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Davidson County Child Death Review

Data Report

2019

Metro Public Health Dept
Nashville / Davidson County
Protecting, Improving, and Sustaining Health

Davidson County Child Death Review Data Report, 2019

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Preface

Mission

The mission of the Davidson County Child Death Review Team (CDRT) is to provide a better understanding of how and why children die in order to find ways to help reduce the number of preventable child deaths. This is accomplished through comprehensive and multidisciplinary reviews of the circumstances surrounding each death.

Background

The CDRT is empowered by State statute (T.C.A. 68-42-101) and Mayoral Executive Order to conduct reviews of deaths to resident children under the age of 18 years in order to achieve the following goals:

1. Ensure an accurate inventory of child fatalities by demographics, geographic locations, causes, and manners.
2. Support adequate child death investigations.
3. Enable multi-agency collaboration, cooperation, and communication at the state and local levels to address child fatalities.
4. Analyze patterns and trends in total and cause-specific child fatalities with greater emphasis on preventable deaths related to abuse and neglect, unsafe sleeping environments, and inadequate medical care or public health services.
5. Enhance community awareness of the epidemiology of childhood mortality, and public understanding of why and how children die.
6. Develop recommendations and community-based prevention initiatives to reduce child fatalities among Davidson County residents.

About This Report

This report first summarizes the key issues, recommendations, and actions resulting from the CDRT's detailed review of each child death occurring in Davidson County during 2019. The report then presents quantitative data on the epidemiology of child fatalities with an emphasis on describing the cause and manner of death, preventability, context, and modifiable risk factors associated with the deaths.

Findings, Actions, and Recommendations Resulting from CDRT Reviews

Each year, based on the findings of child death reviews, the CDRT makes recommendations for policy, infrastructure, and service changes in an effort to prevent future childhood mortality. The Tennessee Department of Health (TDH) State Child Fatality Team consolidates recommendations from all teams across the state and uses them to guide legislative, programmatic, and policy agendas for Tennessee.

At the local level, the Davidson County CDRT facilitates the implementation of recommendations through direct interaction with the agencies and organizations involved, or through contacts and partnerships with appropriate community groups. Recommendations and actions made by the CDRT based on the review of child deaths occurring in 2019 are presented in Table 1 below.

Table 1. Findings, Actions, and Recommendations of the Davidson County CDRT, 2019

Findings	Recommendation/Action
• **Data Quality**: Through the course of reviews, the CDRT often encounters errors in birth and death certificates, and notes that there is no systematic process for reporting these errors for correction.	• Given that vital records form the cornerstone of health statistics used to guide the development and implementation of public health and community-based programs, the CDRT recommends that the State Vital Records Office: 1) Improve the information posted on its website regarding certificate corrections so that it is posted more prominently and provides an in-depth explanation regarding the vital records process and how errors can be reported; 2) Establish or improve current quality ontrol processes so that errors or anomalous entries are automatically flagged in the electronic system so that corrections can be made prior to certificate issuance; and, 3) Create a feedback system designed specifically for the CDR program that would allow Teams to report errors for review and correction.
• **Injury Prevention:** The CDRT noted several cases where guns were stored in vehicles and subsequently stolen and used in a crime. The Team requested clarification on current	• A presentation to the Team was made by a representative of the police department. Notable facts included: 1) In general, Tennessee is relaxing gun restrictions; 2) A person who legally owns a firearm can

gun laws in Tennessee pertaining to firearms in vehicles and the prevention efforts implemented by the police department.	transport it in a vehicle with no repercussions; 3) A non-student adult who legally owns a firearm can have that gun in their vehicle on school property if it is not being handled; 4) There is no law that stipulates what a gun owner must do in order to protect the contents of his or her vehicle. Therefore, the law is unable to prosecute someone who left the car unlocked, had a gun stolen, and that gun was subsequently used in a crime; 5) In 2019, nearly 65% of the automobiles stolen had keys left in the vehicle, and in 16.8% of those, the car was left running without the driver present. Also in that year 747 guns were stolen from vehicles; 6) the police department implemented the PARK SMART campaign, which is designed to encourage citizens to secure their valuables, lock their cars, and remove the keys from the vehicle.
• **Domestic Violence Prevention:** Reviews led the Team to ask how domestic violence is addressed in local WIC programs. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are at nutritional risk.	• A representative from WIC reported the following: 1) There are no specific questions related to domestic violence in the standard series of questions asked during a WIC visit. Additionally, the questions asked are dictated by the federal government and local staff cannot change or modify the form; 2) WIC staff receive mandatory training that includes child abuse reporting, domestic violence in the workplace, and the Safe at Home program. The Safe at Home program protects the confidentiality of program participants' addresses; 3) WIC staff regularly provide an updated resource list to all families certifying or recertifying for the WIC program. The section for domestic violence and sexual assault identifies 7 different resources available in the community.
• **Domestic Violence Prevention:** Reviews raised concerns that the communication between different systems in cases of domestic violence could leave gaps which could impair	• The CDR Team approved the formation of a workgroup to investigate how systems notify and interact with each other in cases of domestic violence. The workgroup is ongoing. Once work is concluded,

efforts to protect victims and families attempting to exit violent situations.	recommendations will be brought to the full CDR Team for review and approval.
• **Health Care Access:** Reviews raised concerns that health histories would be overlooked when birth control prescriptions were provided outside the doctor's office. The Team requested clarification on the laws and regulations governing the availability of over-the-counter (OTC) birth control prescriptions.	• Research revealed that Tennessee has not moved to OTC birth control but has passed a law for pharmacist-prescribed birth control. Patients must be at least 18 years of age, complete a self-screening questionnaire which assesses risk, and consult with a pharmacist. The law will not go into effect until the rules detailing how pharmacist-prescribing will work have been finalized. Birth control prescriptions are also available through online pharmacies, which are generally guided by a physician who consults with the patient, reviews the health history, and prescribes the most appropriate form of birth control.
• **Suicide Prevention:** Reviews raised concerns that there may be insufficient resources and supports in the community for parents and caretakers of people struggling with suicide. The Team requested additional information on suicide prevention resources in the community.	• A representative of the Tennessee Suicide Prevention Network (TSPN) reported that there are support groups and grief resources for family and friends of suicide victims. The support groups available in Tennessee are designed to be of assistance to family members and caregivers.

Report Highlights

- In 2019, the CDRT reviewed 81 child deaths. Most of these deaths (50 deaths, 61.7%) occurred to infants under 1 year of age.

- The overall mortality rate for children aged 0 to 17 years in Davidson County in 2019 (74.8 deaths per 100,000) was not substantially different from the previous year. It was significantly higher than the rates for Tennessee and the United States.

- The CDRT determined that 38.3% of the child deaths reviewed in 2019 were preventable. The high percentage of preventable deaths highlights the need for a thoughtful review of each death to understand the risk factors and circumstances leading to injury and illness or death and identify opportunities for prevention.

- In 2019, Non-Hispanic Black (NHB) children were over 2.5 times more likely to die than Non-Hispanic White (NHW) children. This disparity was persistent over the 5-year period from 2015 to 2019.

- During 2015-2019, NHB infants were, on average, 3.4 times more likely to die than NHW infants. The disparity has widened from 3.4 in 2018 to 5.5 in 2019, and is consistent with state-wide trends.

- More than 25% (13 deaths) of infant deaths reviewed in 2019 were sleep-related, and all 13 occurred when infants were placed to sleep in unsafe bedding.

- Of the total reviewed, 12 deaths (14.8%) resulted from unintentional injuries, including suffocation (2 deaths), drowning (2), motor vehicle crashes (4), poisoning (2), weapon (1), and fire (1).

- There were 6 deaths (7.4% of total reviewed) related to violence (i.e., homicides and suicides). Most of these deaths occurred to males (4 deaths), children aged 10 to 14 or 15 to 17 years (3 deaths each), and NHB children (3 deaths).

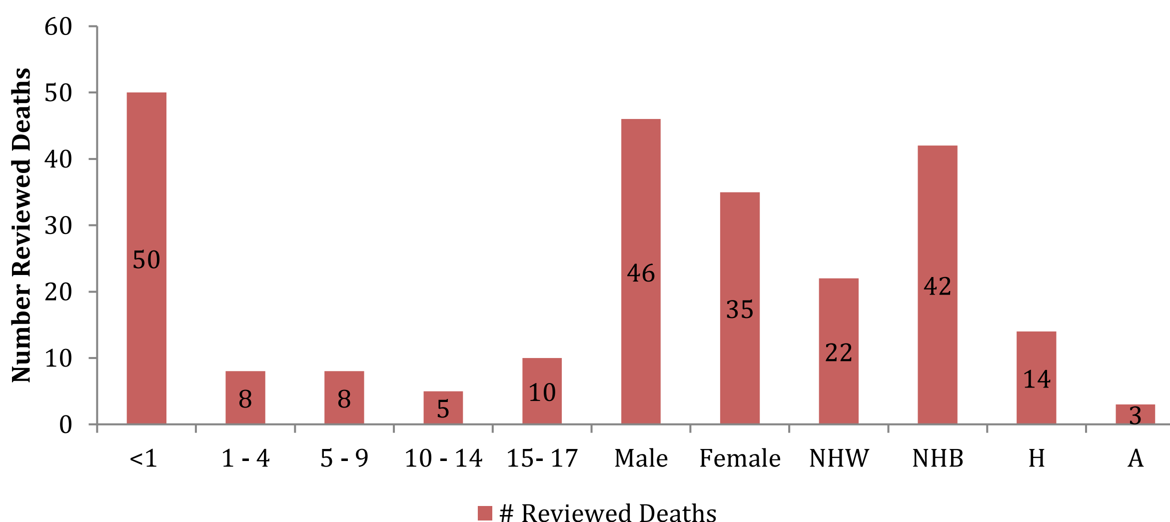
- Over a quarter of the reviewed deaths (22 deaths, 27.2%) showed some evidence of maltreatment, defined as abuse, neglect, lack of supervision, or negligence. In 21 of these deaths, the perpetrator was the child's biological parent or primary caregiver.

Executive Summary

Overall Child Mortality

The CDRT reviewed 81 deaths that occurred to children in Davidson County in 2019. The first year of life appears to be the most vulnerable for Davidson County's children, accounting for 61.7% of all deaths under the age of 18 years (Figure 1). Children aged 15-17 years had the next highest percentage of deaths at 12.3% followed by children aged 1-4 years and 5-9 years (9.9% each). Children aged 10-14 years had the lowest percentage of deaths (6.2%). More males (56.8%) than females (43.2%) died in 2019.

Figure 1. Number of Reviewed Deaths by Age, Sex, and Race/Ethnicity, Davidson County, TN, 2019



Data Source: MPHD, Child Fatality Review Database System

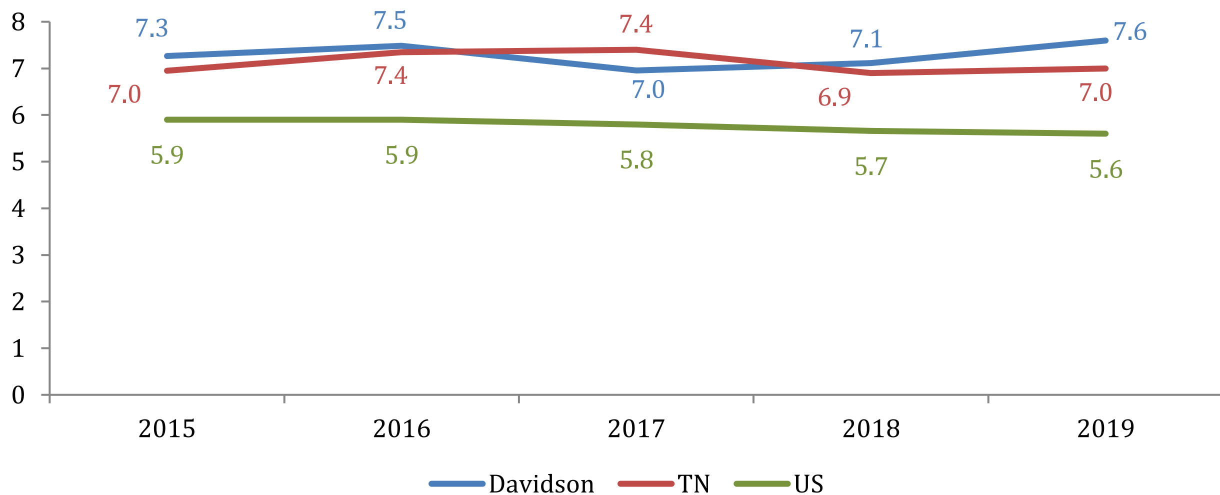
In 2019, similar to previous years, there were racial and ethnic disparities in child fatalities within the county (Figure 1). NHB children represented a disproportionately higher percentage of the total reviewed deaths compared to NHW children (51.9% vs. 27.2%), followed by Hispanic children (17.3%).

The overall annual mortality rate for NHB children in 2019 was 2.7 times higher than for NHW children, up from 1.5 times higher in 2015. This large increase was due largely to a drop in the mortality rate for NHW. For NHB children, the rate went from 115.2 per 100,000 in 2015 to 126.8 in 2019. For NHW children, the rate decreased from 78.4 per 100,000 in 2015 to 46.6 in 2019.

Infant Mortality

In 2019, the infant mortality rate was 7.6 deaths per 1,000 live births, which was not substantially different from the previous year (7.1 deaths per 1,000 live births). The five-year (2015-2019) trend in infant mortality rates in Davidson County were similar to those for Tennessee, and were substantially higher than national rates. In 2019, for example, the infant mortality rate in Davidson County (7.6 per 1,000 births) was 35.7% higher than the rate for the nation (5.6 per 1,000 births) (Figure 2).

Figure 2. Infant Mortality Rates per 1,000 Live Births, Davidson County, Tennessee, and the US, 2015-2019



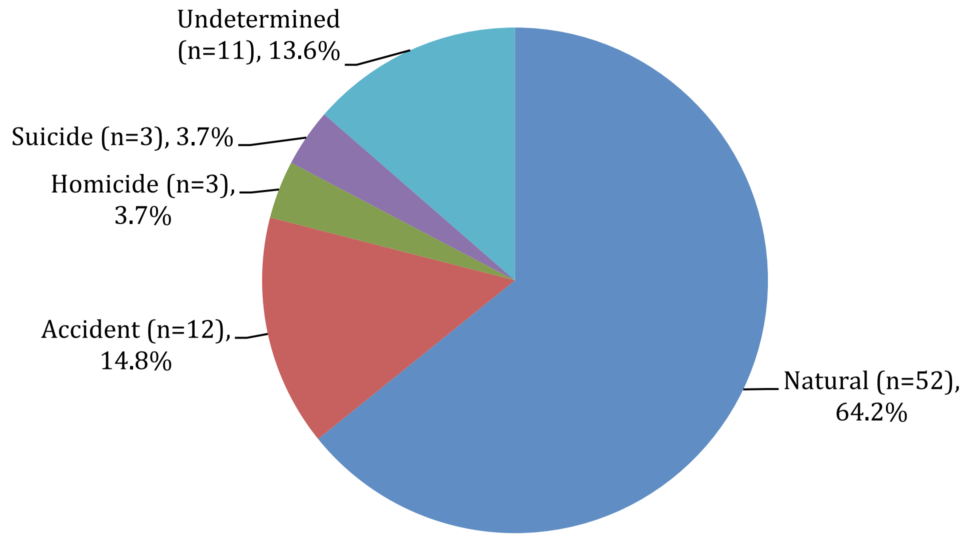
Data Sources: Vital records provided by Tennessee Department of Health; Tennessee and US rates from CDC Wonder.

Between 2015 and 2019, mortality rates among NHB infants increased from 11.8 to 17.1 deaths per 1,000 live births. The rates among NHW infants decreased from 5.7 to 3.1 per 1,000 live births, and the ratio between NHB and NHW infant mortality increased from 2.1 in 2015 to 5.5 in 2019. This represents a dramatic shift in the infant mortality racial disparity and requires renewed attention.

Manner of Death

In 2019, most reviewed deaths in Davidson County resulted from natural causes (64.2%), followed by accidents (14.8%), homicides (3.7%), and suicides (3.7%) (Figure 3). Additionally, 13.6% were categorized as undetermined because their cause and manner remained unknown after extensive autopsy and death scene investigations.

Figure 3. Percent of Reviewed Deaths by Manner of Death, Davidson County, TN, 2019



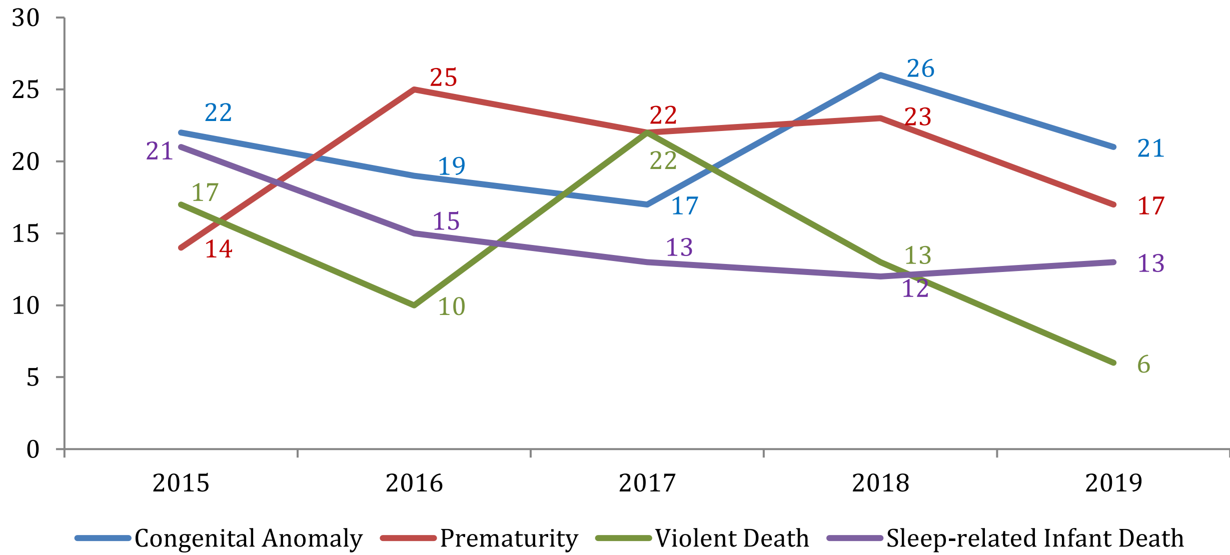
Data Source: MPHD, Child Fatality Review Database System

Cause of Death

During 2019, of the 52 deaths classified as natural, congenital anomalies (40.4%) accounted for the highest percentage, followed by prematurity (32.7%), and cancer (15.4%). Among the 12 deaths categorized as accidental, motor vehicle crashes were the leading cause (4 deaths) followed by drowning, suffocation, and poisoning (2 each). Firearms were the leading causes of death for homicides (2 of 3 deaths) and suicides (2 of 3 deaths).

Figure 4 displays the 5-year trend in the number of infant and child deaths for some of the most frequent causes of death from 2015 through 2019. During this period, the number of sleep-related infant deaths peaked in 2015 (21 deaths), followed by a decline in subsequent years, with the frequency stabilizing in 2017. Compared to 2015, the number of sleep-related deaths in 2019 decreased by 38.1%. Deaths due to prematurity peaked in 2016 (25 deaths) and remained stable until 2019 (17 deaths). The number of deaths due to congenital anomalies increased from 22 deaths in 2015 to 26 deaths in 2018, but decreased slightly to 21 deaths in 2019. Violent deaths, defined as homicides and suicides together, reached the highest level in 2017 with 22 deaths, then declined to 6 deaths in 2019.

Figure 4. Number of Reviewed Deaths for Selected Causes, Davidson County, TN, 2015-2019



Data Source: MPHD, Child Fatality Review Database System

Introduction

The Child Death Review process brings together a multidisciplinary team to examine child deaths in the community to understand why children die and to focus on prevention efforts that reduce childhood morbidity and mortality. Information on each death is collected from a wide range of agencies and medical providers and carefully reviewed. The process allows for the identification of inefficiencies and gaps in medical care and social support systems, as well as gaining understanding of the broader health issues in the community and modifiable risk factors associated with child deaths.

Data Sources and Data Analyses

This report is primarily based on the 2019 child death review data for Davidson County. Child mortality is defined as the death of a child between 0 and 17 years of age. Infant mortality is defined as a death occurring within the first 12 months of life.

For the current analysis, the death of a child was reviewed if:

- The child resided in Davidson County at the time of death;
- The child was between 0 and 17 years; and
- The death occurred in Tennessee.

In addition, infant deaths were reviewed if they were born on or after 23 weeks gestation or at a weight equal to or greater than 500 grams.

Approximately 85% of all child deaths occurring in Davidson County meet the above criteria and are reviewed. As such, data presented in this report might be slightly different from the data in other published reports based on different data sources (e.g., vital records).

Data from child death reviews were analyzed to provide the frequency distribution of deaths by demographic characteristics (i.e., age, gender, race/ethnicity), and by the manner and cause of death.

In addition, mortality rates per 100,000 children and infant mortality rates per 1,000 live births were based on total deaths recorded in the mortality and natality files for Davidson County. The rates for 2019 were compared with the rates for 2015, 2016, 2017, and 2018 to examine the 5-year trend from 2015 through 2019. The geographic distribution of child deaths was also analyzed to determine where the deaths were concentrated within Davidson County.

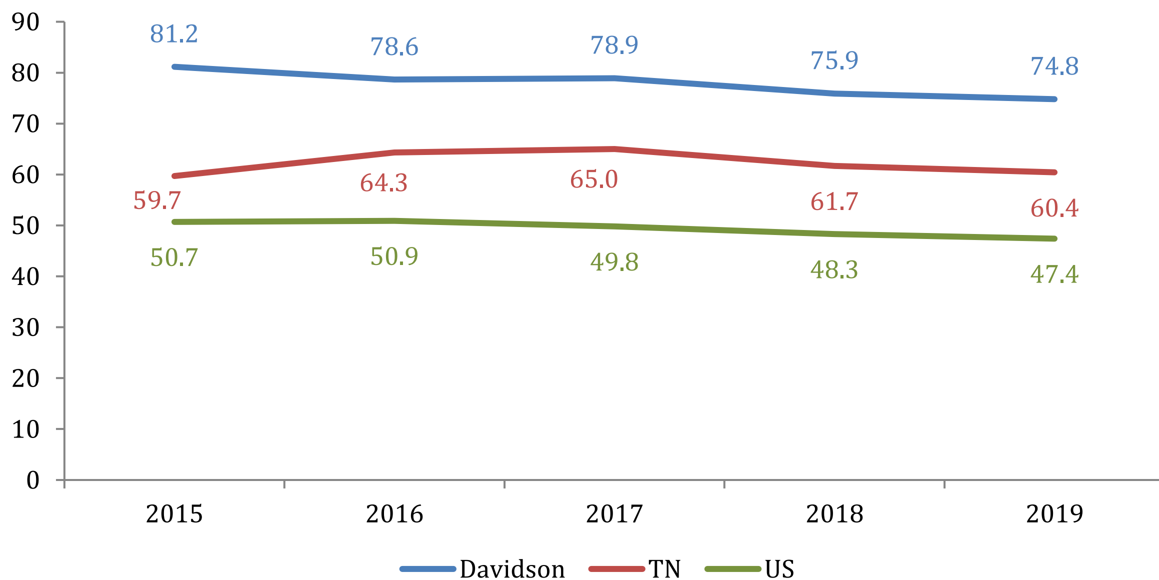
Further details regarding the analysis can be found in the Technical Notes section of this report.

Child Mortality

Overall Mortality

The overall mortality rates for children aged 0 to 17 years in Davidson County in 2019 have declined slightly from the rate in 2015, from 81.2 to 74.8 per 100,000 (Figure 5). In each year, Davidson County experienced a child mortality rate higher than for Tennessee and the United States. In 2019, the rate for Davidson County was 23.8% higher than the rate for Tennessee and 57.8% higher than the national rate.

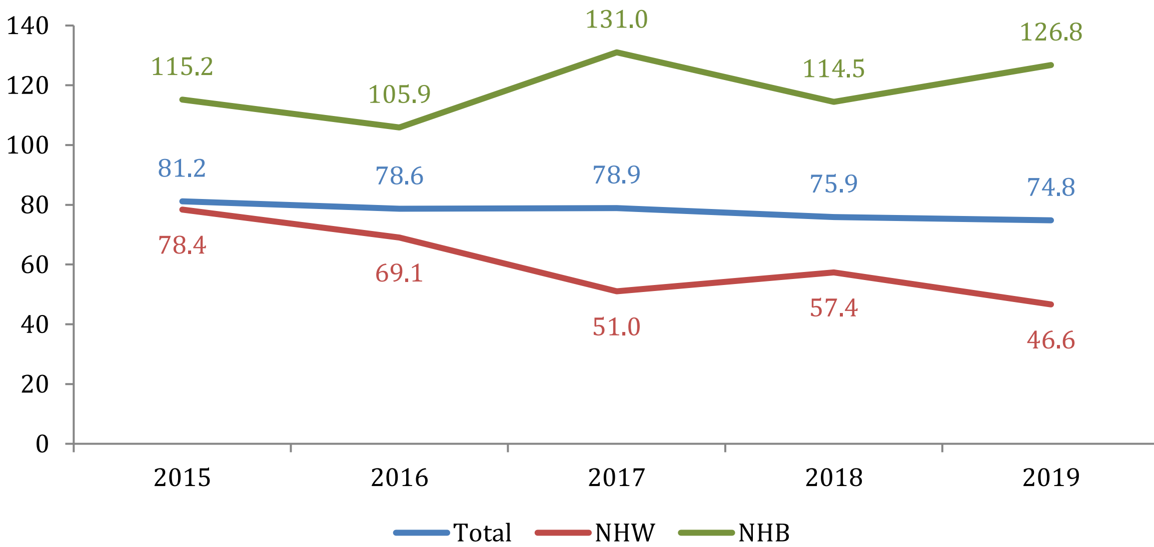
Figure 5. Mortality Rates per 100,000 Children Aged 0-17 Years, Davidson County, Tennessee, and the US, 2015-2019



Data Sources: Vital records provided by Tennessee Department of Health; Population based on American Community Survey 1-year estimates; Tennessee and US rates from CDC Wonder.

Racial and ethnic disparities in childhood mortality in Davidson County persisted during the 5 years 2015-2019 (Figure 6), with NHB children dying at a rate that was, on average, 2.1 times higher than the rate of NHW children. Additionally, mortality rates for NHB children increased slightly (115.2 to 126.8 per 100,000) between 2015 and 2019 while the rate for NHW children decreased 40.6% (78.4 to 46.6 per 100,000).

Figure 6. Mortality Rates per 100,000 Children Aged 0-17 Years by Race/Ethnicity, Davidson County, TN, 2015-2019



Data Sources: Vital records provided by Tennessee Department of Health; Population based on American Community Survey 1-year estimates; Hispanic rates not included due to small numbers.

Manner of Death

Manner of death is a way of categorizing deaths based on the circumstances under which a death occurred. This is assigned by either the physician certifying the death or the medical examiner conducting the autopsy. Each death is classified as one of the following manners: Natural, Accident, Homicide, Suicide, or Undetermined.

Of the 81 deaths reviewed in 2019, 52 deaths (64.2%) were classified as natural, 12 (14.8%) as accidental, 3 (3.7%) as homicide, and 3 (3.7%) as suicide. When data were stratified by sex, age, and race/ethnicity, natural causes remained the leading manner of death in every subgroup, except for children aged 5 to 9 years, among whom the number of natural and accidental deaths was the same (4 deaths), and children aged 10 to 14, among whom the number of natural and suicide deaths were equal (2 deaths) (Table 2).

Table 2. Number of Reviewed Deaths by Manner of Death among Children Aged 0-17 Years, Davidson County, TN, 2019

	Manner of Death					
	Natural (n=52)	Accident (n=12)	Suicide (n=3)	Homicide (n=3)	Undetermined (n=11)	Total (n=81)
Age Group						
<1 yr	35	4	0	0	11	50
1-4 yrs	6	2	0	0	0	8
5-9 yrs	4	4	0	0	0	8
10-14 yrs	2	0	2	1	0	5
15-17 yrs	5	2	1	2	0	10
Race/Ethnicity						
NHB	21	8	2	1	10	42
NHW	16	3	1	1	1	22
Asian	3	0	0	0	0	3
Hispanic	12	1	0	1	0	14
Sex						
Male	25	7	1	3	10	46
Female	27	5	2	0	1	35

Data Source: MPHD, Child Fatality Review Database System

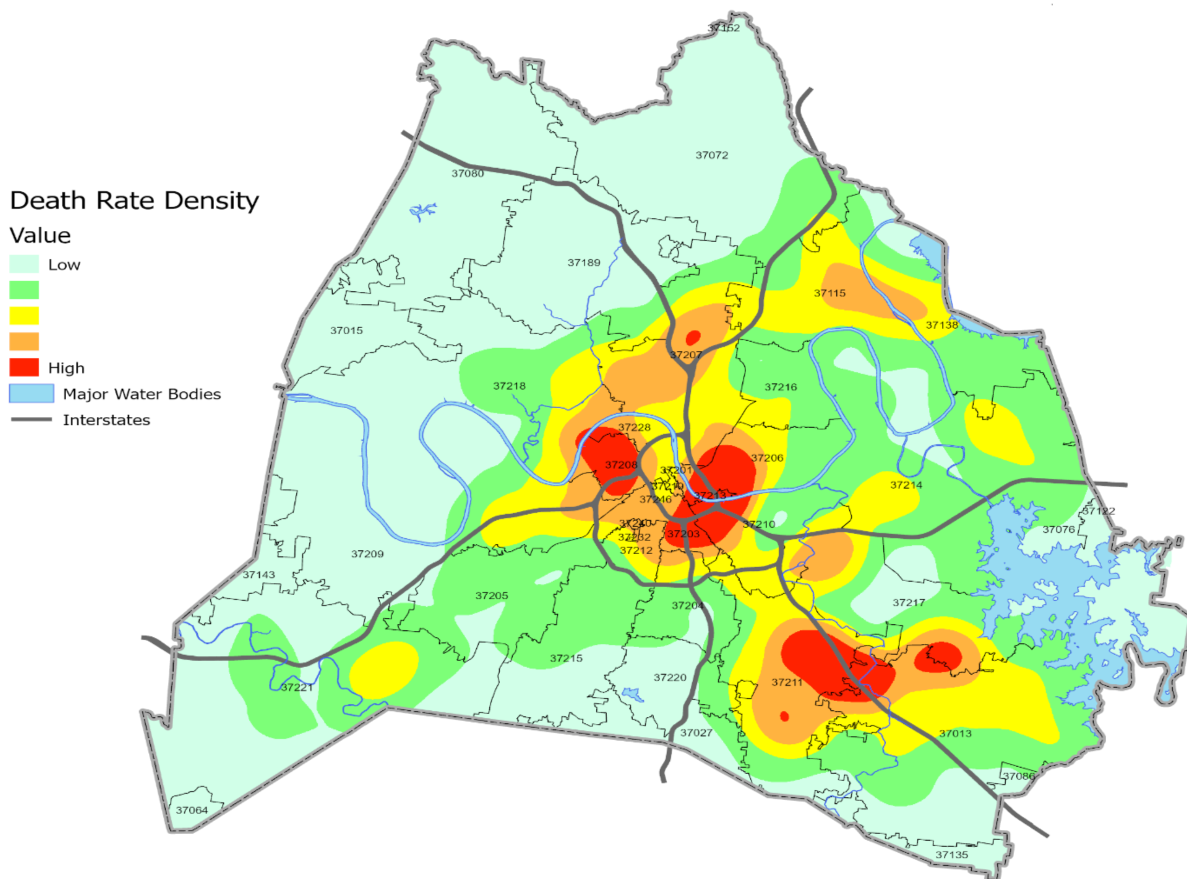
As shown in Table 2, there were marked differences in the demographic distribution of child fatalities by manners of death. While infants accounted for the highest percentage of natural deaths (35 of 52 deaths, 67.3%), children aged 10 to 14 years contributed the highest percentage of suicides (2 of 3 deaths, 66.7%), and aged 15 to 17 years contributed the most homicide deaths (2 of 3 deaths, 66.7%). Except for deaths due to homicide, NHB children consistently had the highest number of deaths when compared to other racial/ethnic groups, irrespective of the manner of death.

Deaths classified as undetermined accounted for 13.6% of all deaths reviewed in 2019. All undetermined deaths were infants and involved unsafe sleeping environments.

Geographic Distribution of Child Mortality

The burden of child mortality is not uniformly distributed across the county. Figure 7 displays the incident density of reviewed child fatalities in Davidson County based on 5-year aggregate data from 2015 to 2019. Areas with the highest relative density of child deaths are shaded in red, while those with the lowest are shaded in light green. As the map indicates, areas with the highest density of child mortality were located in the center and southeast parts of the county. In addition, another smaller area with a high density of child mortality is found in the northeastern part of the county.

Figure 7. Map of Relative Incident Density of Child Deaths According to Resident Address at the Time of Death, Davidson County, TN, 2015-2019



Map Notes:
Created by the Division of Epidemiology, MPHD.
Density is calculated using ArcGIS Kernel Density Tool

Data Sources:
MPHD, Child Fatality Review Database System

Infant Mortality

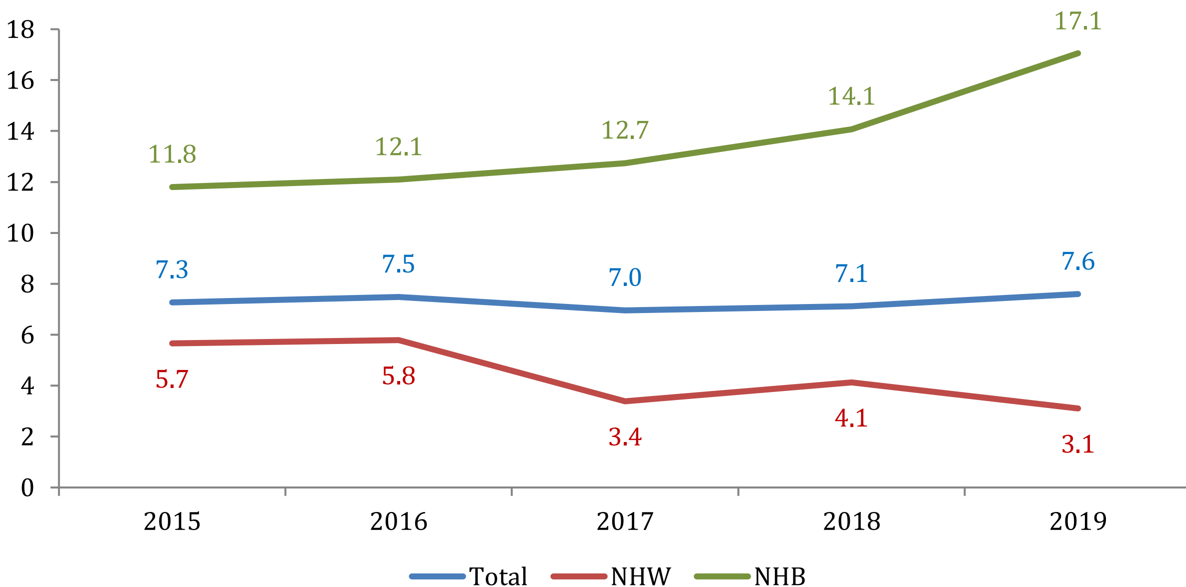
Overall Infant Mortality

The CDRT reviewed 50 infant deaths in 2019, representing 61.7% of all reviewed deaths. As presented in Figure 2, the infant mortality rate in Davidson County was 7.6 per 1,000 live births in 2019, which was similar to the previous year (7.1 per 1,000 live births).

From 2015 to 2019, infant mortality rates in Davidson County were similar to the rates for Tennessee and consistently exceeded national rates. In 2019, for example, Davidson County's rate was 35.7% higher than the national rate (Figure 2, page 12).

As shown in Figure 8, between 2015 and 2019, racial and ethnic disparities in infant mortality widened dramatically. The infant mortality rate for NHB infants grew by 45% (from 11.8 to 17.1 per 1,000 live births), while the rate for NHW infants dropped by 45.6% (from 5.7 to 3.1 per 1,000 live births). In 2019,the NHB infant mortality rate was 5.5 times higher than that for NHW infants.

Figure 8. Infant Mortality Rates per 1,000 Live Births by Race/Ethnicity, Davidson County, TN, 2015-2019



Data Sources: Vital records provided by Tennessee Department of Health. Hispanic rates not included due to small numbers.

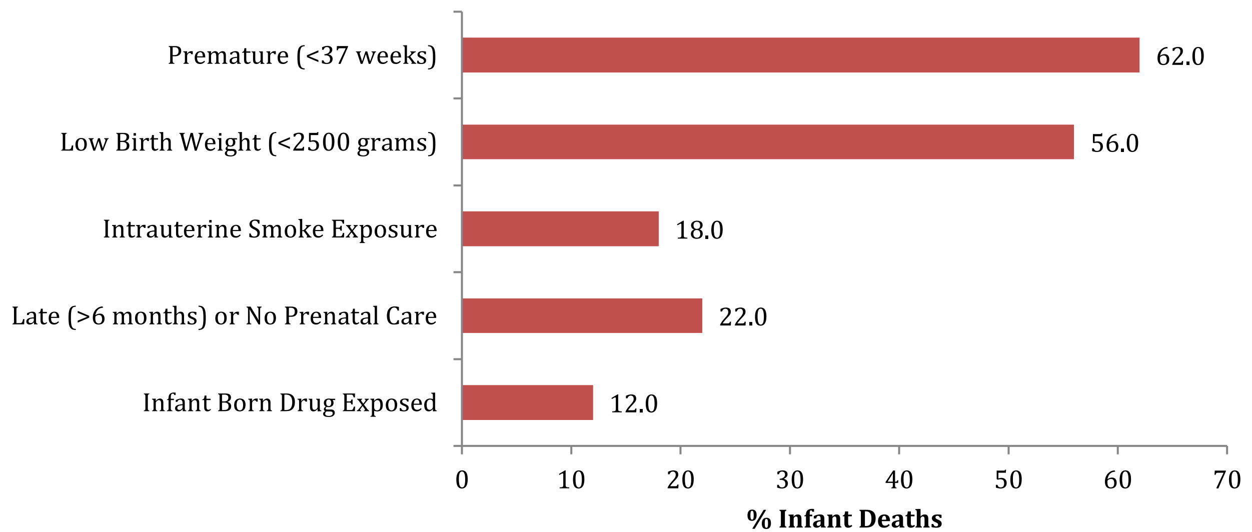
Factors Associated with Infant Deaths

It is well established that infant vitality is influenced by a range of factors such as maternal health and behaviors, maternal substance use (e.g., smoking, drug abuse), access to pre- and post-natal care, issues related to labor and delivery, and housing conditions. This

section of the report presents data on factors associated with infant deaths based on information obtained from CDRT reviews, irrespective of the cause and manner of death.

As shown in Figure 9, prematurity and low birth weight were the predominant risk factors, which occurred in 62% and 56% of the total reviewed infant deaths. These percentages mirror the rate of preterm birth (10.5%) and low birth weight (9.1%) in Davidson county. Additionally, 18% of reviewed infant deaths were associated with intrauterine smoke exposure, and 12% were born drug-exposed. Having late or no prenatal care was noted among 22% of mothers with infant deaths, which was higher than the percentage of having late or no prenatal care among all mothers in Davidson County (9.4%).

Figure 9. Risk Factors Associated with Infant Deaths, All Causes, Davidson County, TN, 2019



Data Source: MPHD, Child Fatality Review Database System

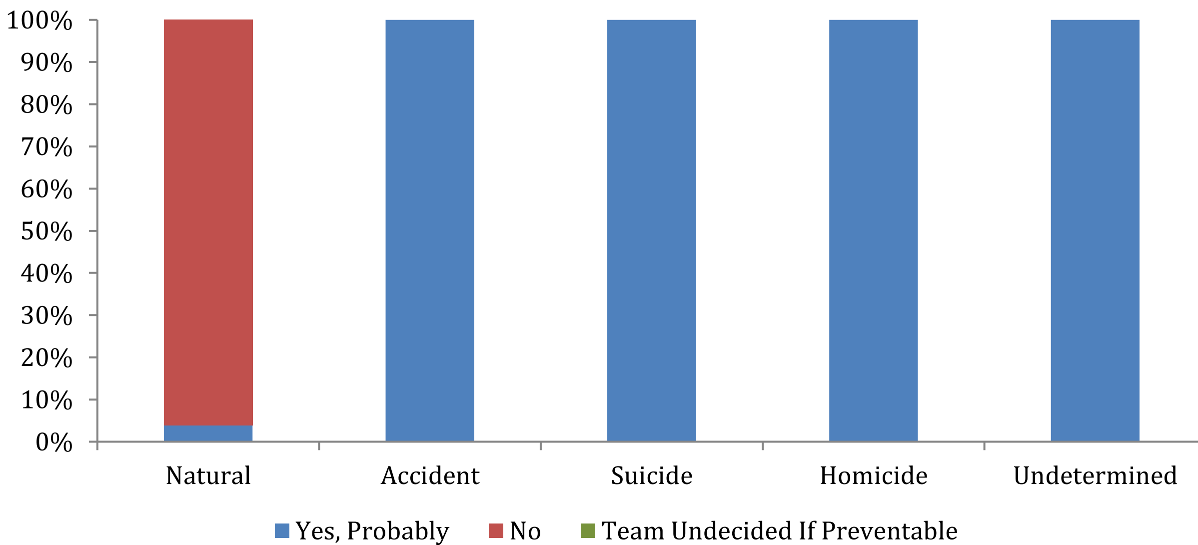
Approximately 26% of total infant deaths in 2019 in Davidson County were sleep-related (13 deaths). Review determined that the sleeping environment was unsafe due to co-sleeping or soft bedding. Practicing safe sleep habits for infants is a key component of any interventions to reduce infant mortality. A more detailed examination of sleep-related infant deaths is provided later in this report.

Preventability

The CDRT reviewed each death to determine if the death appeared preventable. A death is deemed preventable if an individual or a community could have identified and modified risk factors and reasonably changed the circumstances leading to death.

The CDRT determined that 31 (38.3%) of the total 81 deaths reviewed in 2019 were probably preventable. Most preventable deaths were injury-related such as suicides, homicides, motor vehicle crashes, fires, poisonings, and drownings (Figure 10). Notably, 100% of accidents, homicides, suicides, and undetermined deaths were preventable. This includes sleep-related deaths, for which the manner of death was often classified as accidental or undetermined.

Figure 10. Reviewed Child Deaths by Manner of Death and Preventability, Davidson County, TN, 2019



Data Source: MPHD, Child Fatality Review Database System

Detailed Review of Deaths by Manner and Cause

As stated previously in this report, certifying physicians or medical examiners classified deaths into 1 of 5 manners of death: natural, accident, homicide, suicide, or undetermined. The frequency distribution of deaths by manner is discussed earlier in this report (Figure 3, Table 2). The following sections describe the specific causes of death within each manner.

Deaths Due to Natural Causes

A total of 52 deaths reviewed by the CDRT in 2019 were due to natural causes. As shown in Table 3, 67.3% of those deaths occurred to infants, 51.9% occurred to females, and 40.4% occurred to NHB children, the highest percentage when compared to other race/ethnic groups. The leading causes of deaths were congenital anomalies (21 deaths, 40.4%), and prematurity (17 deaths, 32.7%). Cancers contributed 15.4% (8 deaths). Other conditions (6 deaths) contributed 11.5% and included infections (3.9%), heart conditions, pneumonia, perinatal conditions, and other medical issues (1.9% each).

Table 3. Number of Reviewed Deaths Due to Natural Causes by Specific Cause, Summary for Children Aged 0-17 Years, Davidson County, TN, 2019

	Natural Causes of Death					
	Total (n=52)	**% of Reviewed Deaths**	**Congenital Anomaly (n=21)**	**Prematurity (n=17)**	**Cancer (n=8)**	**Other Causes (n=6)**
Age Group						
<1 yr	35	67.3	16	17	0	2
1-4 yrs	6	11.5	2	0	4	0
5-9 yrs	4	7.7	2	0	0	2
10-14 yrs	2	3.8	0	0	1	1
15-17 yrs	5	9.6	1	0	3	1
Race/Ethnicity						
NHB	21	40.4	9	10	1	1
NHW	16	30.8	5	4	4	3
Asian	3	5.8	2	0	1	0
Hispanic	12	23.1	5	3	2	2
Sex						
Male	25	48.1	10	11	1	3
Female	27	51.9	11	6	7	3

Data Source: MPHD; Child Fatality Review Database System

Deaths Due to Unintentional Injuries

The CDRT identified 12 deaths due to unintentional injury in 2019, representing 14.8% of the total reviewed deaths. The leading causes of deaths due to unintentional injury were motor vehicle crashes (4 deaths, 33.3%), followed by suffocation, drowning, and poisoning (2 deaths each, 16.7%) (Table 4). The remaining deaths resulted from fire and faulty handling of a weapon (1 death each, 8.3%). Male children (7 deaths, 58.3%), infants under 1 year of age (4 deaths, 33.3%), children aged 5 to 9 years (4 deaths, 33.3%), and NHB children (8 deaths, 66.7%) had the highest percentages of unintentional injury-related deaths compared to other subgroups.

Table 4. Number of Reviewed Deaths Due to Unintentional Injury by Cause, Summary for Children Aged 0-17 Years, Davidson County, TN, 2019

	Deaths Due to Unintentional Injury					
	Total (n=12)	**% of Reviewed Deaths**	**Suffocation (n=2)**	**Drowning (n=2)**	**Motor Vehicle (n=4)**	**Other Causes (n=4)**
Age Group						
<1 yr	4	33.3	2	0	0	2
1-4 yrs	2	16.7	0	0	1	1
5-9 yrs	4	33.3	0	2	2	0
10-14 yrs	0	0.0	0	0	0	0
15-17 yrs	2	16.7	0	0	1	1
Race/Ethnicity						
NHB	8	66.7	2	2	1	3
NHW	3	25.0	0	0	3	0
Asian	0	0.0	0	0	0	0
Hispanic	1	8.3	0	0	0	1
Sex						
Male	7	58.3	1	1	3	2
Female	5	41.7	1	1	1	2

Data Source: MPHD; Child Fatality Review Database System

Motor Vehicle

The CDRT reviewed 4 deaths due to motor vehicle accidents. The child was the driver in 1 incident, a passenger in 2 incidents, and a pedestrian in 1 incident. Speeding, recklessness, and driver distraction were cited as contributing factors in 2 incidents each. Poor visibility, running a stoplight, poor sight line, failure to keep in proper lane, and cellphone use while driving were each cited in 1 incident. Drug or alcohol impairment was noted in 2 incidents. Driving conditions were normal in all 4 incidents. The actions of the child caused the crash in 1 case. In 1 incident the child's driver was operating the vehicle with a suspsended license. For the 2 incidents where seatbelt use was appropriate, correct use was evident in 1 incident, and in 1 incident seatbelts were not used. A booster seat or a helmet was needed and used correctly in 1 incident each.

Drowning

Of the 2 drowning deaths reviewed, 1 occurred in a lake, and 1 occurred in a swimming pool. Neither child was able to swim. A flotation device was used in 1 incident. Supervisors were noted to have consumed alcohol in 1 incident. In 1 incident, the child was noted to have significant mental health and medical conditions.

Suffocation

The CDRT reviewed 2 child deaths due to accidental suffocation, both of which were sleep-related. Further discussion can be found in the sleep-related death section of the report.

Poisoning

The CDRT reviewed 2 child deaths due to accidental overdose. One death occurred in an infant due to maternal acute drug intoxication. The other death occurred when a toddler consumed illegal drugs that were left unsecured in the home.

Fire

One child died of smoke inhalation from a fire while being left unattended at home. Functioning smoke alarms were present at the scene, and no barriers to safe exit were noted.

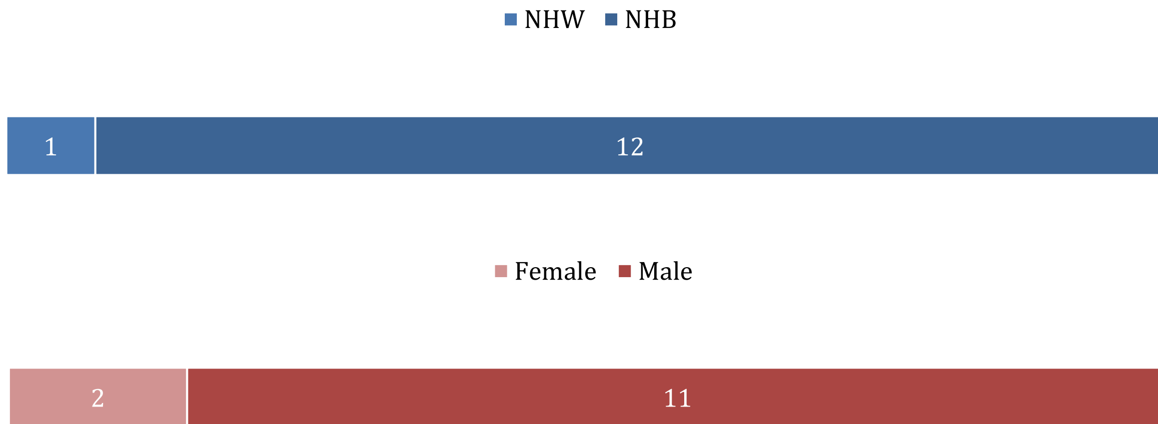
Weapon

One child died when a firearm the child was carrying in his clothing accidentally discharged. The child's gun was of indeterminate origin, but had reportedly been acquired for protection.

Infant Deaths Due to Sleep-Related Factors

Of the 50 infant deaths reviewed by the CDRT in 2019, 13 (26%) were determined to be sleep-related. Of these 13 deaths, most (12 deaths) occurred to NHB infants. The majority (11 deaths) occurred to male children (Figure 11).

Figure 11. Demographic Distribution of Sleep-Related Infant Deaths, Davidson County, TN, 2019



Data Source: MPHD, Child Fatality Review Database System

Table 5 displays the frequency of selected sleep-related factors that contributed to the deaths. With regards to sleeping places, 100% of the sleep-related deaths occurred in unsafe bedding. Of these, 92.3% occurred when the child was sleeping somewhere other than a crib or bassinette, including an adult bed (69.2%), couch (15.4%), or pack-n-play (7.7%). A crib or other safe place to sleep was available in the home in 61.5% of cases. In 30.8% of cases, the home was overcrowded, which may have significantly reduced the space available for a crib or pack-n-play placement.

Table 5. Selected Factors Involved in Sleep-Related Infant Deaths, Davidson County, TN, 2019

Factors Involved in Sleep-Related Infant Deaths		
	Total (n=13)	% of Reviewed Deaths
Sleeping in unsafe bedding	13	100.0
Not in a crib or bassinette	12	92.3
Not sleeping on the back	3	23.1
Sleeping with other people	11	84.6
Crib present in the home	8	61.5
Exposed to second-hand smoke	9	69.2
Residence overcrowded	4	30.8
Supervising adult was drug-impaired	1	7.7

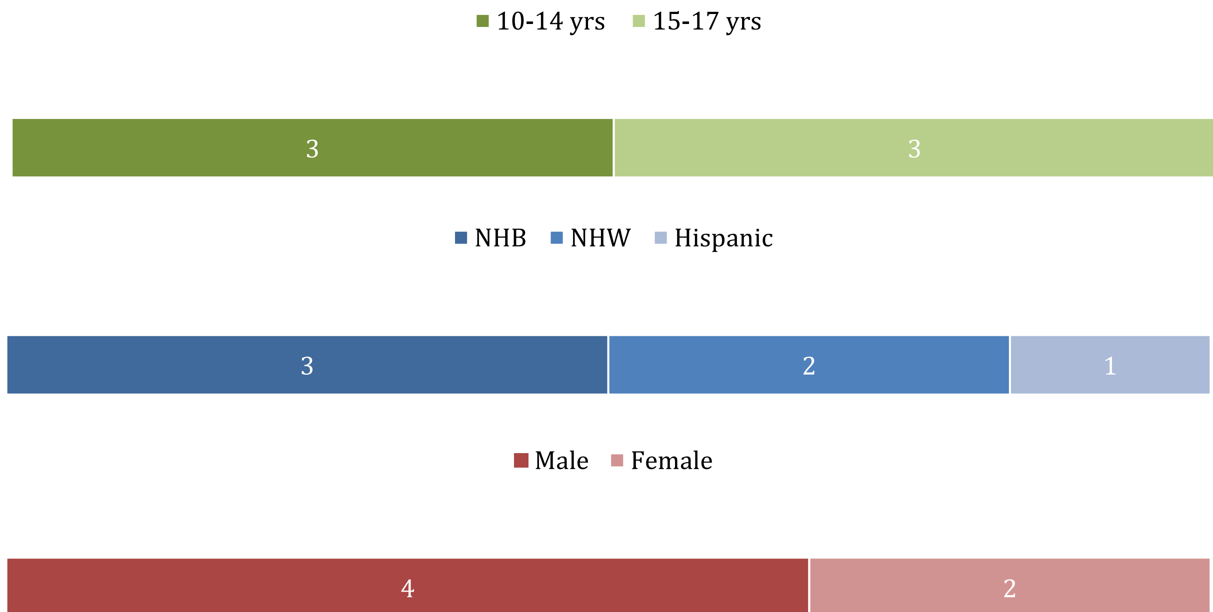
Categories are not mutually exclusive
Data Source: MPHD; Child Fatality Review Database System

Additionally, 23.1% of infants were not sleeping on their backs, and 84.6% were sleeping with other people at the time of death. More than two-thirds (69.2%) of the infants were exposed to second-hand smoke in the home. One of the infants was under the care of a drug-impaired adult at the time of death.

Deaths Due to Violence—Homicides and Suicides

The CDRT identified 6 deaths (7.4% of all reviewed 2019 deaths) that occurred to children as the result of violence. The number of deaths were evenly split between children aged 10 to 14 years and those aged 15 to 17 years. More of the deaths occurred to males (4 deaths), and NHB children (3 deaths) (Figure 12). Regarding the mechanism of death, violence-related deaths consist of homicides and suicides, which are described in detail below. A single death may have multiple contributing factors; therefore, the categories are not mutually exclusive.

Figure 12. Demographic Distribution of Violent Deaths for Children Aged 0-17 Years, Davidson County, TN, 2019



Data Source: MPHD, Child Fatality Review Database System

Homicides

In 2019, 3 deaths were due to homicide, representing 50% of deaths due to violence and 3.7% of all reviewed deaths. Most of these deaths occurred to males (3 deaths), and youth aged 15 to 17 years (2 deaths). One death each occurred among NHB, NHW, and Hispanic youth.

Firearms were used in 2 incidents, and a knife was used in 1 incident. Motives for the homicides included commission of a crime, intimate partner violence, self-defense, and playing with the weapon (1 incident each).

Most of the homicides were committed by someone known to the victim. The mother's partner and a friend were cited in 1 incident each, while a stranger to the victim was cited in 1 incident.

Weapon use was commonly noted to occur during the commission of another crime (2 incidents). Cited crimes were robbery and interpersonal violence (1 incident each).

Detailed reviews revealed that victims were often experiencing 1 or more behavioral, social, or school-related issues prior to death. The victim was noted to have problems in school in all 3 deaths. All 3 victims were noted to have issues with truancy, behavior, and suspensions. Two victims also experienced academic issues. Additional issues cited included substance abuse (2 incidents), and a history of criminal or delinquent activity (1 incident).

In all 3 of the homicide deaths, the victims or their families were receiving services from public agencies prior to death. Three had received mental health services, and the Department of Children's Services (DCS) was noted to be involved with 1 family at the time of the incident (e.g., investigating allegations of child abuse and neglect, providing foster-care or family preservation services, or ensuring child safety).

Suicides

There were 3 suicide deaths in 2019, representing 50% of all deaths due to violence and 3.7% of all deaths reviewed. The majority of suicide deaths occurred to children aged 10 to 14 years (2 deaths), NHB children (2 deaths), and females (2 deaths).

With regards to mechanisms of death, two deaths were due to firearms and 1 death was due to strangulation.

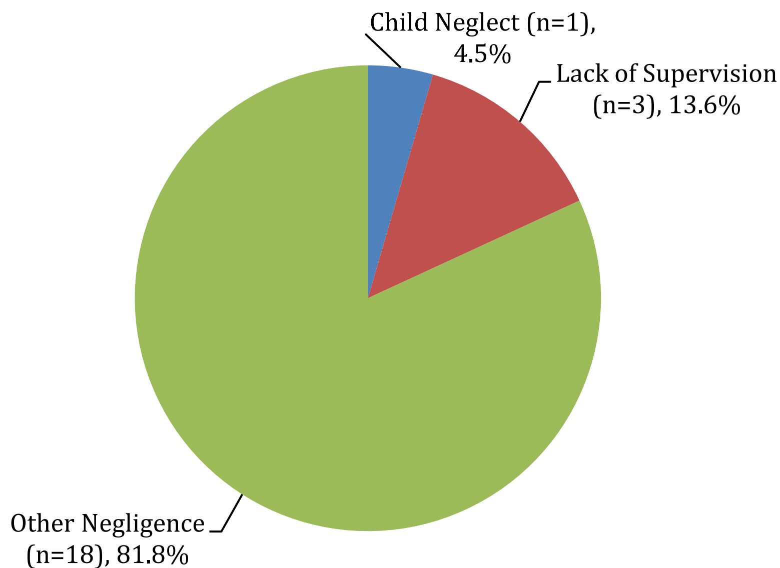
Two victims had previous nonfatal suicide attempts, and 2 victims had communicated suicidal thoughts or intentions. In 1 case, the suicide was premeditated, and in 1 incident the suicide act was likely to have been observed by others. Changes in behavior prior to the suicide were noted in 1 incident, and in 2 incidents the child experienced a known crisis in the 30 days prior to death.

Similar to homicide victims, suicide victims were noted to have social, behavioral, or school problems prior to death. All 3 victims experienced problems in school including academic issues (1 incident), truancy (1 incident), suspensions (2 incidents), and behavioral issues (2 incidents). Additional issues cited included a delinquent or criminal history (1 incident), a history of self-harm or mutilation (1 incident), substance abuse (1 incident), a history of running away (1 incident), and diagnosed mental health disorders (2 incidents).In 2 suicide deaths, the victims had received prior mental health services. None of the families were noted to be involved with DCS prior to the death.

Child Abuse and Neglect

In reviewing child deaths occurring in 2019, the CDRT found 22 deaths (27.2%) having some evidence of maltreatment, defined as abuse, neglect, or other form of negligence. Of those 22 deaths, 4.5% involved child neglect, 13.6% involved a lack of proper supervision, and 81.2% involved other negligence such as exposure to unsecured medication in the home, exposure to water or motor vehicle hazards, or unsafe bedding (Figure 13).

Figure 13. Percentage of Deaths with Evidence of Maltreatment by Type, Davidson County, TN, 2019



Data Source: MPHD, Child Fatality Review Database System

Table 6 displays the demographic information for reviewed deaths associated with child abuse, child neglect, lack of supervision, or other negligence. The majority of these deaths occurred to infants (77.3%), NHB children (81.8%), and males (63.6%).

Table 6. Number of Reviewed Deaths with Evidence of Child Maltreatment among Children Aged 0-17 Years, Davidson County, TN, 2019

Deaths with Evidence of Maltreatment (n=22)		
	Total	**% of Reviewed Deaths**
	Age Group	
<1 yr	17	77.3
1-4 yrs	2	9.1
5-9 yrs	3	13.6
10-14 yrs	0	0.0
15-17 yrs	0	0.0
	Race/Ethnicity	
NHB	18	81.8
NHW	4	18.2
Asian	0	0.0
Hispanic	0	0.0
	Sex	
Male	14	63.6
Female	8	36.4

Data Source: MPHD, Child Fatality Review Database System

In 95.5% of the deaths, the perpetrator was the child's biological parent or primary caregiver. Other perpetrators cited included the child's supervisor at the time of death (4.5%) In 18.2% of the deaths, the person causing or contributing to the death of the child was drug or alcohol-impaired. DCS was involved with the family prior to death in 13.6% of the deaths.

Conclusion

The CDRT strives to understand both the magnitude and the causes of death among Davidson County's children in order to identify strategies and systems changes that might help not only prevent future tragic outcomes but also excess injury and suffering among children. The data contained in this report highlights several key areas that warrant further attention and indicate a need for the community to prioritize childhood morbidity and mortality as a strategic focus. For example, the child mortality rate in Davidson County was almost unchanged since 2015 and was consistently higher than the rate for Tennesse and the nation. Additionally, disparities in overall child mortality and infant mortality between NHB and NHW children were persistent and increasing over time. Lastly, a third of the total reviewed deaths were determined to be preventable, including approximately 26% of all infant deaths, which were related to unsafe sleep environments or practices.

The review process allowed identification of key areas for future interventions to reduce the number of preventable deaths. These include, among others, efforts to increase first-trimester prenatal care utilization, interventions to increase the utilization of safe sleep practices among infants, promoting vehicle safety, and support of programs, policies, and practices in the community aimed at reducing violent deaths.

Technical Notes

Data Sources

The data presented in this report are compiled from many different sources.Errors in the data are sometimes identified and corrected through the review process. For this reason, the data presented in this report might differ from data published from other sources.

Data from reviews are abstracted into a standard data collection form and entered into a database hosted by The National Center for Fatality Review and Prevention.

National and State level comparison data are from the National Vital Statistics System Database, CDC WONDER, and reports from the Tennessee Child Fatality Review Team.

Childhood and infant mortality rates were calculated from the Davidson County vital records files; those estimates include deaths excluded from CDRT review. Population estimates are from the American Community Survey; single-year estimates are used to calculate child mortality rates where appropriate. Infant mortality rates are calculated from the total number of infant deaths divided by the total number of live births.

Data Limitations

The indicators in this report are based on county-level data, and as such, the numbers can be small. Rates based on counts less than 20 are considered unstable and should be interpreted with caution; percentages and rates may change drastically from year to year.

Data Interpretation

Death is the final outcome of a continuum of circumstances, and the data collected by the CDRT represents this extreme. Therefore, caution should be used when extrapolating these results to the general population. However, the data collected by the CDRT illustrates areas where the systems, policies, and practices of a community fail to protect children adequately. As such, this information provides valuable evidence to promote and advocate for systems change.

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Appendix

Appendix 1. Organizations and Agencies Serving on the Child Death Review Team

Participating Organizations	
Metro Public Health Department	Tennessee Suicide Prevention Network
Metro Nashville Police Department	Monroe Carrell Jr. Children's Hospital at Vanderbilt
Metro Nashville Public Schools	Vanderbilt University Medical Center
Metro Office of Family Safety	St. Thomas Midtown Hospital
Office of the District Attorney Nashville	TriStar Centennial Medical Center
Juvenile Court of Metropolitan Nashville and Davidson County	Metro Nashville General Hospital
Nashville Fire Department	Children's Clinic East
Davidson County Medical Examiner's Office	Nurses for Newborns
Department of Children's Services	Child Protective Investigative Team
Nashville Children's Alliance	