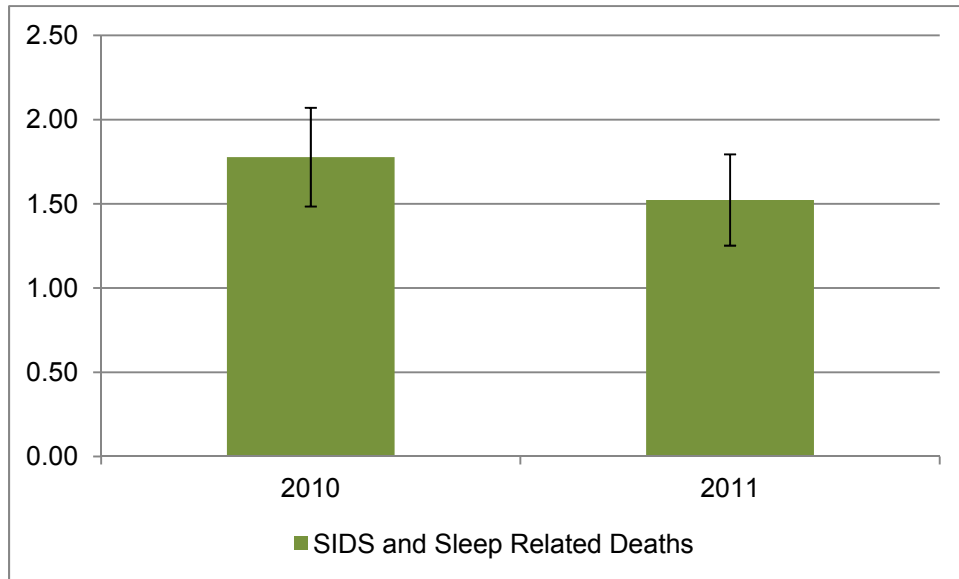


Figure 8—SIDS and Sleep-Related Deaths Per 1,000 Live Births, 2007-2011¹⁴

¹⁴ Error bars represent 95% confidence intervals for the crude rate estimates.

Circumstances in Infant Sleep Environment Deaths

Table 10—Contributing Factors in Sleep-Related Infant Deaths¹⁵

Circumstance	Year				
	2007	2008	2009	2010	2011
Infant not in a crib or bassinette	103	102	106	113	92
Infant sleeping with other people	72	67	77	100	73
Infant not sleeping on back	49	55	59	57	54
Unsafe bedding or toys in sleep area with infant	20	32	32	38	33
Obese adult sleeping with infant	8	10	4	13	9
Adult drug impaired sleeping with infant	4	2	2	8	11
Adult alcohol impaired sleeping with infant	1	3	2	5	6
Adult fell asleep bottle feeding	2	2	0	3	1
Adult fell asleep breast feeding	2	0	3	1	1

As indicated in Table 10, three main contributing factors are consistently present in sleep-related infant deaths: infant not sleeping alone (84.4% of cases), infant not sleeping on their back (49.5% of cases), and infant not sleeping in a crib or bassinette (67.0% 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).

Over the past five years, there has been an increasing number of sleep-related deaths associated with parents who are impaired by drugs or alcohol (5 cases in 2007 compared to 17 cases in 2011). This rise parallels the increasing number of babies being born with neonatal abstinence syndrome, a condition where the baby goes through withdrawal after being born to a substance-using mother (in many cases the substances are prescription medications).

Table 11—Circumstances of SIDS and Sleep-Related Infant Deaths

Circumstance	Age	0-1	2-3	4-5	6-7	8-11	Total
	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	
Unobstructed by person or object	8	17	7	0	0	0	32
On top of person	1	1	0	0	0	0	2
On top of object	1	1	2	0	0	0	4
Under person	2	1	3	0	0	0	6
Under object ¹⁶	3	1	1	1	0	0	6
Between person	3	0	0	0	0	0	3
Between object ¹⁶	0	3	0	0	0	1	4
Wedged	0	1	1	0	0	0	2
Pressed	3	4	0	0	0	1	8
Fell or rolled onto object	0	0	1	0	0	0	1
Tangled in object	0	0	0	0	0	1	1
Other	5	3	1	1	0	0	10
Unknown	20	8	6	5	0	0	39
Total	46	40	22	7	3	3	118

¹⁵ 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.

¹⁶ Under and between objects includes animals.

SUMMARY OF CHILD MORTALITY DATA **BY SPECIFIC MANNER AND CAUSE**

Manner of Death

Manner of death is a classification of deaths based on the circumstances surrounding a cause of death and how the death occurred. Table 12 outlines the manner of death for the 799 cases reviewed by local child fatality review teams.

In 2011, 499 deaths (62.5%) were by natural manner (medical causes); 156 (19.5%) were by an accidental manner. By comparison, 60% of deaths in 2010 were attributed to natural manner while 21% were attributable to accidental manner.

39 deaths of children in 2011 (4.9%) were the result of homicide. This is unchanged from the 39 homicide deaths in 2010. Thirteen young people took their own lives during 2011 (1.6% of all deaths); this represents a sharp decline from the 24 deaths by suicide observed in 2010. Half of all suicides involved a weapon; two-thirds occurred in the child's home.

Table 12—Manner of Death

Manner of Death	Number of Deaths	Percent of Deaths
Natural	499	62.5
Accidental	156	19.5
Homicide	39	4.9
Suicide	13	1.6
Undetermined	80	10.0
Pending	3	0.4
Unknown	9	1.1

Cause 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. Within the external classification, individual deaths are then further classified according to the nature of the injury.

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 13.

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 13—Cause of Death (Medical Causes)

Cause of Death	All Deaths		Age				
	Total	Percent	<1	1 - 4	5 - 9	10 - 14	15 - 17
Prematurity	131	26.3%	131	0	0	0	0
Other medical condition	124	24.8%	70	17	11	17	9
Congenital anomaly	108	21.6%	91	8	3	2	4
Cancer	30	6.0%	0	7	9	10	4
Cardiovascular	23	4.6%	17	3	0	2	1
Other infection	23	4.6%	16	3	1	1	2
Other perinatal condition	18	3.6%	17	0	0	1	0
Pneumonia	14	2.8%	5	5	0	1	3
SIDS ¹⁷	10	2.0%	10	0	0	0	0
Asthma	5	1.0%	0	2	1	2	0
Any injury	4	0.8%	2	1	0	1	0
Unknown	4	0.8%	1	1	2	0	0
Neurological/Seizure disorder	3	0.6%	0	0	1	2	0
Malnutrition/dehydration	1	0.2%	0	1	0	0	0
Low birth weight	1	0.2%	1	0	0	0	0
Total	499	100%	361	48	28	39	23

Within the external classification, individual deaths are then further classified according to the nature of the injury. In 2011, **208 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 2011, 26% of child deaths were classified as due to external causes, including motor vehicle, weapons, asphyxia, fire/burns, poisoning or overdose, and fall/crush. This represents a decline from the 29% observed in 2010.

¹⁷ The actual number of SIDS cases in 2011 was 12. Ten cases were reported as a “Natural” manner of death and attributable to a medical cause, while an additional two (not represented in this chart, which only describes medical causes of death) were classified as being of an “Undetermined” manner. The ten reported here plus those two bring the total of SIDS cases to 12.

Homicide Deaths

Thirty-nine children died at the hands of another during 2011. This number represents **4.9 percent of all deaths**. Twenty-six homicide victims were male; 13 were female. Males and older teens suffered the highest percentage of homicidal fatalities. Half of all homicides involved firearms, and one-third occurred in the child's home.

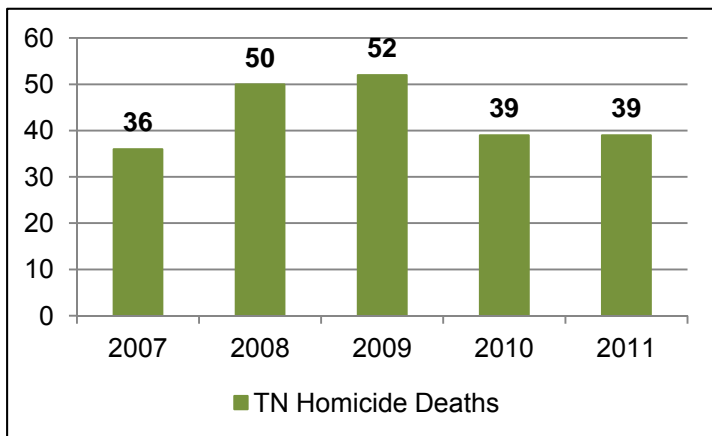


Figure 9—Homicide Deaths, 2007-2011

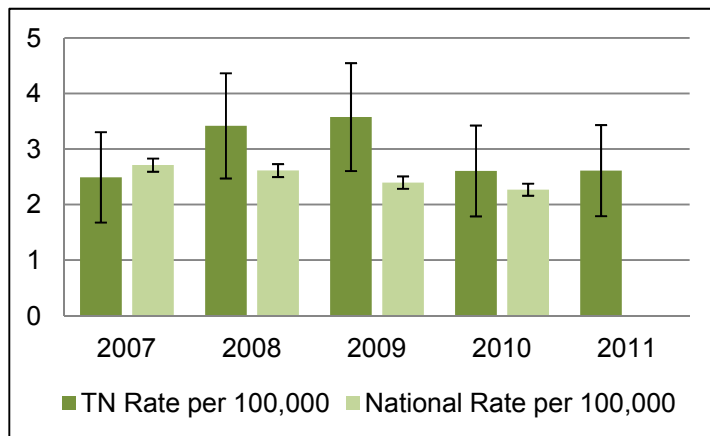


Figure 10—Homicide Deaths Per 100,000 Population, 2007-2011¹⁸

Table 14—Homicide by Victim's Age, Cause, and Location

Age	Number of Deaths
<1 Year	13
1-4 Years	6
5-9 Years	2
10-14 Years	1
15-17 Years	16
Unknown	1
Cause	
Firearm	19
Sharp Instrument	1
Person's Body Part	5
Asphyxiation	5
Other	6
Unknown	3
Location	
Child's Home	13
Relative's Home	3
Friend's Home	4
Roadway	4
Other	10
Unknown	5

¹⁸ Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011.

Suicide Deaths

Thirteen young people took their own lives during 2011, a figure that represents **1.6 percent of all deaths for the year**. Nearly half of all suicide cases involved a weapon. Nine (69%) occurred in the child's home.

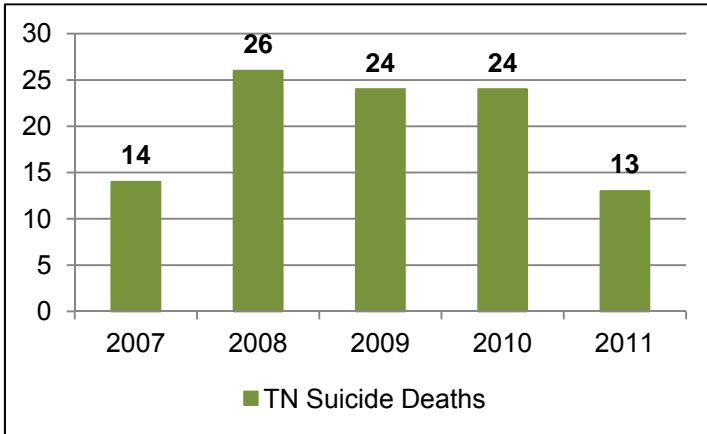


Figure 11—Suicide Deaths, 2007-2011

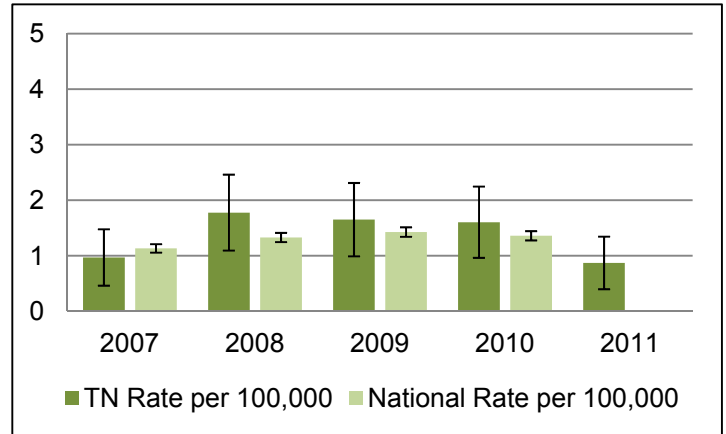


Figure 12—Suicide Deaths Per 100,000 Population, 2007-2011¹⁹

Table 15—Suicide by Victim's Age, Cause, and Location

Age	Number of Deaths
<1 Year	0
1-4 Years	0
5-9 Years	0
10-14 Years	1
15-17 Years	12
Cause	
Weapon	6
Asphyxiation	4
Poisoning, Overdose, or Acute Intoxication	1
Other	2
Location	
Child's Home	9
Friend's Home	1
Jail	1
Location Missing	2

¹⁹ Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011.

Motor Vehicle Deaths

Deaths related to motor vehicle incidents represent the highest number of fatalities among all external causes of death. This is true both nationally and in the state of Tennessee.²⁰ In 2011, **69 deaths** were related to motor vehicles, representing **8.6 percent of all child fatalities in 2011**.

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 with nearly equal frequency among males (N=34) and females (N=35).

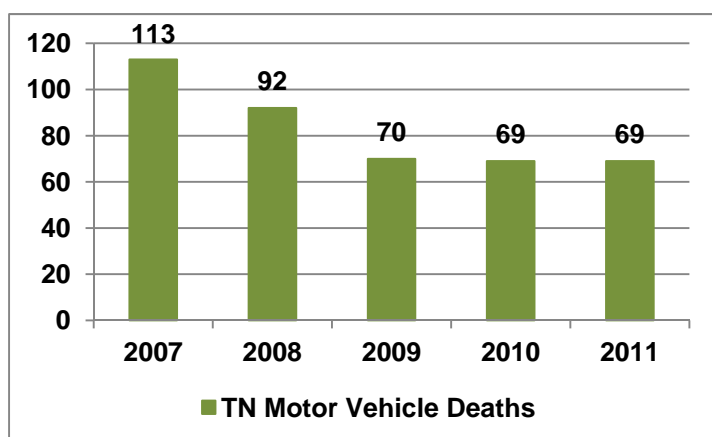


Figure 13—Motor Vehicle Deaths, 2007-2011

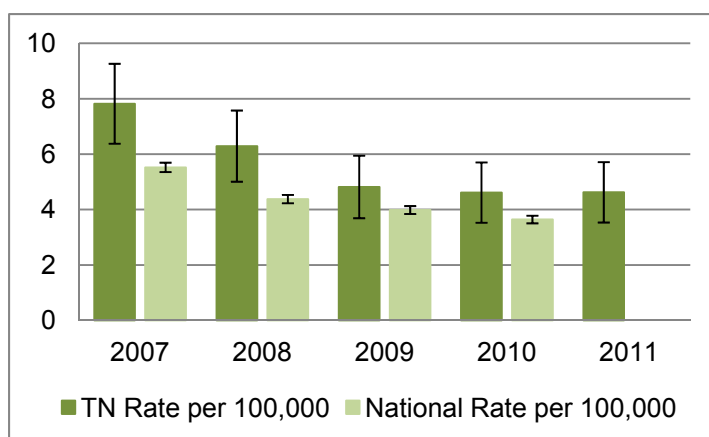


Figure 14—Motor Vehicle Deaths Per 100,000 Population, 2007-2011²¹

Table 16—Motor Vehicle/Other Transport Fatalities by Age and Position in Vehicle

Age	Position in Vehicle				TOTAL
	Passenger	Driver	Pedestrian	Unknown	
<1 Year	4	0	0	0	4
1-4 Years	6	0	5	0	11
5-9 Years	12	0	1	0	13
10-14 Years	8	6	1	1	16
15-17 Years	9	13	1	2	25
Total	39	19	8	3	69

Table 17—Motor Vehicle Deaths by Vehicle Type

Vehicle Type	Number of Deaths
Car	27
Truck	8
SUV	12
ATV	6
Motorcycle	2
Other/Unknown	14

²⁰ Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. 10 Leading Causes of Injury Deaths, United States 2010, All Races, Both Sexes.

²¹ Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011.

Asphyxia Deaths

Sixty children died of asphyxia in 2011. This number represents **7.5 percent of all deaths**. Asphyxia cases may be related to either suffocation, strangulation, or choking.

Forty seven of the asphyxia cases were due to suffocation. Forty-three (43) of these children were infants under the age of one year. **Forty of these 43 children expired in a sleep-related environment.**

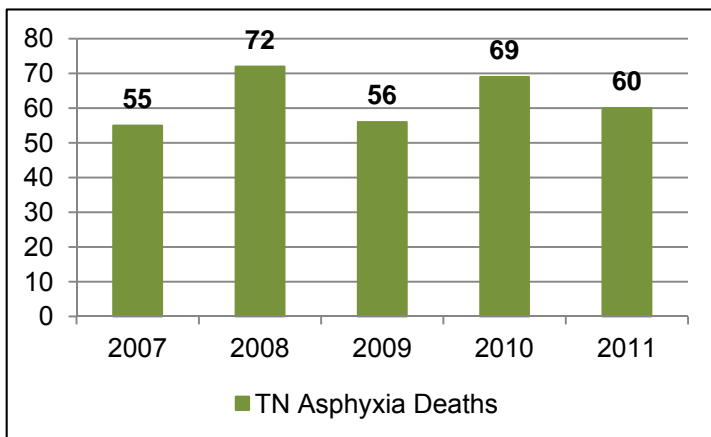


Figure 15—Asphyxia Deaths, 2007-2011

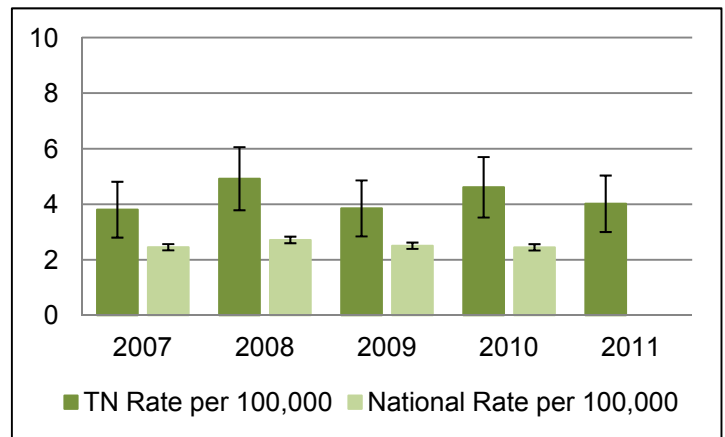


Figure 16—Asphyxia Deaths Per 100,000 Population, 2007-2011²²

Table 18—Asphyxia Due to Suffocation By Age and Circumstance

Age	Sleep Environment	Confined in a tight space	Other	Total
<1 Year	40	1	2	43
1-4 Years	0	0	2	2
5-9 Years	0	0	0	0
10-14 Years	0	0	1	1
15-17 Years	0	0	0	0
Unknown	0	1	0	1
Total	40	2	5	47

²² Error bars represent 95% confidence intervals for the crude rate estimates. National data not available for 2011.

Weapon-Related Deaths

Thirty-eight children died via weapon injuries in 2011. This number represents **4.8 percent of all 2011 deaths**. For classification purposes, body parts are included as weapons.

Of the 38 deaths, 27 were to males and 11 to females. Sixty-eight percent (N=26) of all weapon fatalities were the result of firearms. Of the twenty-six deaths involving firearms, 23 were related to handguns, and one was related to a hunting rifle.

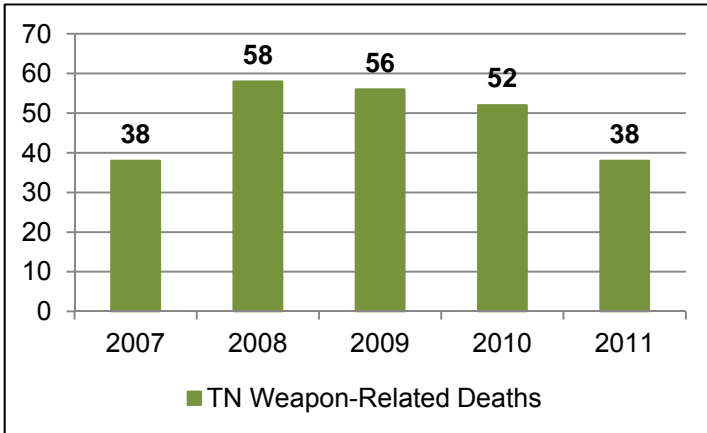


Figure 17—Weapon-Related Deaths, 2007-2011

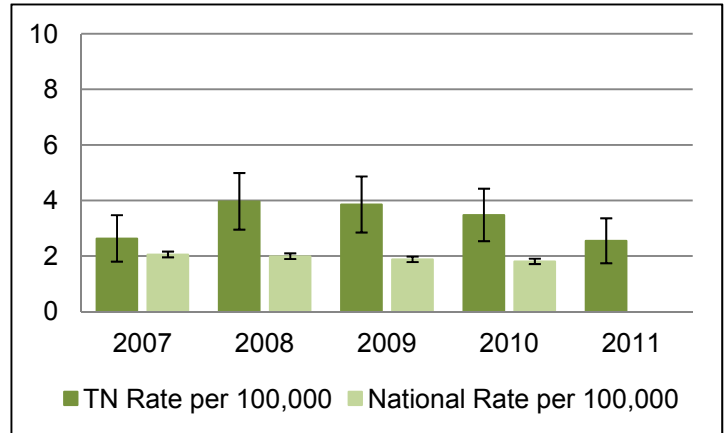


Figure 18—Weapon-Related Deaths Per 100,000 Population, 2007-2011²³

Table 19—Weapon-Related Deaths By Weapon Type and Age

Age	Type of Weapon						Total
	Firearm	Sharp Instrument	Human Body Part	Rope	Other	Unknown	
<1 Year	1	0	2	0	1	2	6
1 – 4 Years	0	0	3	0	2	0	5
5 – 9 Years	2	0	0	0	0	0	2
10 – 14 Years	2	0	0	0	0	0	2
15 – 17 Years	21	1	0	1	0	0	23
Total	26	1	5	1	3	2	38

²³ Error bars represent 95% confidence intervals for the crude rate estimates. National data are not available for 2011. National estimates for 2007-2010 are based on deaths due to firearms only.

Drowning Deaths

Twenty children perished by drowning in 2011. This number represents **2.5 percent of all 2011 deaths**. In the United States, accidental drowning claims the lives of more children in the age cohort of one to four years than does any other injury-related cause.²⁴ Drowning deaths were more frequent in males (N=12) than females (N=8).

Of the 20 drowning case reports, in only four cases was it definitively acknowledged that the child was able to swim.

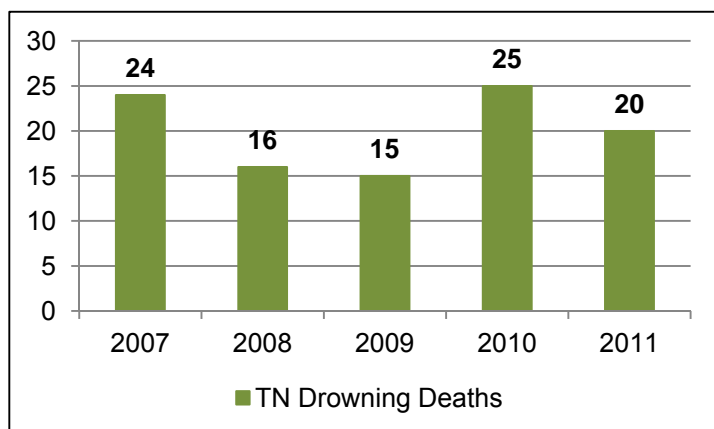


Figure 19—Drowning Deaths, 2007-2011

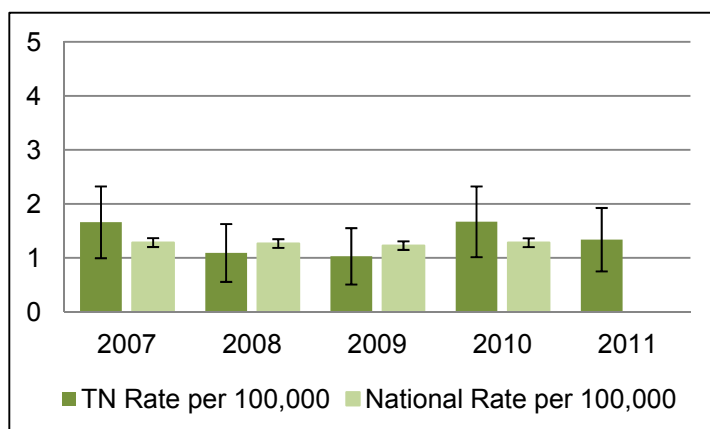


Figure 20—Drowning Deaths Per 100,000 Population, 2007-2011²⁵

Table 20—Drowning Deaths by Location and Age

Age	DROWNING LOCATION				Total
	Open Water (Lake, River, Pond, Creek)	Pool / Hot Tub / Spa	Bathtub	Other	
<1 Year	0	0	3	0	3
1-4 Years	1	6	1	0	8
5-9 Years	0	0	0	1	1
10-14 Years	5	0	0	0	5
15-17 Years	2	0	1	0	3
Total	8	6	5	1	20

²⁴ Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. 10 Leading Causes of Injury Deaths, United States 2010, All Races, Both Sexes.

²⁵ Error bars represent 95% confidence intervals for the crude rate estimates. National data are not available for 2011.

Fire/Burn Deaths

Fires claimed the lives of **six** children in 2011. This number represents **0.8 percent of all 2011 deaths**. Fire/burn fatalities were split equally among males and females (N=3 each). The cause of the fire was noted in three cases: space heater, electrical wiring, and hot liquid. There has been a continued decline in fire/burn deaths over the past five years.

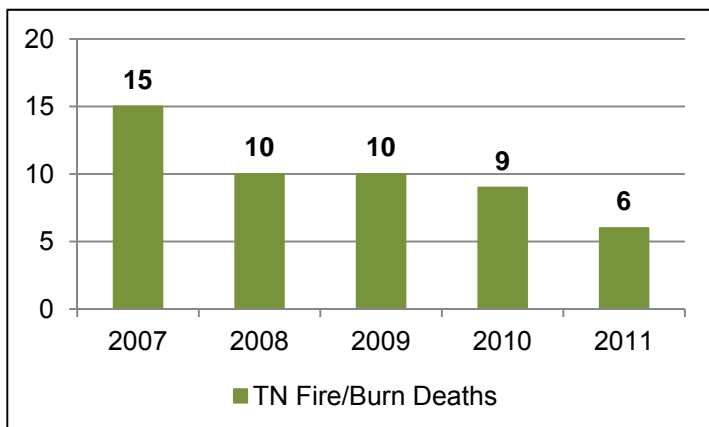


Figure 21—Fire/Burn Deaths, 2007-2011

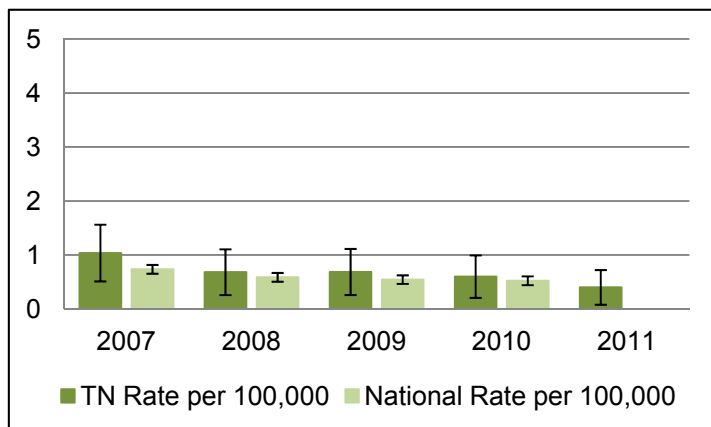


Figure 22—Fire/Burn Deaths Per 100,000 Population, 2007-2011²⁶

Table 21—Fire/Burn Deaths by Structure Type and Age

Age	Type of Structure			Total
	Single Home	Duplex/apartment	Trailer/Mobile Home	
<1 Year	0	0	0	0
1-4 Years	1	1	1	3
5-9 Years	0	1	0	1
10-14 Years	1	0	0	1
15-17 Years	0	0	1	1
Total	2	2	2	6

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

Poisoning Deaths

Seven children died as the result of a poison-related incident in 2011. **These seven deaths represent 0.9 percent of all child fatalities in 2011.** Poison-related fatalities include drug overdose and acute intoxication. Four of the deaths were to males, three were to females.

Tennessee's statistics echo national data in relation to age cohorts, in that those over 15 generally have the highest percentage of poisonings.²⁷ Particularly noteworthy is the fact that **five of the seven poisoning fatalities in Tennessee involved prescription drugs.**

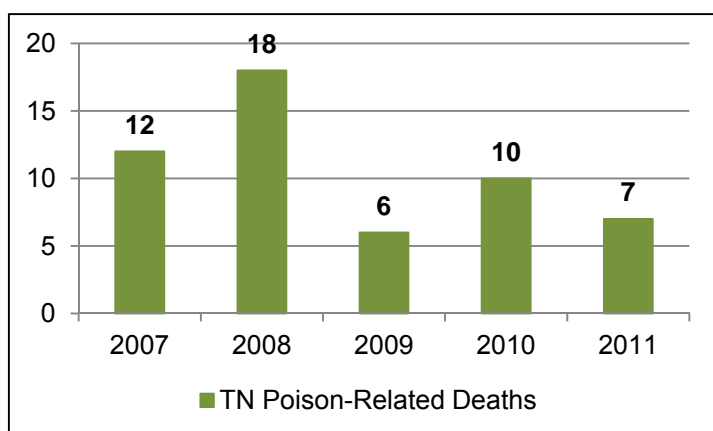


Figure 23—Poison-Related Deaths, 2007-2011

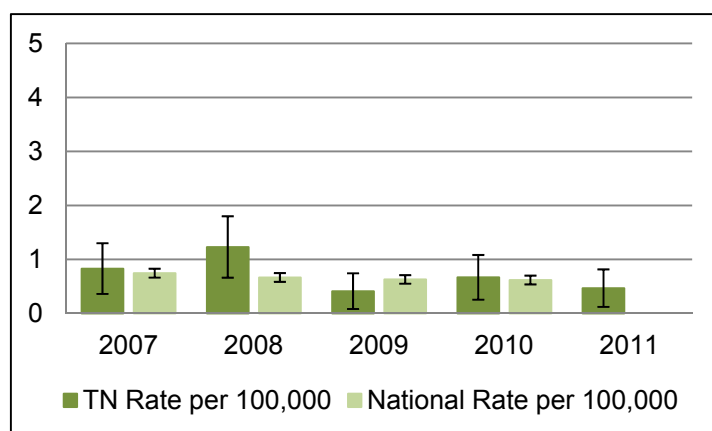


Figure 24—Poison-Related Deaths Per 100,000 Population, 2007-2011²⁸

Table 22—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	0	0	0	0
15-17 Years	6	4	1	2
Total²⁹	7	5	1	2

²⁷ Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. 10 Leading Causes of Injury Deaths, United States 2010, All Races, Both Sexes.

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

²⁹ 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

Six children died as the result of a crush or fall injury in 2011. **These six deaths represent 0.8 percent of all child fatalities in 2011.** In the United States, fall/crush injuries are among the most common **nonfatal** childhood injuries each year, resulting in up to 2.6 million Emergency Room visits.³⁰

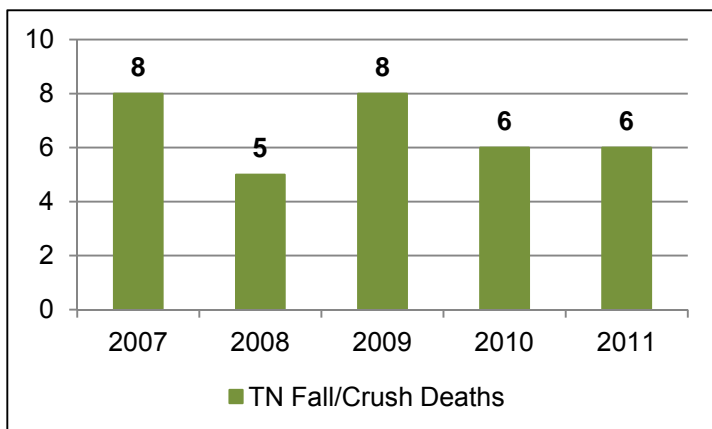


Figure 25—Fall/Crush Deaths, 2007-2011

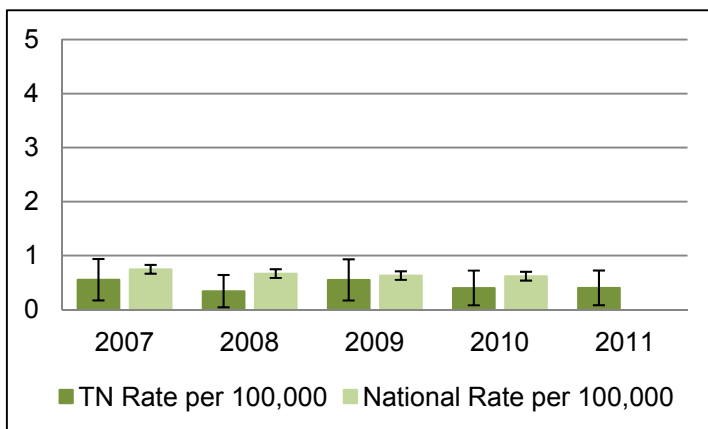


Figure 26—Fall/Crush Deaths Per 100,000 Population, 2007-2011³¹

³⁰ Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. 10 Leading Causes of Nonfatal Unintentional Injury, United States 2011, All Races, Both Sexes, Disposition: All Cases.

³¹ Error bars represent 95% confidence intervals for the crude rate estimates. National level data for 2011 are not available.

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. Sleep-related infant deaths, external injuries to pre-teens and teens, and ongoing quality improvement for child fatality review teams were all identified as priority areas for this year's recommendations to the Governor and General Assembly, as outlined below:

- Educate infant caregivers in every county of the state on safe sleep practices.
- Incorporate 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.
- Implement training and quality improvement procedures for local teams to minimize the amount of records with fields marked as unknown or left blank.

We encourage all who read this report to utilize the data contained herein to explore opportunities for improving the health and well-being of children in your own community.

APPENDICES

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Appendix B—Glossary

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 23—Child Fatalities (Number and Rate) By County, 2011³²

County Name	Number of Deaths	Population 0-17 Yrs	Rate per 100,000
TENNESSEE	898	1,492,473	60.2
Anderson	11	15,996	68.8
Bedford	10	12,007	83.3
Benton	1	3,292	30.4
Bledsoe	1	2,677	37.4
Blount	14	26,866	52.1
Bradley	12	23,003	52.2
Campbell	2	8,738	22.9
Cannon	2	2,953	67.7
Carroll	5	6,318	79.1
Carter	7	11,361	61.6
Cheatham	5	9,492	52.7
Chester	3	4,084	73.5
Claiborne	4	6,611	60.5
Clay	0	1,610	0.0
Cocke	4	7,457	53.6
Coffee	6	12,604	47.6
Crockett	1	3,565	28.1
Cumberland	9	10,532	85.5
Davidson	94	140,365	67.0
Decatur	2	2,483	80.5
Dekalb	1	4,187	23.9
Dickson	2	12,122	16.5
Dyer	10	9,335	107.1
Fayette	6	8,636	69.5
Fentress	2	4,059	49.3
Franklin	3	8,920	33.6
Gibson	12	12,184	98.5
Giles	2	6,431	31.1
Grainger	4	4,921	81.3
Greene	7	14,526	48.2
Grundy	1	3,066	32.6
Hamblen	8	14,733	54.3
Hamilton	58	73,558	78.8
Hancock	1	1,406	71.1

³² Data source: Surveillance, Epidemiology, and Evaluation; Division of Policy, Planning and Assessment; Tennessee Department of Health.

County Name	Number of Deaths	Population 0-17 Yrs	Rate per 100,000
Hardeman	8	5,516	145.0
Hardin	4	5,411	73.9
Hawkins	11	12,254	89.8
Haywood	3	4,599	65.2
Henderson	4	6,638	60.3
Henry	7	6,926	101.1
Hickman	2	5,314	37.6
Houston	2	1,922	104.1
Humphreys	4	4,175	95.8
Jackson	0	2,250	0.0
Jefferson	10	11,397	87.7
Johnson	2	3,277	61.0
Knox	47	95,845	49.0
Lake	0	1,286	0.0
Lauderdale	5	6,543	76.4
Lawrence	5	10,407	48.0
Lewis	0	2,829	0.0
Lincoln	6	7,657	78.4
Loudon	4	9,729	41.1
McMinn	4	11,619	34.4
McNairy	2	5,982	33.4
Macon	1	5,547	18.0
Madison	19	23,890	79.5
Marion	3	5,989	50.1
Marshall	3	7,377	40.7
Maury	7	19,411	36.1
Meigs	0	2,447	0.0
Monroe	6	10,019	59.9
Montgomery	24	48,704	49.3
Moore	0	1,373	0.0
Morgan	4	4,431	90.3
Obion	4	7,077	56.5
Overton	2	5,057	39.5
Perry	0	1,721	0.0
Pickett	0	953	0.0
Polk	4	3,627	110.3
Putnam	8	16,169	49.5
Rhea	8	7,459	107.3
Roane	9	10,895	82.6
Robertson	8	17,063	46.9

County Name	Number of Deaths	Population 0-17 Yrs	Rate per 100,000
Rutherford	28	69,464	40.3
Scott	4	5,477	73.0
Sequatchie	1	3,260	30.7
Sevier	7	19,781	35.4
Shelby	192	243,456	78.9
Smith	0	4,557	0.0
Stewart	2	2,910	68.7
Sullivan	22	31,767	69.3
Sumner	24	40,274	59.6
Tipton	6	16,253	36.9
Trousdale	3	1,853	161.9
Unicoi	2	3,632	55.1
Union	3	4,481	66.9
Van Buren	1	1,100	90.9
Warren	7	9,569	73.2
Washington	13	25,110	51.8
Wayne	1	3,226	31.0
Weakley	6	7,393	81.2
White	1	5,763	17.4
Williamson	13	53,787	24.2
Wilson	12	28,477	42.1

Appendix D—Infant Deaths by County of Residence

Table 24—Infant Mortality (Number and Rate), By County, 2011³³

County Name	Number of Infant Deaths	Number of Live Births	Rate per 1,000 Live Births
TENNESSEE	587	79,462	7.4
Anderson	7	803	8.7
Bedford	7	598	11.7
Benton	0	172	0.0
Bledsoe	0	125	0.0
Blount	9	1,293	7.0
Bradley	11	1,147	9.6
Campbell	2	424	4.7
Cannon	0	138	0.0
Carroll	4	313	12.8
Carter	5	574	8.7
Cheatham	2	429	4.7
Chester	2	192	10.4
Claiborne	3	304	9.9
Clay	0	81	0.0
Cocke	3	401	7.5
Coffee	3	612	4.9
Crockett	0	170	0.0
Cumberland	7	566	12.4
Davidson	72	9,601	7.5
Decatur	1	100	10.0
Dekalb	1	222	4.5
Dickson	1	582	1.7
Dyer	5	499	10.0
Fayette	3	419	7.2
Fentress	1	192	5.2
Franklin	3	390	7.7
Gibson	8	652	12.3
Giles	1	287	3.5
Grainger	4	223	17.9
Greene	4	605	6.6
Grundy	1	155	6.5
Hamblen	6	792	7.6

³³ Data source: Deaths: TN Department of Health, Office of Health Statistics, Death Statistical System. Statistics were for Tennessee residents only. 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
Hamilton	32	4,047	7.9
Hancock	0	65	0.0
Hardeman	6	292	20.5
Hardin	0	307	0.0
Hawkins	7	546	12.8
Haywood	2	216	9.3
Henderson	4	312	12.8
Henry	4	342	11.7
Hickman	2	270	7.4
Houston	2	78	25.6
Humphreys	2	203	9.9
Jackson	0	107	0.0
Jefferson	4	530	7.5
Johnson	2	147	13.6
Knox	27	5,143	5.2
Lake	0	80	0.0
Lauderdale	4	320	12.5
Lawrence	3	568	5.3
Lewis	0	120	0.0
Lincoln	5	354	14.1
Loudon	3	558	5.4
McMinn	3	578	5.2
McNairy	1	283	3.5
Macon	0	305	0.0
Madison	10	1,271	7.9
Marion	1	290	3.4
Marshall	2	372	5.4
Maury	2	1,136	1.8
Meigs	0	101	0.0
Monroe	3	482	6.2
Montgomery	17	3,042	5.6
Moore	0	47	0.0
Morgan	3	180	16.7
Obion	4	350	11.4
Overton	1	268	3.7
Perry	0	102	0.0
Pickett	0	39	0.0
Polk	3	137	21.9

County Name	Number of Infant Deaths	Number of Live Births	Rate per 1,000 Live Births
Putnam	6	898	6.7
Rhea	6	409	14.7
Roane	6	495	12.1
Robertson	5	931	5.4
Rutherford	18	3,648	4.9
Scott	3	249	12.0
Sequatchie	1	175	5.7
Sevier	5	1,019	4.9
Shelby	134	13,993	9.6
Smith	0	231	0.0
Stewart	1	133	7.5
Sullivan	13	1,511	8.6
Sumner	15	1,922	7.8
Tipton	2	738	2.7
Trousdale	0	94	0.0
Unicoi	1	163	6.1
Union	2	216	9.3
Van Buren	1	48	20.8
Warren	7	467	15.0
Washington	8	1,331	6.0
Wayne	1	132	7.6
Weakley	3	354	8.5
White	1	306	3.3
Williamson	8	2,012	4.0
Wilson	5	1,338	3.7

Appendix E—Local Child Fatality Review Team Leaders

(JD=Judicial District)

JD 1: Dr. David Kirschke
(Carter, Johnson, Unicoi, and Washington Counties)

JD2: Dr. Stephen May
(Sullivan County)

JD3: Dr. David Kirschke
(Greene, Hamblen, Hancock, and Hawkins Counties)

JD4: Dr. Tara Sturdivant
(Cocke, Grainger, Jefferson, and Sevier Counties)

JD5: Lori Baxter
(Blount County)

JD6: Dr. Mary Palmer
(Knox County)

JD7: Patty Campbell, Dr. Tara Sturdivant
(Anderson County)

JD8: Kerri Byrd-Hamby, Dr. Tara Sturdivant
(Campbell, Claiborne, Fentress, Scott, and Union Counties)

JD9: Dr. James Guider, Dr. Tara Sturdivant
(Loudon, Meigs, Morgan, and Roane Counties)

JD10: Dr. Jan BeVilLe
(Bradley, McMinn, Monroe, and Polk Counties)

JD11: Dr. Valerie Boaz
(Hamilton County)

JD12: Dr. Jan BeVilLe
(Bledsoe, Franklin, Grundy, Marion, Rhea, and Sequatchie Counties)

JD13: Dr. Fred Vossel
(Clay, Cumberland, DeKalb, Overton, Pickett, Putnam, and White Counties)

JD14: Dr. David Brumley, Dr. Langdon Smith
(Coffee County)

JD15: Dr. Fred Vossel
(Jackson, Macon, Smith, Trousdale, and Wilson Counties)

JD16: Dr. Alison Asaro
(Cannon and Rutherford Counties)

JD17: Dr. David Brumley, Dr. Langdon Smith
(Bedford, Lincoln, Marshall, and Moore Counties)

JD18: Dr. Alison Asaro
(Sumner County)

JD1901: Dr. Alison Asaro
(Montgomery County)

JD1902: Dr. Alison Asaro
(Robertson County)

JD20: Dr. Kim Wyche-Etheridge
(Davidson County)

JD2101: Dr. David Brumley, Dr. Langdon Smith
(Hickman, Lewis, and Perry Counties)

JD2102: Dr. Alison Asaro
(Williamson County)

JD2201: Dr. David Brumley, Dr. Langdon Smith
(Giles, Lawrence, and Wayne Counties)

JD2202: Dr. David Brumley, Dr. Langdon Smith
(Maury County)

JD23: Dr. Alison Asaro
(Cheatham, Dickson, Houston, Humphreys, and Stewart Counties)

JD24: Dr. Shavetta Conner
(Benton, Carroll, Decatur, Hardin, and Henry Counties)

JD25: Dr. Shavetta Conner
(Fayette, Hardeman, Lauderdale, McNairy, and Tipton Counties)

JD26: Dr. Tony Emison
(Chester, Henderson, and Madison Counties)

JD27: Dr. Shavetta Conner
(Obion and Weakley Counties)

JD28: Dr. Shavetta Conner
(Crockett, Gibson, and Haywood Counties)

JD29: Dr. Shavetta Conner
(Dyer and Lake Counties)

JD30: Dr. Helen Morrow
(Shelby County)

JD31: Dr. Fred Vossel
(Van Buren and Warren Counties)

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.