CHILD FATALITIES IN TENNESSEE 2010



Tennessee Department of Health

Tennessee Department of Health Division of Family Health and Wellness Acknowledgements

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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 Department of Health, 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.state.tn.us/MCH/CFR.htm

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EXECUTIVE SUMMARY

This report contains data extrapolated from **873 deaths** to Tennessee children in 2010. The state of Tennessee is committed to investigating the death of all children under the age of 18, with the exception of those that:

- involve gestations of 22 weeks or less and weights of less than 500 grams;
- occur outside the state.

Of the 875 deaths meeting review criteria, 99.8 percent (873) were reviewed and are represented in this annual report.

Key Findings

- The first year of life continues to be the most perilous for Tennessee's children, accounting for 61 percent of all deaths to those through the age of 17. Children between the ages of 15 and 17 suffered the second highest percentage of deaths at 12.7 percent.
- Sixty percent of all child deaths in 2010 were by natural manner, with a finding of an accidental manner of death for another 21 percent.
- Tennessee's male children, once again, succumbed to fatalities more frequently than females (59% vs. 41%, respectively).
- A racial disparity exists among child fatalities, with African-American children suffering a higher rate of mortality than their white counterparts.
- The number of infants succumbing to Sudden Infant Death Syndrome (SIDS) continues to decline, with only eight SIDS deaths in 2010, compared to 20 in 2009. However, an *additional* 131 infants perished of other causes in the sleep environment.
- Sixty-eight (68) children (7.8% of all deaths) died in motor vehicle crashes in 2010, virtually unchanged from the 70 vehicular deaths in 2009.
- 4.5 percent of deaths to children in 2010 (39 deaths) were the result of homicide.
 This is an improvement over the 52 homicide deaths (6 percent of all deaths) in 2009.

State CFR Team Recommendations

Teens

Representative Parkinson will work with representatives from the Department of Education, TN Commission on Children and Youth, TN Suicide Prevention Network, TBI, and the Department of Children's Services to: 1) identify existing data related to teenage mortality related to motor vehicle collisions, gang-related violence, and suicide; and 2) develop a list of current programs/resources available related to these three causes of mortality.

Grief Counseling

Dr. Cline will collaborate with staff from the Department of Mental Health, the Department of Children's Services, and the Tennessee Suicide Prevention network to improve connections to grief and bereavement resources for families and friends of child fatality victims.

Safe Sleep

The Department of Health will collaborate with Representative Ryan Williams and staff from Prevent Child Abuse Tennessee, the TN Commission on Children and Youth, the Departments of Human Services, Education, and Children's Services as well as UT Extension to distribute safe sleep information to health care providers, child care staff, hospitals, and other community partners.

CFR Procedures

Dr. Cline will collaborate with the Department of Children's Services and TBI to identify strategies to improve death reporting and investigation.

Medical-Related

The Departments of Health and Mental Health will collaborate with Dr. Valerie Arnold (representative from TMA) to develop a list of strategies to encourage providers to complete appropriate screening and referral for prenatal substance use and to encourage early prenatal care and genetic counseling.

2010 Child Fatality Review: Summary Findings

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 teams (CFRTs) report the manner of death as indicated on the death certificate. In those instances where a manner of death is left blank, CFRTs may make the determination upon conclusion of the review process.

The overall rate of child fatalities for 2010 was 58.29 per 100,000 in the population of children less than 18 years of age. Fatality rates identified in this report are based on population estimates supplied by the United States Census Bureau.

Table 1, below, summarizes the manners of death for 2010 fatalities, as does Figure 4 on the following page.

	Table 1 - Manner of Death Summary											
	Natural	Accident	Homicide	Suicide	Undetermined	Unknown	Pending	Total				
Age				•								
<1	374	58	6	0	88	0	5	531				
1-4	49	34	12	0	5	1	0	101				
5-9	37	16	0	0	1	0	0	54				
10-14	35	24	6	8	1	2	0	76				
15-17	30	48	15	16	2	0	0	111				
Total	525	180	39	24	97	3	5	873				
Race												
White	334	128	16	18	58	1	4	559				
African American	155	43	21	5	31	2	1	258				
Asian												
ASIAIT	5	3	2	1	0	0	0	11				
American Indian	1	0	0	0	0	0	0	1				
Pacific Islander	1	0	0	0	0	0	0	1				
Multi-racial	11	1	0	0	4	0	0	16				
Missing/Unknown	18	5	0	0	4	0	0	27				
Total	525	180	39	24	97	3	5	873				
Gender					-							
Male	282	119	30	17	58	2	3	511				
Female	243	61	9	7	39	1	2	362				
Total	525	180	39	24	97	3	5	873				

Figure 1 – Manner of Death by AGE

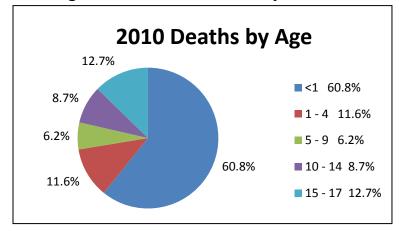


Figure 2 – Manner of Death by GENDER

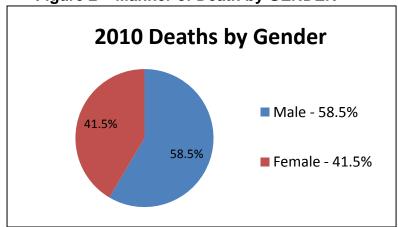
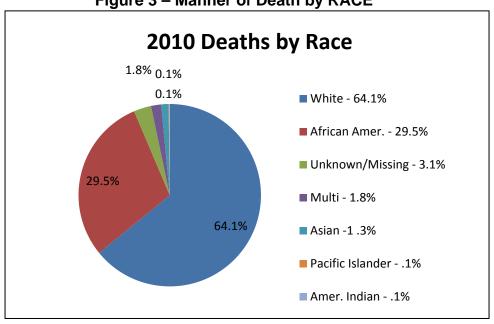


Figure 3 – Manner of Death by RACE



Natural 60.1%
Accident 20.6%
Undet. 11.1%
Homicide 4.5%
Suicide 2.7%
Pending 0.3%
Unknown 0.6%

Figure 4 – Manner of Death Summary

Causes of Death: Medical/External

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 873 deaths reviewed by the CFRT in 2010:

- Sixty-two (62) percent were due to **medical** causes.
- Twenty-nine (29) percent were due to **external** causes.
- Nine (9) percent of cases were **unknown or could not be determined** as a medical or external cause.

Table 2 on the following page displays medical and external causes as they relate to age, race, and gender.

Table 2 – Medical / External Causes of Death Summaries										
	External Cause of Injury	Medical Condition	Undetermined if External or Medical	Unknown	Total					
Age										
<1	66	392	67	6	531					
1-4	47	51	3	0	101					
5-9	17	36	0	1	54					
10-14	39	37	0	0	76					
15-17	81	28	1	1	111					
TOTAL	250	544	71	8	873					
Race										
White	168	345	41	5	559					
African American	72	162	22	2	258					
Asian	6	5	0	0	11					
American Indian	0	1	0	0	1					
Pacific Islander	0	1	0	0	1					
Multi-racial	1	11	4	0	16					
Unknown / Missing data	3	19	4	1	27					
TOTAL	250	544	71	8	873					
Gender										
Male	172	295	39	5	511					
Female	78	249	32	3	362					
TOTAL	250	544	71	8	873					

Prevention Analysis

The overarching goal of the Child Fatality Review Program is to craft and adopt recommendations 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**. CFRTs carefully examine each death in an effort to determine preventability.

Of the cases reviewed, CFRTs determined that **254 deaths (29%) could probably** have been prevented.

	Table 3 – Preventability of Child Deaths										
Manner of Death	Probably Not Preventable	Probably Preventable	Could Not Determine	Unknown	Total						
Natural	444	17	32	32	525						
Accident	8	143	10	19	180						
Homicide	2	32	4	1	39						
Suicide	5	15	2	2	24						
Undetermined	18	46	26	7	97						
Pending	0	1	1	1	3						
Unknown	1	0	1	3	5						
TOTAL	478	254	76	65	873						

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 4 below reflects the 72 cases for which review teams found there was poor or absent supervision, child abuse, child neglect, or other negligence. *

	Table 4 – Acts of Child Abuse or Neglect										
Age	Poor or absent	Child Abuse	Neglect	Other Negligence							
<1	1	7	3	20							
1-4	10	6	2	3							
5-9	0	0	0	2							
10-14	4	1	0	1							
15-17	0	0	0	12							
Total	15	14	5	38							

^{*} This data may vary from the data DCS has because the child fatality review team determines whether there was abuse or neglect based on the information they receive from different team members and organizations.

Deaths to Children with Special Circumstances

Just over 33 percent of the deaths in 2010 involved children known to have suffered from a disability or chronic illness. Of those 290 children, 27 were enrolled in the Department of Health's Children's Special Services program (CSS).

The families of 41 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 5 – Children with Special Circumstances										
Yes No Unknown Blank										
Did child have disability or chronic illness?	290	392	55	136						
If disabled, was child receiving CSS?	27	146	8	692						
Was there an open CPS case with child at time of death?	41	596	40	196						

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 of 7.9 deaths per 1,000 live births in 2010 is an improvement over the 2009 rate of 8.0.

In 2010, **531*** Tennessee children lost their lives before the age of one year. 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 531 deaths.

Table 6 – Risk Factors Associated with Infant Death*											
	Natural	Accident	Homicide	Undetermined	Pending	Unknown	Total				
Premature (<37 weeks)	279	13	1	22	0	3	318				
Low birth weight (<2500 grams)	274	7	1	20	0	3	305				
Known Intrauterine Smoke Exposure	74	28	3	38	0	2	145				
Known Intrauterine Alcohol Exposure	1	0	0	0	0	0	1				
Known Intrauterine Drug Exposure	15	7	1	10	0	0	33				
Late (>6 months) or No Prenatal Care	33	13	1	14	0	1	62				

^{*}CFRTs are not able to review the death of every infant. 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 CFRT. 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.

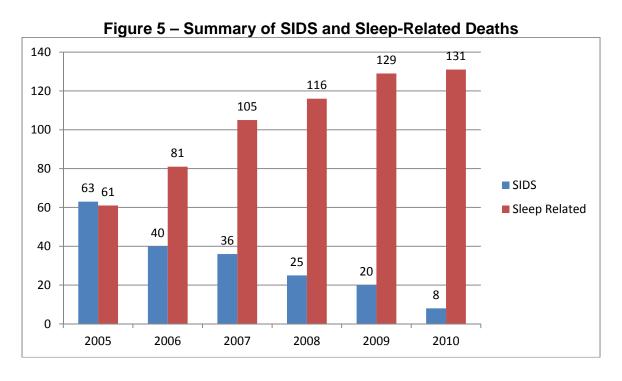
Sudden Infant Death Syndrome (SIDS) and Sleep-Related Deaths

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, 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 2010, the manner of death in 67 sleep-related 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.



As Figure 5 displays, **eight deaths were reported as SIDS** in 2010, and an additional **131 infant deaths resulted from an unsafe sleep environment**.

- These eight deaths represent 1.5 percent of infant deaths due to medical conditions and .09 percent of all childhood deaths in 2010.
- Of all fatalities due to SIDS, six (75 percent) occurred from birth through one month of age.
- Fifty (50) deaths were confirmed as asphyxia in the sleep environment.

Circumstances in Infant Sleep Environment Deaths

Table 8 - Contributing Factors in Infant Sleep Environment Deaths ¹										
	2005	2006	2007	2008	2009	2010				
Infant not in a crib or bassinette	54	69	103	102	106	113				
Infant sleeping with other people	45	60	72	67	77	100				
Infant not sleeping on back	30	38	49	55	59	57				
Unsafe bedding or toys in sleep area with infant	13	18	20	32	32	38				
Obese adult sleeping with infant	3	9	8	10	4	13				
Adult drug impaired sleeping with infant	0	2	4	2	2	8				
Adult alcohol impaired sleeping with infant	1	2	1	3	2	5				
Adult fell asleep bottle feeding	0	0	2	2	0	3				
Adult fell asleep breast feeding	0	0	2	0	3	1				

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¹ 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.

Table 9 - Circumstances of SIDS and Sleep-Related Deaths									
Ages	0-1 Mos.	2-3 Mos.	4-5 Mos.	6-7 Mos.	8-11 Mos.	1-4 Yrs.	5 Yrs. Up	Total	
Unobstructed by person or object	17	14	6	4	0	1	0	42	
On top of person	2	2	0	1	0	0	0	5	
On top of object	1	8	3	1	1	0	0	14	
Under person	0	4	1	0	0	1	0	6	
Under object	0	1	2	0	2	0	0	5	
Between person	3	5	1	0	0	0	0	9	
Between object ²	0	0	1	0	0	0	0	1	
Wedged	2	2	2	0	1	0	0	7	
Pressed	2	3	0	0	0	0	0	5	
Fell or rolled onto object	0	0	0	0	0	0	0	0	
Tangled in object	0	0	0	0	1	0	0	1	
Other	3	3	0	0	0	0	0	6	
Unknown	17	12	4	5	2	2	0	42	
TOTAL	47	54	20	11	7	4	0	143	

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. Reporting categories include:

Natural	525 deaths	(60%)
Accidental	180 deaths	(21%)
Homicide	39 deaths	(4.5%)
Suicide	24 deaths	(2.7%)
Undetermined	97 deaths	(11%)
Pending	5 deaths	(0.5%)
Unknown (or Missing Data)	3 deaths	(0.3%)

² Under and between objects includes animals.

•

Manner of Death: Violence Related

Among the seven official manners of death, two pertain to violence—on the part of the decedent (suicide) or others (homicide).

Full details regarding these manners are outlined on the succeeding two pages.

Manner of Death: Violence-Related HOMICIDE

Thirty-nine (39) children died at the hands of another during 2010. This number represents **4.5 percent of all deaths**. Males and older teens suffered the highest percentage of homicidal fatalities.

	Table 10 Homicide by Cause n=39										
Firearm	Firearm Sharp Poisoning Person's Asphyxiation Other Unknown										
22											

	Table 11 Homicide by Location n=39									
Child's Home	Child's Home Relative's Home Roadway Parking Hospital Unknown Location									
19 2 3 5 4 1 5										

Table 12 Homicide Victims by Age n=39							
Under 1 Year	Age 1 – 4 Years	Age 5 – 9 Years	Age 10 – 14 Years	Age 15 – 17 Years			
6	12	0	6	15			

Table 13 – Homicide by Gender n=39			
Male	Female		
30	9		

Table 14 Homicide by Perpetrator n=39									
Acquaintance	Biological Parent	Mom's Partner	Relative	Friend	Gang Member	Stranger	Unknown		
8	6	6	3	3	1	3	4		
	5 cases missing data								

Manner of Death: Violence-Related SUICIDE

Twenty-four (24) young people took their own lives during 2010, a figure that represents **2.7 percent of all deaths for the year**, the identical percentage of deaths by suicide in 2009.

Table 15 Suicide by Cause n=24						
Weapon Asphyxiation		Poisoning	Other			
13	8	2	1			

Table 16 Suicide by Location n=24						
Child's Home	Friend's Home	Roadway	Driveway			
21	1	1	1			

Table 17 Suicide by Weapon/Implement n=20									
Rope / Cord	Handgun	Shotgun	Hunting Rifle	Assault Rifle	Belt	Drugs	Plastic Bag		
3	7	1	2	1	4	1	1		
	4 cases missing data								

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.

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.

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 18 - Cause of Death – Medical Causes													
	All I	Deaths			Age			Ger	nder		Rad	е		Ethnic
Cause of Death	Total	Percent	7	1-4	5 - 9	10 - 14	15 - 17	Male	Female	White	Black	Asian	Other/ Multi	Hispanic
Prematurity	150	27.7%	148	1	1	0	0	79	71	77	67	2	4	5
Congenital anomaly	139	25.7%	123	9	4	3	0	72	67	93	27	2	17	21
Other medical condition	85	15.7%	41	13	9	12	10	46	39	63	20	0	2	5
Cancer	37	6.8%	0	8	11	11	7	19	18	27	6	1	3	3
Cardiovascular	28	5.2%	13	4	4	3	4	16	12	21	6	0	1	1
Other infection	28	5.2%	14	8	1	3	2	21	7	16	11	0	1	1
Other perinatal condition	20	3.7%	19	0	0	1	0	10	10	13	6	0	1	1
Neurological/ Seizure disorder	15	2.8%	3	3	4	3	2	5	10	9	5		1	1
Pneumonia	12	2.3%	9	1	0	1	1	9	3	8	3	0	1	2
SIDS	8	1.8%	10	0	0	0	0	6	4	9	0	0	1	0
Undetermined medical cause	10	1.8%	8	2	0	0	0	7	3	4	6	0	0	0
Asthma	6	1.1%	0	2	2	0	2	2	4	1	5	0	0	0
Malnutrition/ dehydration	1	0.2%	1	0	0	0	0	0	1	1	0	0	0	0
TOTAL	539	100%	389	51	36	37	28	292	249	342	162	5	32	40

External Causes of Death

The official manner of death includes two broad categories: medical causes and external causes. Within the external classification, individual deaths are then further classified according to the nature of the injury.

In 2010, **250 deaths were attributed to external cause**, 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

Motor Vehicle Related Fatalities

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. In 2010, **68** Tennessee children and youth under the age of 18 died from injuries sustained in or by motor vehicles. **These 68 deaths represent 27.2 percent of all injury-related deaths and 7.8 percent of all child fatalities in 2010**.

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.

	Table 19 Motor Vehicle/Other Transport Fatalities $n = 68$									
Age		TOTAL								
Group	Passenger	Driver	Pedestrian	Unknown						
<1 Year	5	0	0	0	5					
1-4 Years	4	0	1	0	5					
5-9 Years	8	0	2	0	10					
10-14 Years	7	2	1	1	11					
15-17 Years	16	14	5	2	37					
TOTAL	40	16	9	3	68					

Table 20 Vehicle Type $n = 68$							
Car	Truck	SUV	ATV	Motorcycle	Unknown		
44	7	8	2	3	4		

Table 21 – Motor Vehicle Fatalities by Gender n = 68				
Male	Female			
47	21			

Table 22 – Safety Equipment Usage (Safety equipment information not available for all vehicular fatalities)					
Seat Belts Worn Child Safety Seats Helmets in Use					
Correctly	Used Incorrectly	(ATV & Motorcycle Riders)			
14	5	2			

Asphyxiation Fatalities

Sixty-eight (68) children died of asphyxia in 2010. This number represents **27.2** percent of all injury-related deaths and **7.8** percent of all deaths. Asphyxia cases may be related to either suffocation, strangulation, or choking.

Fifty-two (52) of the children who succumbed to death by asphyxia were infants under the age of one year. Nationally and in Tennessee, asphyxia accounts for the largest share of external deaths among children in this age group. **Forty-eight of these 52 children expired in a sleep-related environment**.

	Table 23 Asphyxiation Fatalities $n = 68$									
		UNDERL	YING CAUSES							
Age Group	I Sleep I Suicide I Homicide I Other I I									
<1 Year	46		1	1	4	52				
1-4 Years			1		5	6				
5-9 Years				1	1	2				
10-14 Years		5				5				
15-17 Years		3				3				
TOTAL	46	8	2	2	10	68				

Table 24 – Asphyxiation Fatalities by Gender n=68		
Male	Female	
45	23	

Table 25 – Sleep Surface/Position of Sleep-Related Fatalities under 5 Years of Age (Sleep details not available or relevant for all asphyxia fatalities)						
Adult Bed	Couch	Crib	Other	Found on Stomach		
23	14	6	6	15		

Weapons Fatalities

Fifty-two (52) children died via weapon injuries in 2010. This number represents **20.8 percent of all injury-related deaths and six (6) percent of all 2010 deaths**. For classification purposes, body parts are included as weapons.

Of the 52 deaths, 41 were to males and 11 to females. Forty-eight percent of all weapon fatalities were the result of handguns, while another 29 percent were perpetrated by other firearms.

Table 26 Weapons Fatalities n = 52							
TYPE of WEAPON							
Age Group	Firearm	Sharp Instrument	Human Body Part	Rope	Other	Unknown	Total
<1	0	0	3	0	0	0	3
1 – 4	3	2	3	0	0	2	10
5 – 9	0	0	0	0	0	0	0
10 – 14	11	0	0	0	0	0	11
15 - 17	26	0	0	1	1	0	28
Total	40	2	6	1	1	2	52

Table 27 Type of Firearm n=40						
Missing						Total
25	4	4	2	2	3	40

Table 28 Individual Yielding Weapon n=52									
Self	Acquaintance	Parent	Mom's Partner	Friend	Gang	Stranger	Relative	Robbery Victim	Unknown or Missing
14	8	4	2	4	1	3	3	1	12

Drowning Fatalities

Twenty-five (25) children perished by drowning in 2010. This number represents **ten percent of all injury-related deaths and 2.9 percent of all 2010 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. In Tennessee in 2010, the number of drownings in the one-four-year age group was identical to the number of weapons fatalities in that age cohort.

Of the 25 drowning case reports, in only three cases was it definitively acknowledged that the child was able to swim.

Table 29 Drowning Fatalities $n = 25$						
DROWNING LOCATION						
Group	Age Group Open Water Pool / Hot Tub / Bathtub Other					
<1 Year	0	0	1	0	1	
1-4 Years	1	7	1	1	10	
5-9 Years	2	1	0	0	3	
10-14 Years	3	1	0	0	4	
15-17 Years	5	2	0	0	7	
TOTAL	11	11	2	1	25	

Table 30 –Drowning Fatalities by Gender n=25		
Male	Female	
20	5	

Fire/Burn Fatalities

Fires claimed the lives of **nine** children in 2010. This number represents **3.6 percent of all injury-related deaths and one (1) percent of all 2010 deaths.** Case files indicate that none of the fires was the result of arson.

Table 31 Fire/Burn Fatalities $n = 9$					
Ago		Type of Structure			
Age Group	Single Home	Duplex	Trailer/Mobile Home	Total	
<1 Year	1	0	0	1	
1-4 Years	2	0	3	5	
5-9 Years	0	2	0	2	
10-14 Years	0	0	0	0	
15-17 Years	1	0	0	1	
TOTAL	4	2	3	9	

Table 32 Cause of Fire n=9					
Space Heater	Cigarette Lighter	Cooking Stove	Unknown	Missing Data	
3	1	1	2	2	

Table 33 – Fire/Burn Fatalities by Gender n=9				
Male	Female			
2	7			

Fall/Crush Fatalities

Six children died as the result of a crush or fall injury in 2010. These six deaths represent 2.4 percent of all injury-related deaths and 0.7 percent of all child fatalities in 2010. Four of the deaths were to females and two to males.

Fall and crush deaths were evenly divided, with three fatalities resulting from each. In the United States, fall/crush injuries are among the most common **non**fatal childhood injuries each year, resulting in up to 2.8 million Emergency Room visits.

Table 34 Fall/Crush Fatalities $n = 6$					
Age Group	Fall or Crush	Associated Object	Gender	TOTAL	
<1 Year	0			0	
1-4 Years	Crush	Automobile	male	1	
1-4 rears	Crush	Bookcase	female	1	
5-9 Years	0			0	
	Fall	Horse	female	1	
10-14 Years	Fall	Other	male	1	
10-14 rears	Fall	Tree	female	1	
	Crush	Pile of lumber (2 x 10s)	female	1	
15-17 Years	0			0	
TOTAL				6	

Poison Related Fatalities

Ten children died as the result of a poison-related incident in 2010. **These ten deaths represent four (4) percent of all injury-related deaths and 1.1 percent of all child fatalities in 2010**. Poisoning related fatalities include drug overdose and acute intoxication. Eight of the deaths were to males, the remaining two, females.

Tennessee's statistics echo national data in relation to age cohorts, in that those over 15 generally have the highest percentage of poisonings, with children in the age group of five to nine having the lowest. The most recent national data show that male deaths outnumbered female fatalities by a ratio of two to one, a statistic even more exaggerated in Tennessee's 2010 poisoning deaths. Particularly noteworthy is the fact that eight of the ten poisoning fatalities involved medications in the opiate or benzodiazepine class.

Table 35 – Poison Related Fatalities $n = 10$							
Age Group	Substance(s)	Circumstance	Substance Stored	Gender	Total		
<1 Year	Over-the-counter cold medication	Deliberate Poisoning homicide	unknown	male	1		
1-4 Years	Opiates - OxyContin	Acute Intoxication – Dad's pain medication		male	1		
	Opiates - Morphine	Acute Intoxication Homicide (neglect)	Top Shelf, open closet	female	1		
5-9 Years							
10-14 Years	Opiate - Darvocet	Accidental, braces adjusted prior day	Closed cabinet / unlocked	male	1		
10-14 Years	Prescriptions – morphine, oxycodone, zolpidem	Acute Intoxication Manner Pending	unknown	male	1		
	Antidepressant, Opiate	Accidental, given by parents		male	1		
	Opiate - Morphine	Accidental	unknown	male	1		
15-17 Years	Opiates	Unknown, history of drug abuse		male	1		
	Over-the-counter (Benadryl)	Deliberate Poisoning Suicide	Closed cabinet / locked	male	1		
	Opiate & Other Prescriptions - Butalbital	Suicide	unknown	female	1		
TOTAL					10		

Exposure-Related Fatalities

Three children perished in Tennessee in 2010 as the result of an exposure-related fatality. These three deaths represent 1.2 percent of all injury-related deaths and .03 percent of all child fatalities in 2010.

As Table 36 indicates, each of these deaths was an accidental hyperthermic event, taking place in an automobile. All three deaths were in the one-three-year age cohort.

Table 36 – Exposure-Related Fatalities							
Age Group	Circumstance Condition Gender						
<1 Year				0			
	Accidental – buckled self in car	Hyperthermia	male	1			
1-4 Years	Accidental – got in car	Hyperthermia	male	1			
	Accidental – left in car	Hyperthermia	female	1			
5-9 Years				0			
10-14 Years				0			
15-17 Years				0			
TOTAL				3			

2010 County Information . . . "At a Glance"

This section provides a quick reference to child fatality numbers in Tennessee's 95 counties.

County Natural Accident Homicide Suicide Pending Undet. Unknown Total Anderson 7 4 0 0 0 0 0 11 Bedford 2 2 0 0 0 0 0 5 Benton 1 2 0 0 0 0 0 3 Blount 8 2 1 0 0 1 0 12 Bradley 3 2 0 0 0 0 0 0 12 Bradley 3 2 0
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Hamblen 3 1 1 0 1 1 0 7
Hamilton 25 4 2 1 1 12 0 45
Hancock 2 0 0 0 0 1 0 3
Hardeman 1 0 0 0 0 1 0 2
Hardin 4 1 1 0 0 0 0 6
Hawkins 4 2 0 0 0 1 0 7
Haywood 4 1 0 0 0 0 0 5
Henderson 0 0 0 0 0 0 0 0
Henry 5 1 0 0 0 2 0 8
Hickman 2 2 0 0 0 1 0 5
Houston 0 0 0 0 0 0 0 0
Humphreys 3 0 0 0 0 0 0 3
Jackson 0 0 0 0 0 0 0 0
Jefferson 7 1 0 0 0 0 0 8
Johnson 1 0 0 0 0 0 0 1
Knox 27 8 4 0 0 4 0 43

Table 37 - Manner of Death for All Counties								
County	Natural	Accident	Homicide	Suicide	Pending	Undet.	Unknown	Total
Lake	1	0	0	0	0	0	0	1
Lauderdale	5	1	0	1	0	1	0	8
Lawrence	2	4	1	0	0	1	0	8
Lewis	0	1	0	0	0	0	0	1
Lincoln	1	4	0	0	0	0	0	5
Loudon	3	3	0	0	0	0	0	6
Macon	3	1	0	0	0	1	0	5
Madison	8	6	1	0	0	1	0	16
Marion	3	1	0	0	0	1	0	5
Marshall	1	1	0	1	0	1	0	4
Maury	9	1	0	0	0	2	0	12
McMinn	4	2	0	0	0	0	0	6
McNairy	1	0	0	0	0	1	0	2
Meigs	1	1	0	0	0	0	0	2
Monroe	1	5	0	0	0	0	0	6
Montgomery	23	5	0	2	0	4	0	34
Moore	1	0	0	0	0	0	0	1
Morgan	4	0	0	0	0	0	0	4
Obion	4	1	0	0	0	1	0	6
Overton	1	0	0	0	0	0	0	1
Perry	0	2	0	1	0	0	0	3
Pickett	1	0	0	0	0	0	0	1
Polk	2	0	0	0	0	0	0	2
Putnam	5	0	1	1	0	0	0	7
Rhea	0	0	0	0	0	0	0	0
Roane	1	3	0	0	0	1	0	5
Robertson	6	2	1	1	0	1	0	11
Rutherford	20	3	1	2	0	5	0	31
Scott	3	2	0	0	0	0	0	5
Sequatchie	2	1	0	0	0	0	0	3
Sevier	10	1	0	0	0	0	0	11
Shelby	101	24	9	2	1	13	1	151
Smith	101	1	0	0	0	0	0	2
Stewart	0	1	0	0	0	0	0	1
Sullivan	12	1	0	1	0	0	3	17
Sumner	13	6	1	2	0	5	0	27
Tipton	6	5	0	1	0	1	0	13
Trousdale	2	2	0	0	0	0	0	4
Unicoi	1	2	0	0	0	1	0	4
Union	2	1	0	0	0	0	0	3
Van Buren	0	0	0	0	0	1	0	3 1
Warren	2	0	0	1	0	1	0	4
Washington	5	1	0	0	0	0	0	6
Wayne	2	1	0	0	0	0	0	3
Weakley	3	1	0	0	0	1	0	5
White	3	0	0	0	0	0	0	3
Williamson	11	1	0	1	0	1	0	14

Table 37 - Manner of Death for All Counties								
County	Natural	Accident	Homicide	Suicide	Pending	Undet.	Unknown	Total
Wilson	12	4	1	0	0	2	0	19
TOTAL	525	180	39	24	3	97	5	873

Table 38- Counties with 15 or More Fatalities					
COUNTY	TOTAL				
Shelby	151				
Davidson	91				
Hamilton	45				
Knox	43				
Montgomery	34				
Rutherford	31				
Sumner	27				
Wilson	19				
Sullivan	17				
Madison	16				
Dickson	15				
TOTAL	489				

Table 39 – Infant Deaths by County							
County	2008	2009	2010	County	2008	2009	2010
Anderson	2	4	6	Lauderdale	2	4	6
Bedford	4	5	3	Lawrence	4	1	5
Benton	0	0	2	Lewis	0	1	0
Bledsoe	0	2	2	Lincoln	3	1	0
Blount	10	3	8	Loudon	2	1	2
Bradley	8	2	1	Macon	3	2	1
Campbell	2	3	0	Madison	17	10	7
Cannon	0	2	1	Marion	1	4	3
Carroll	3	0	1	Marshall	4	7	1
Carter	5	11	7	Maury	8	12	7
Cheatham	1	1	4	McMinn	2	6	3
Chester	1	1	2	McNairy	2	2	2
Claiborne	4	3	2	Meigs	1	0	2
Clay	0	0	0	Monroe	3	1	3
Cocke	2	5	1	Montgomery	19	17	24
Coffee	5	4	6	Moore	0	0	0
Crockett	5	2	3	Morgan	0	1	3
Cumberland	4	3	7	Obion	4	1	4
Davidson	58	59	59	Overton	0	2	0
Decatur	0	2	0	Perry	0	1	0
DeKalb	4	6	1	Pickett	1	0	1
Dickson	4	6	8	Polk	2	1	2
Dyer	8	4	5	Putnam	9	7	4
Fayette	2	4	5	Rhea	2	3	0
Fentress	0	2	2	Roane	7	5	1
Franklin	4	3	1	Robertson	7	5	4
Gibson	4	3	3	Rutherford	24	29	20
Giles	1	3	2	Scott	0	1	2
Grainger	1	2	1	Sequatchie	2	0	1
Greene	3	3	2	Sevier	8	10	8
Grundy	3	1	0	Shelby	129	132	104
Hamblen	7	6	4	Smith	2	0	1
Hamilton	33	16	32	Stewart	1	1	0
Hancock	0	2	1	Sullivan	8	13	13
Hardeman	3	2	2	Sumner	19	6	14
Hardin	2	0	3	Tipton	8	4	6
Hawkins	3	2	4	Trousdale	0	0	1
Haywood	4	4	4	Unicoi	0	1	1
Henderson	1	0	0	Union	0	2	2
Henry	2	5	6	VanBuren	0	0	0
Hickman	5	0	2	Warren	3	3	2
Houston	0	0	0	Washington	8	13	5
Humphreys	1	2	2	Wayne	0	0	2
Jackson	0	0	0	Weakley	0	3	4
Jefferson	8	3	4	White	3	2	2
Johnson	0	0	1	Williamson	3	2	9
Knox	38	24	32	Wilson	8	6	7
Lake	1	0	0	TOTAL	589	538	531

APPENDIX

Appendix A – 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 B – Tennessee Child Fatality Review Process

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.

Mission

The mission of the Child Fatality Review (CFR) Program is to review deaths in order to:

- Promote understanding of the causes of childhood deaths.
- Identify deficiencies in the delivery of services to children and families by public agencies.
- Make and carry out recommendations that will prevent future childhood deaths.

State Child Fatality Prevention Team

The State Child Fatality Prevention Team (see Appendix D) is composed of elected officials, commissioners, and other policy makers in the state of Tennessee as described in T.C.A. 68-142-103 (available online at http://www.childdeathreview.org/Legislation/TNleg.pdf). This team reviews the reports from the local teams, analyzes statistics of the incidence and causes of child deaths, and makes recommendations to the Governor and General Assembly to promote the safety and well being of children. Members of the state team, per T.C.A. 68-142-103, include:

- (1) The Commissioner of Health, who shall chair the state team;
- (2) The Attorney General and Reporter;
- (3) The Commissioner of Children's Services;
- (4) The Director of the Tennessee Bureau of Investigation;
- (5) A physician nominated by the state chapter of the American Medical Association;
- (6) A physician to be appointed by the Commissioner of Health who is credentialed in forensic pathology, preferably with experience in pediatric forensic pathology;
- (7) The Commissioner of Mental Health and Substance Abuse Services;
- (8) A member of the judiciary selected from a list submitted by the Chief Justice of the Tennessee Supreme Court;
- (9) The Executive Director of the Commission on Children and Youth;
- (10) The President of the State Professional Society on the Abuse of Children:
- (11) A team coordinator, to be appointed by the Commissioner of Health;
- (12) The Chair of the Select Committee on Children and Youth:
- (13) Two (2) members of the House of Representatives, to be appointed by the Speaker of the House of Representatives, at least one (1) of whom shall be a member of the Health and Human Resources Committee;
- (14) Two (2) senators to be appointed by the Speaker of the Senate, at least one(1) of whom shall be a member of the General Welfare, Health and Human Resources Committee, and;

- (15) The Commissioner of Education or the Commissioner's designee.
- (16) The Commissioner of Intellectual and Developmental Disabilities.

Local Child Fatality Review Teams

The Child Fatality Review and Prevention Act of 1995 (T.C.A. 68-142-101-109) established a statewide network of child fatality prevention teams in the Judicial Districts of Tennessee (see Appendix E). The judicial districts cover all 95 counties of the state. Fourteen team leaders provide the administration for and coordination of the multi-discipline, multi-agency teams. Team leaders are from regional and metropolitan health offices across the state. The teams review all deaths of children 17 years of age or younger and make recommendations to the State Child Fatality Prevention 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. Members of the local teams include:

- (1) A Supervisor of Social Services in the Department of Children's Services within the area served by the team;
- (2) The Regional Health Officer in the Department of Health in the area served by the team, who shall serve as interim chair, pending the election by the local team;
- (3) A Medical Examiner who provides services in the area served by the team:
- (4) A Prosecuting Attorney appointed by the District Attorney General; and
- (5) An employee of the local education agency, to be appointed by the Director of Schools.
- (6) The interim chair of the local team shall appoint the following members to the local team:
 - a. A local law enforcement officer:
 - b. A mental health professional;
 - c. A pediatrician or family practice physician:
 - d. An emergency medical service provider or firefighter, and
 - e. A representative from a juvenile court.
 - f. Each local Child Fatality Team may include representatives of public and nonpublic agencies in the community that provide services to children and their families.

Case Reporting Database

Tennessee's child fatality data are entered electronically into the National Center for Child Death Review (CDR) database. Our partnership with the National Center has allowed us to capture and analyze data more efficiently and comprehensively than in past years.

The CFR Process

After the State Child Fatality Prevention Team reviews the recommendations from the local CFRTs, the findings are incorporated into the annual *Child Fatalities in Tennessee Report*. The annual report is then presented to the Legislature 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.

In spite of their best efforts, CFRTs are not able to review every child death. Some reviews must be delayed until all legal investigations, autopsies, or prosecutions are completed. Some deaths occur outside the county of residence, resulting in long delays in notification for the CFRT. Fetal deaths of less than 22 weeks' gestation and less than 500 grams in weight are not reviewed. 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 to augment other, more one-dimensional data sources.

Conclusion

The CFR process has raised the collective awareness of all participants and has led to a clearer understanding of agency responsibilities and possibilities for collaboration on all efforts addressing child health and safety. It is only through continued collaborative work that we can hope to protect the health and lives of our children.

Appendix C – Tennessee Child Fatality Prevention State Team for the 2010 Child Fatality Report

Co-Chairs

Karen Cline-Parhamovich, DO Chief State 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

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

Senator Ophelia Ford Tennessee Senate

Judge Betty Adams Green
Juvenile Court

Kathryn R. O'Day
Tennessee Department of Children's Services

Rachel Heitmann
Tennessee Department of Health

Jim Henry
Tennessee Department of Intellectual and Developmental Disabilities

Mike Hermann
Tennessee Department of Education

Linda O'Neal Tennessee Commission on Children and Youth

> Representative Antonio Parkinson Tennessee House of Representatives

Margie Quin Tennessee Bureau of Investigation

Sue Shelton Attorney General's Office

Representative Ryan Williams Tennessee House of Representatives

Appendix D – Local Child Fatality Review Teams

Local CFRT Team Leaders and Staff

Judicial Districts (JD) and Counties	CFRT Leader
JD 1: Carter, Johnson, Unicoi, and Washington Counties	Dr. David Kirschke/Pat Rash Northeast TN Regional Health Office
JD 2: Sullivan County	Dr. Stephen May/Janice Miller Sullivan Co. Health Dept.
JD 3: Greene, Hamblen, Hancock, and Hawkins Counties	Dr. David Kirschke/Pat Rash Northeast TN Regional Health Office
JD 4 – Dr. Ken Marmon Cocke, Grainger, Jefferson, and Sevier Counties JD 5 – Dr. Ken Marmon: Blount County JD 7 – Patti Campbell: Anderson County JD 8 – Kerri Byrd-Hamby: Campbell, Claiborne, Fentress, Scott, and Union Counties JD 9 – Dr. Bud Guider: Loudon, Meigs, Morgan, and Roane Counties	Dr. Tara Sturdivant/ Autumn Mays East TN Regional Health Office
JD 6: Knox County	Dr. Mary Palmer/ Alicia Mastronardi Knox County Health Dept.
JD 10: Bradley, McMinn, Monroe, and Polk Counties JD 12: Bledsoe, Franklin, Grundy, Marion, Rhea, and Sequatchie Counties	Dr. Jan BeVille/Billie Ammons Southeast Regional Health Office
JD 11: Hamilton County	Dr. Valerie Boaz/Sarah Stuart Sloan Chattanooga/Hamilton Co. Health Dept.
JD 13: Clay, Cumberland, DeKalb, Overton, Pickett, Putnam, and White Counties JD 15: Jackson, Macon, Smith, Trousdale, and Wilson Counties JD 31: Van Buren and Warren Counties	Dr. Fred Vossel/Jean Coffee Upper Cumberland Reg. Health Office

Judicial Districts (JD) CFRT Leader and Counties JD 14: Coffee County Dr. Langdon Smith/Dr. David Brumley JD 17: Bedford, Lincoln, Marshall, and South Central Regional Health Office Moore Counties JD 2101: Hickman, Lewis, and Perry Counties JD 2201: Giles, Lawrence, and Wayne Counties JD 2202: Maury County JD 16: Cannon and Rutherford Counties Dr. Alison Asaro/Sharon A. Woodard JD 18: Sumner County Mid Cumberland Reg. Health Office JD 1901: Montgomery County JD 1902: Robertson County JD 2102: Williamson County JD 23: Cheatham, Dickson, Houston, Humphreys, and Stewart Counties JD 20: Davidson County Dr. Kimberly Wyche-Etheridge/ **Amanda Holley** Metro/Davidson Co. Health Dept. JD 24: Benton, Carroll, Decatur, Hardin, Dr. Shavetta Conner/Kathy Smith and Henry Counties West TN Regional Health Office JD 25: Fayette, Hardeman, Lauderdale, McNairy, and Tipton Counties JD 27: Obion and Weakley Counties JD 28: Crockett, Gibson, and Haywood Counties JD 29: Dyer and Lake Counties JD 26: Chester, Henderson, and Madison **Dr. Tony Emison** Counties Jackson/Madison Co. Health Dept. JD 30: Shelby County Dr. Helen Morrow

Shelby County Health Department