MFRP
Michigan Fatality Review & Prevention

CHILD DEATHS IN MICHIGAN

A Report on Case Reviews Conducted in 2021

A report on the causes and trends of child deaths in Michigan based on findings from community-based Child Death Review teams.

Published March 2024

Our mission is to understand how and why children die in Michigan in order to take action to prevent other child deaths.

Prepared By:

The Center for Child and Family Health (CCFH) at the Michigan Public Health Institute (MPHI) on behalf of the Michigan Child Death State Advisory Team

Submitted To:

The Honorable Gretchen Whitmer, Governor, State of Michigan

Dear Director Elizabeth Hertel,
Michigan Department of Health and Human Services

The Michigan Child Death State Advisory Team is submitting this report on child deaths in 2021 in Michigan as required by law (1997 PA 167 MCL 722.627b). In 2021, nearly 1,200 Michigan children ages 0 through 18 died.

The Child Death State Advisory Team identified multiple strategies to prevent child deaths, based in part on the information collected through Michigan's local Child Death Review (CDR) teams. The child death review process provides a critical opportunity to identify the causes and circumstances of these children's deaths to prevent future deaths, injuries, and disabilities.

Reducing infant and child mortality will require sustained effort at the state and local levels. Childhood mortality is a crucial indicator of the overall health and welfare of a state, and, therefore, persistent disparities are an indicator of deeper structural inequities. The Child Death State Advisory Team shares your commitment to make Michigan a safer, healthier place to raise a family.

MICHIGAN CHILD DEATH STATE ADVISORY TEAM

MICHIGAN CHILD DEATH STATE ADVISORY TEAM MEMBERSHIP — 2023

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ACKNOWLEDGMENTS

This report is written in memory of all the Michigan children who have died and in honor of the families and communities impacted by the immeasurable loss. The Michigan Child Death State Advisory Team issues this report with the hope that it will encourage additional efforts, both in local communities and among our state leaders, to keep every child in Michigan safe and healthy.

We wish to acknowledge the dedication of the more than 1,500 volunteers throughout Michigan who serve our state and the children of Michigan by participating in their local Child Death Review (CDR) team. It is an act of courage to acknowledge that the death of a child is a community problem. The willingness of these volunteers to step outside of their traditional professional roles, to examine all the circumstances that lead to child deaths, and to seriously consider ways to prevent other deaths has made this report possible. Many thanks to the local CDR team coordinators for volunteering their time to organize and facilitate review meetings, and to identify findings and recommendations from their reviews. This report would not be possible without their continued commitment to the CDR process.

The Michigan Department of Health and Human Services, Office of the State Registrar, Division for Vital Records and Health Statistics, has been especially helpful in providing child mortality data and in helping us to better understand and interpret the statistics on child deaths.

The Michigan Department of Health and Human Services, Children's Services Administration, provides the funding and oversight for Michigan's CDR Program, which is managed through a contract with the Michigan Public Health Institute.

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INTRODUCTION

The death of a child is a profound loss, not only for the child's parents, family, and friends, but also for the larger community. To reduce the number and impact of these losses, we must first understand how and why children are dying.

Michigan Child Death Review Program

The Child Death Review (CDR) Program was implemented in Michigan in 1995 to conduct in-depth reviews of child deaths and identify ways to prevent them. In Michigan, there are 77 local CDR teams covering all 83 counties. Some teams serve a two-county jurisdiction.

CDR is a collaborative process that brings together local professionals from a variety of disciplines who volunteer their time to share and discuss comprehensive information on the circumstances surrounding the deaths of children.

Local CDR team membership is comprised of six mandated members, which include:

The health department

The medical examiner's office

Law enforcement

Michigan Department of Health and Human Services

The prosecutor's office

The court

Local CDR teams may add further membership or invite guests as necessary, including representatives from emergency medical services, hospitals and other medical facilities, schools, organizations providing mental health and/or substance use services, and organizations serving those impacted by domestic or sexual violence. In total, more than 1,500 professionals volunteered their time to serve on a local CDR team in Michigan.

Each team determines the agency or individual that will coordinate its team activities. The role of the coordinator includes identifying cases for review, identifying and communicating with team members, scheduling and facilitating team meetings, and leading prevention discussions. One person may perform all of these activities, or the responsibilities may be shared with a co-coordinator. There are no program funds that support the activities of the local CDR team coordinators.

Local CDR teams determine how often they will meet. Meeting frequency varies and is dependent on the number of deaths the team reviews each year. Teams serving rural counties with few deaths may meet once or twice per year, while teams serving mid-sized counties may meet on a quarterly or bimonthly basis. Teams for the most populous counties meet monthly.

Local CDR teams use what they learn during the review process to develop findings and recommendations, which they share with other local entities that can help translate them into prevention initiatives that address needs specific to their communities. It is important to note that CDR is not about assigning blame, determining cause or manner of death, or prosecuting cases, as the teams have no official authority in any of these areas.

The Michigan Child Death State Advisory Team

The Michigan Child Death State Advisory Team was established by Public Act 167 of 1997 (MCL 722.627b) to "identify and make recommendations on policy and statutory changes pertaining to child fatalities and to guide statewide prevention, education and training efforts." The State Advisory Team provides support to local CDR teams, recommends improvements in protocols and procedures for the Michigan CDR Program, and reviews Michigan's child mortality data as well as local CDR team findings and recommendations to identify causes, risk factors, and trends in child deaths. MDHHS has administrative responsibility for the State Advisory Team; a membership list can be found on pages 5-6 of this report.

The law also requires the State Advisory Team to publish these annual reports on child fatalities. The present report includes information pertaining to the 491 children whose deaths were reviewed by Michigan's local CDR teams in 2021.

Michigan Public Health Institute Program Support

MDHHS established a contract with the Michigan Public Health Institute (MPHI) to manage the CDR Program. The contract requires MPHI to:

- Assist local CDR teams with case identification and provide guidance on team functioning.
- Facilitate the activities of the Child Death State Advisory Team.
- Provide an annual training for team members, as well as trainings on other issues pertinent to the investigation and prevention of child fatalities, including infant safe sleep for child welfare professionals.
- Develop program support materials, including resource guides for effective reviews, investigative protocols, and the Michigan Fatality Review & Prevention website (URL: https://mifrp.org/).
- Compile information and resources on specific causes of death and promising prevention initiatives.
- Maintain Michigan's CDR Program data, including providing guidance on how to access necessary records, ensuring data is complete and accurate, and analyzing county-specific and cause of death-specific data.
- Represent the Michigan CDR Program at local, state, and national levels.
- Provide other types of technical assistance and support as needed.

The Michigan CDR Program has established working relationships with numerous diverse organizations throughout the state to promote child health and safety. The program also maintains a productive working relationship with MDHHS that has led to the implementation of innovative strategies to better protect children and prevent deaths.

CHILD DEATH REVIEW DATA OVERVIEW

The information presented in this report is based on data gathered through Michigan's local CDR process by using a standardized data reporting tool developed by the National Center for Fatality Review and Prevention (NCFRP). Data is then entered into the web-based National Fatality Review-Case Reporting System (NFR-CRS). This reporting tool was developed with input from many states through their CDR programs. The NCFRP regularly updates the data collection instrument, which can be viewed on the NFR-CRS page of the NCFRP website (URL: https://bit.ly/370ec8M).

Case Selection

Not all child deaths in the state are reviewed. Local CDR teams select cases to review based on the number of deaths that occur, the resources available in the county, and the team's ability to access case information. More populous counties typically limit their reviews to those cases that fall under the jurisdiction of the county medical examiner, which are primarily non-natural deaths. In some instances, typically when the incident or death occurred in a county other than the child's county of residence, a second or third local CDR team may also review the case. When this occurs, only the case data entered into the NFR-CRS by the child's county of residence was included in the analyses depicted in this report. Local CDR teams typically choose to review the deaths of children from birth through age 18.

While the CDR data presented in this report provides rich contextual details about the circumstances surrounding children's deaths, it does not encompass information about every child death in the state. Through examination of the case information on deaths that were reviewed, the resulting data assists in the identification of emerging issues, problematic trends, and key risk factors that can be used to prevent deaths.

Please contact the Michigan CDR Program at the Center for Child and Family Health at MPHI at MichiganCDR@mphi.org with any questions or additional data requests.

Data Sources

When text in this report refers to "deaths reviewed," data was derived from the information entered into the NFR-CRS and collected through the local CDR team process. Data about deaths reviewed are presented by year of review by the local CDR team, which may not be the same as the year in which the child died.

When text in this report refers to "total deaths," data was derived from official mortality statistics for the state, which are based on death records obtained from MDHHS, Office of the State Registrar, Division for Vital Records and Health Statistics. Data about total deaths are presented by the year of the child's death.

Data Limitations

As not every child death is reviewed, Michigan's CDR Program dataset is not population-based and should not be directly compared with vital statistics data, nor should it be used to compute mortality rates. It is recommended that complementary data sources are examined alongside the CDR Program data when making prevention, policy, or practice decisions. These complementary data sources may include, but are not limited to, Michigan Vital Records and Health Statistics, Children's Protective Services data, emergency department or hospitalization data, Kids Count, county health rankings, or data gathered through Michigan's Pregnancy Risk Assessment Monitoring System.

Like most data collection systems, the NFR-CRS has been modified over time to reflect emerging issues such as trends in substance use or products that are no longer recommended for infant sleep. To date, there have been multiple major updates to the NFR-CRS. When questions are added or modified, these changes are noted in the NFR-CRS codebook along with the version number in which the change was made. As a result of these changes over time, every data field may not be available for all years during which the NFR-CRS has been in use. In addition, some data elements have been modified to such a degree over the years that they cannot be recoded into a newer version, and this may limit the availability of data from before or after the modification was made.

Completeness of the data entered into the NFR-CRS is dependent upon the depth and breadth of information available during the case review process. As a result, some variables will be marked missing or unknown in some cases.

Note: *Tables and charts throughout this report may not sum to exactly 100% due to rounding.*

Infographic Overview

A total of

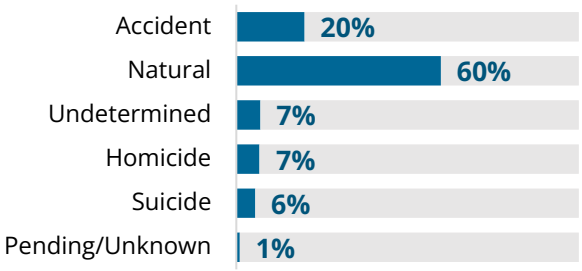
1,194

Michigan children died in 2021.

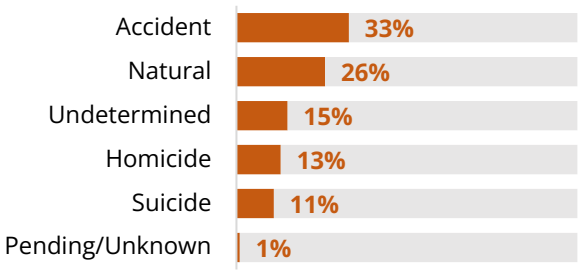
491

Deaths were reviewed by local CDR teams in 2021.*

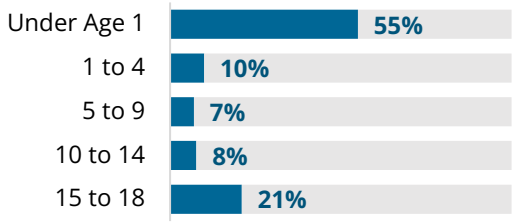
Manner of Death Determination for Michigan Resident Children (2021)



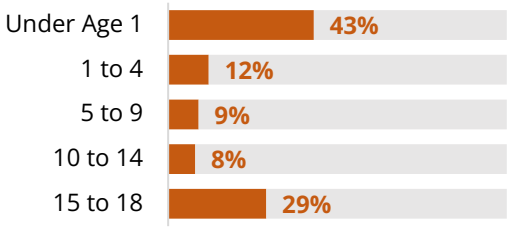
Manner of Death Determination for Deaths Reviewed by Local CDR Teams (2021)



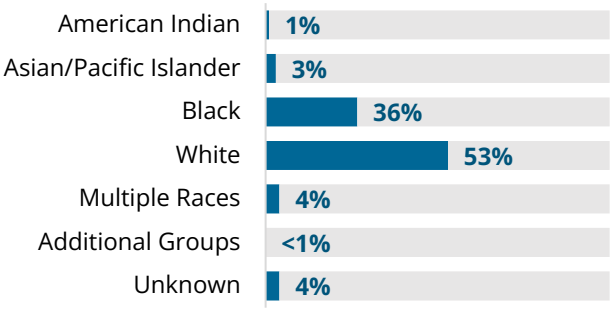
Michigan Resident Child Deaths by Child's Age Group (2021)



Deaths Reviewed by Local CDR Teams by Child's Age Group (2021)

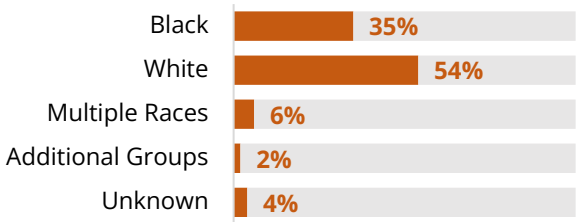


Michigan Resident Child Deaths by Child's Race (2021)



Notes: *Additional groups includes children of all other races. American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.*

Deaths Reviewed by Local CDR Teams by Child's Race (2021)



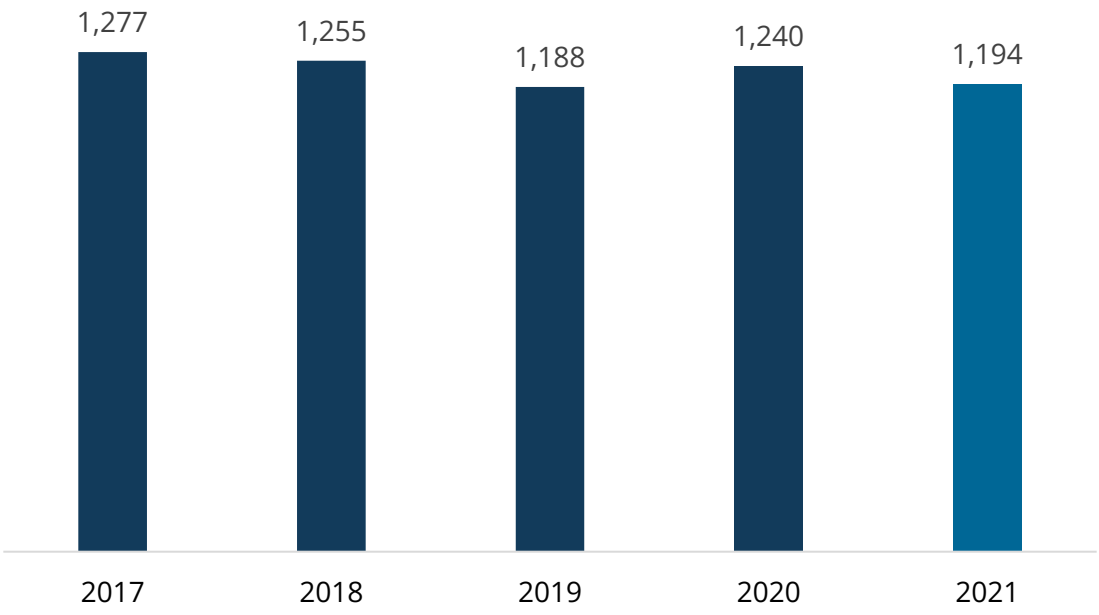
Notes: *Additional groups include American Indian children and Asian or Pacific Islander children. American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.*

**Not all deaths reviewed in 2021 occurred in 2021. Data about deaths reviewed are presented by year of review by the local CDR team, which may not be the same as the year in which the child died.*

CHILD MORTALITY AND DEATHS REVIEWED BY LOCAL CHILD DEATH REVIEW TEAMS

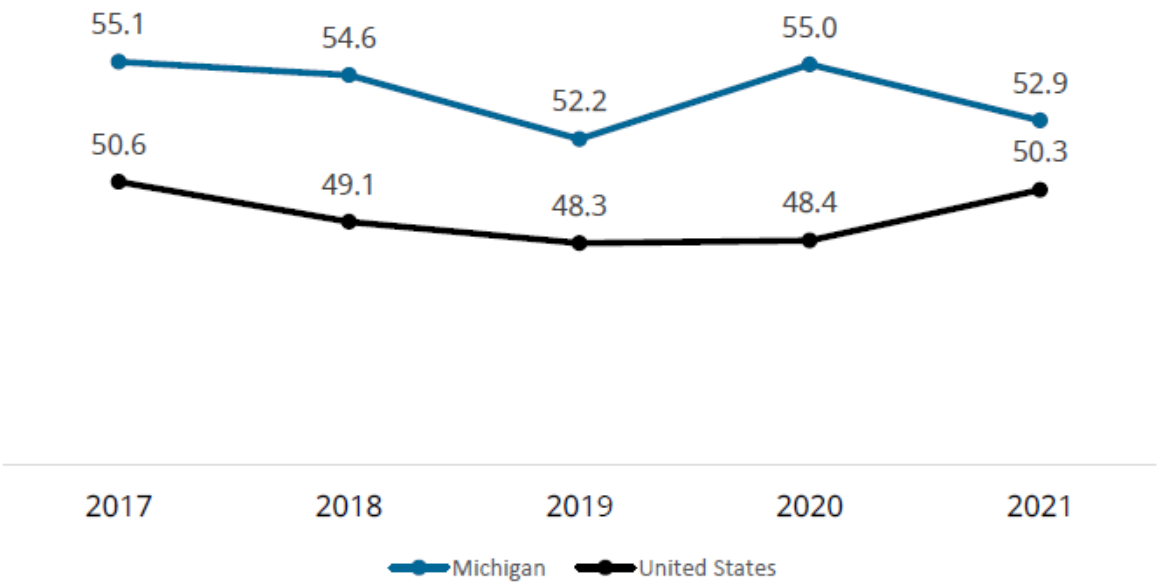
From 2017 to 2021, a total of 6,154 Michigan children from birth through age 18 died.[1] In 2021, 1,194 Michigan children died.

Chart 1. Number of Michigan Resident Child Deaths by Year of Death (2017-2021)



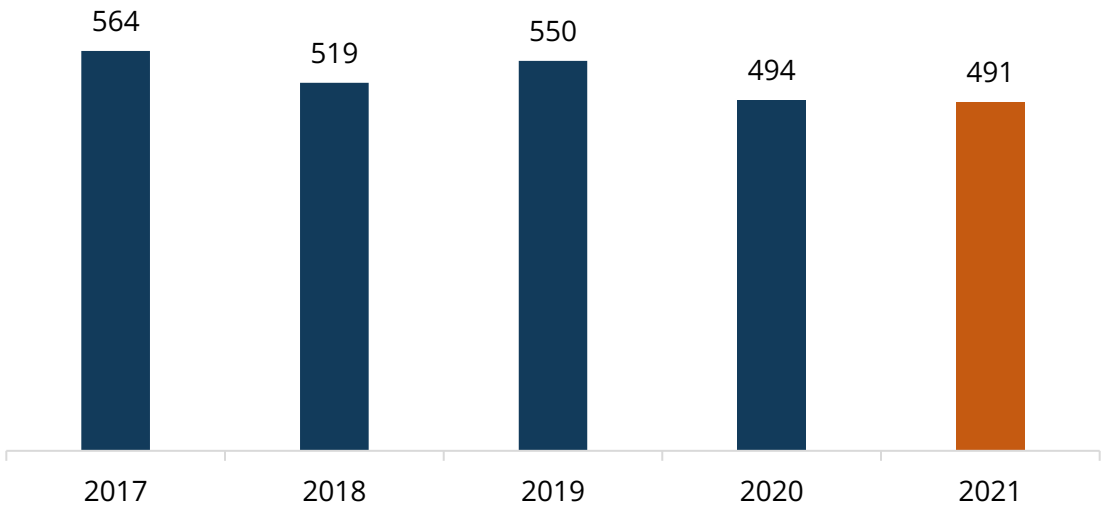
Michigan's rate of child death has remained consistently higher than the average rate of child death for the United States.[2]

Chart 2. Rate of Resident Child Deaths per 100,000 Children by Year of Death, Michigan and the United States (2017-2021)



Local CDR teams reviewed the deaths of 491 children in 2021. Please see Appendix A and Appendix B for a complete list of the total number of child deaths by county of residence and the year in which the child died, as well as the total number of reviews conducted by county of review and the year in which the child's death was reviewed by the local CDR team. As some children's deaths were reviewed by more than one local CDR team, the total of 497 reviews conducted in 2021 is higher than the total number of child deaths reviewed.

Chart 3. Number of Child Deaths Reviewed by Local CDR Teams by Year of Review (2017-2021)



In 2021, a total of 16 children ages 0 through 18 died while they were placed in foster care. Local CDR teams reviewed 11 of these children's deaths (69%) by the time of this report's publication. To learn more about the deaths reported to Children's Protective Services, please visit the MDHHS Child Fatality Registry website (URL: https://bit.ly/3jkvL5O).

Manner and Cause of Death

Two types of death determination are reported on death certificates: manner and cause.

Manner refers to the circumstances of the death. There are five possible manners: natural, accident, suicide, homicide, and undetermined, which may also be referred to as indeterminate. The National Association of Medical Examiners[3] provides the following definitions for each of the five manners of death:

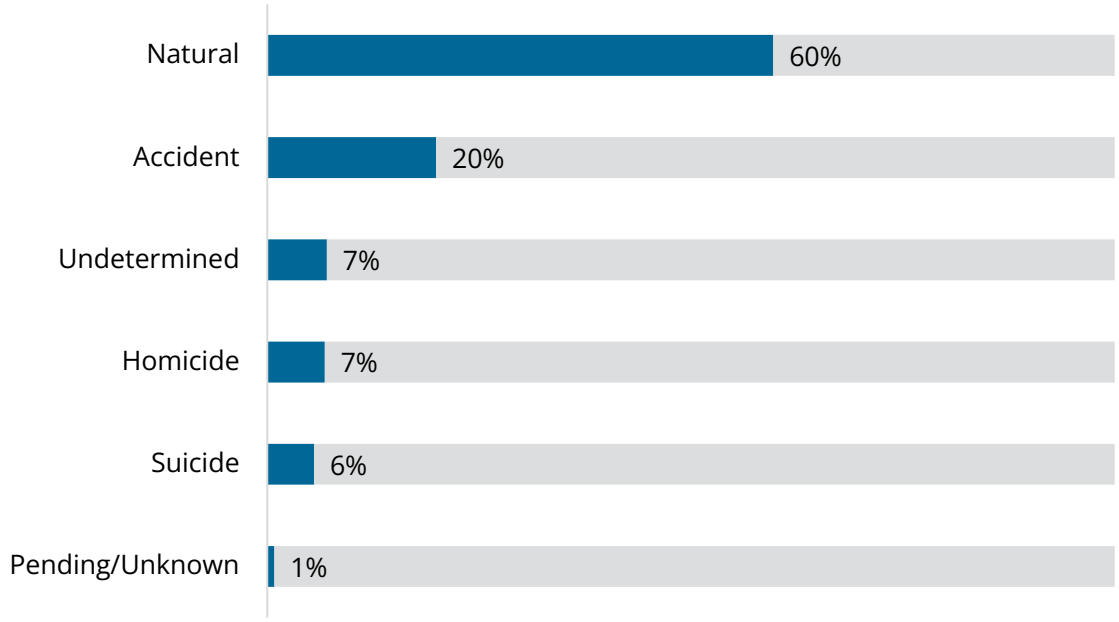
> **Natural:** Due solely or nearly totally to disease and/or the aging process.
>
> **Accident:** An injury or poisoning causes death, and there is little or no evidence that the injury or poisoning occurred with intent to harm or cause death. In essence, the fatal outcome was unintentional.
>
> **Suicide:** An injury or poisoning as a result of an intentional, self-inflicted act committed to do self-harm or cause the death of one's self.
>
> **Homicide:** A volitional act committed by another person to cause fear, harm, or death. Intent to cause death is a common element but is not required for classification as homicide. It is to be emphasized that the classification of Homicide for the purposes of death certification is a "neutral" term and neither indicates nor implies criminal intent, which remains a determination within the province of legal processes.
>
> **Undetermined:** The information pointing to one manner of death is no more compelling than one or more other competing manners of death in thorough consideration of all available information.

Cause refers to the actual disease, injury, or complications that directly resulted in the death. Within each of the five manners of death, there can be multiple causes of death. Natural deaths can include causes such as cancer, birth defects, or prematurity. Accidents can include transportation-related fatalities, drownings, suffocations, and fires. Homicides can include causes such as blunt force trauma or multiple gunshot wounds. An undetermined manner of death may include instances where the intent of the decedent or others involved in the death was unknown or it was not clear how the child's underlying medical conditions may have interacted with the external environment.

"Pending/Unknown" in the charts in this report indicates that the official manner of death was not yet available at the time of data entry and/or analysis.

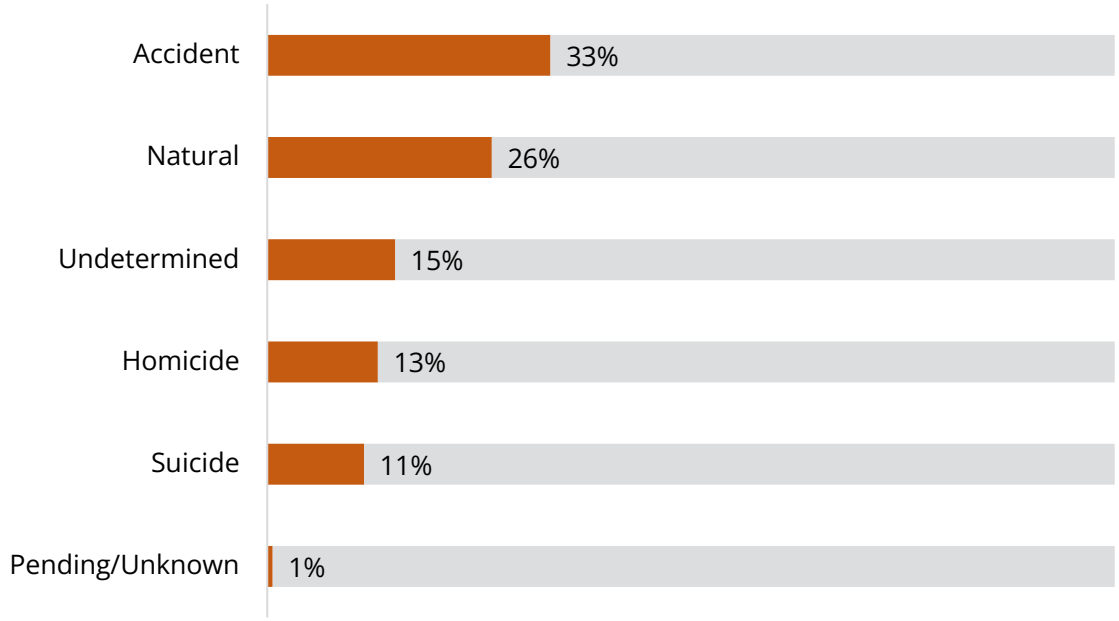
The manner of death determination for the 1,194 total Michigan children who died in 2021 was most often natural (60%), followed by accident (20%), undetermined (7%), homicide (7%), and suicide (6%). Manner of death was not available at the time of data analysis for 1% of the children who died in 2021.[1]

Chart 4. Manner of Death Determination for Michigan Resident Children (2021)



Of the 491 deaths reviewed by local CDR teams in 2021, the manner of death determination was most often accident (33%), followed by natural (26%), undetermined (15%), homicide (13%), and suicide (11%). Manner of death was not available at the time of data analysis for 1% of the cases reviewed in 2021. More populous counties typically limit their reviews to those cases that fall under the jurisdiction of the county medical examiner, which are primarily non-natural deaths. As a result, a relatively lower percentage of the total number of natural deaths was reviewed by local CDR teams.

Chart 5. Manner of Death Determination for Deaths Reviewed by Local CDR Teams (2021)



Child's Demographic Information

As a result of persistent structural inequities, some children are more likely to die than others. According to the American Medical Association and the Association of American Medical Colleges Center for Health Justice, inequities "are neither natural nor inevitable. Rather, they are produced and sustained by deeply entrenched social systems that intentionally and unintentionally prevent people from reaching their full potential. Inequities cannot be understood or adequately addressed if we focus only on individuals, their behavior or their biology."[4] Inequities result from unfair and unjust circumstances that can be addressed through systemic changes.

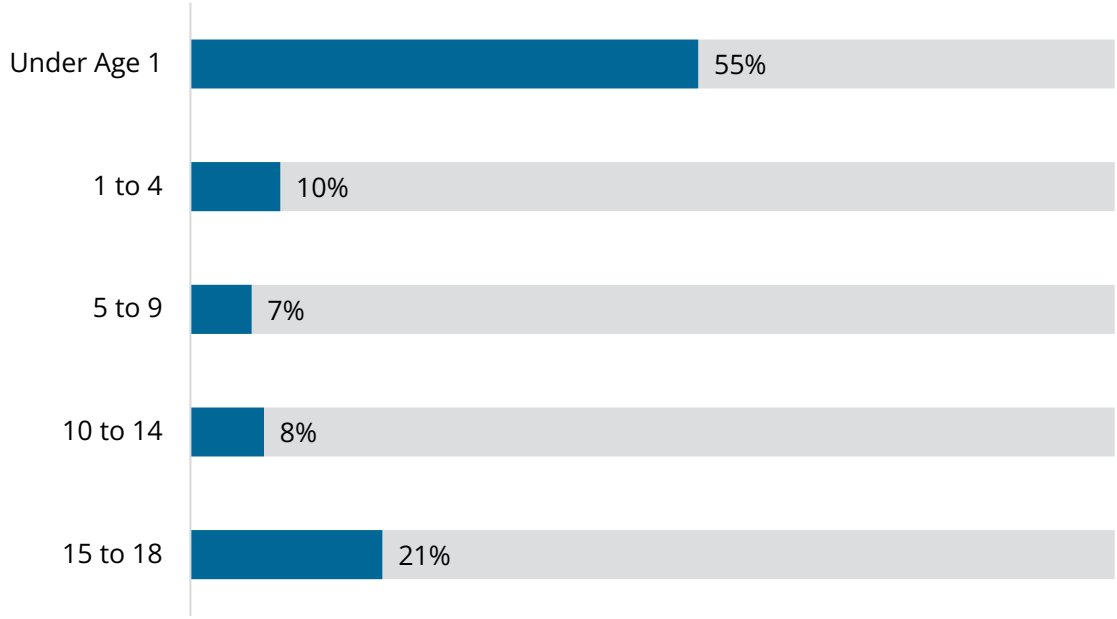
The following sections provide details about the age, sex, race, and disability status of the total number of Michigan children who died, as well as of those children whose deaths were reviewed by a local CDR team. We hope that highlighting these persistent inequities across all causes of child mortality will encourage local CDR teams and policymakers to work to identify their root causes, including sexism, racism, and ableism, and center equity when planning prevention initiatives.

For more information about centering equity in prevention efforts, and a tool for identifying and implementing strategies to address inequities, please visit the Children's Safety Network Health Equity Planner (URL: https://bit.ly/3LUFJHt).

CHILD'S AGE

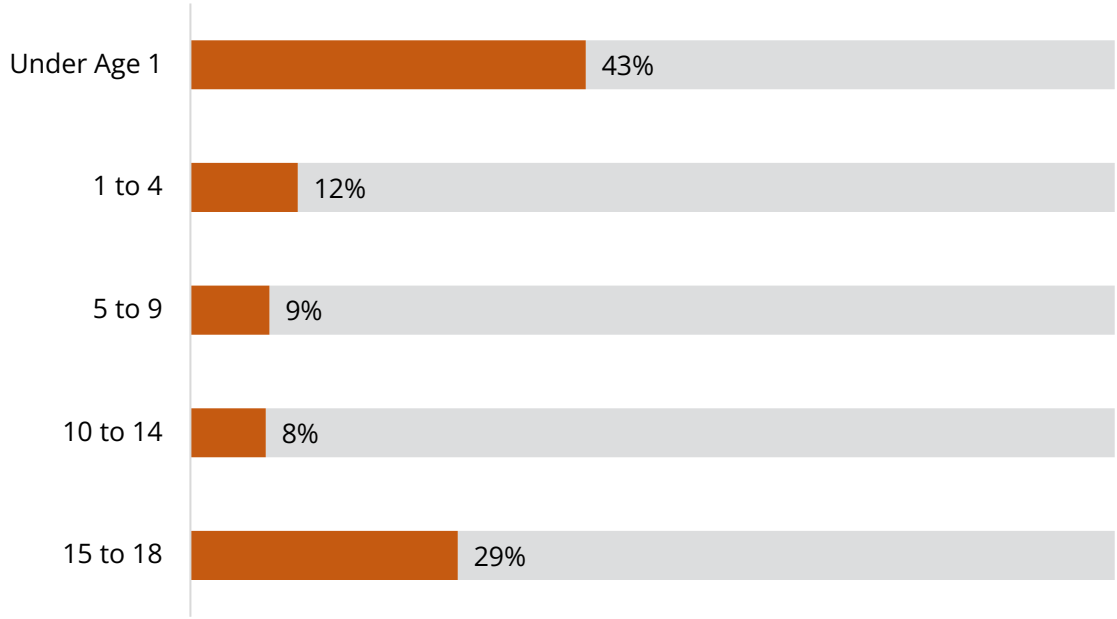
In 2021, 55% of the 1,194 total Michigan children who died from birth through age 18 were infants (children under the age of 1). Adolescents (children ages 15 to 18) accounted for an additional 21% of all child deaths, followed by children ages 1 to 4 (10%), children ages 10 to 14 (8%), and children ages 5 to 9 (7%).[1] Infant mortality accounts for the largest proportion of child deaths nationwide[5] and is addressed in further detail on pages 26-29.

Chart 6. Michigan Resident Child Deaths by Child's Age Group (2021)



Of the 491 deaths reviewed by local CDR teams in 2021, most of the children were either infants (43%) or adolescents ages 15 through 18 (29%). Children ages 1 to 4 accounted for an additional 12% of the deaths reviewed by local CDR teams, followed by children ages 5 to 9 (9%) and children ages 10 to 14 (8%).

Chart 7. Deaths Reviewed by Local CDR Teams by Child's Age Group (2021)



Child's Age at Death and Manner of Death Determination

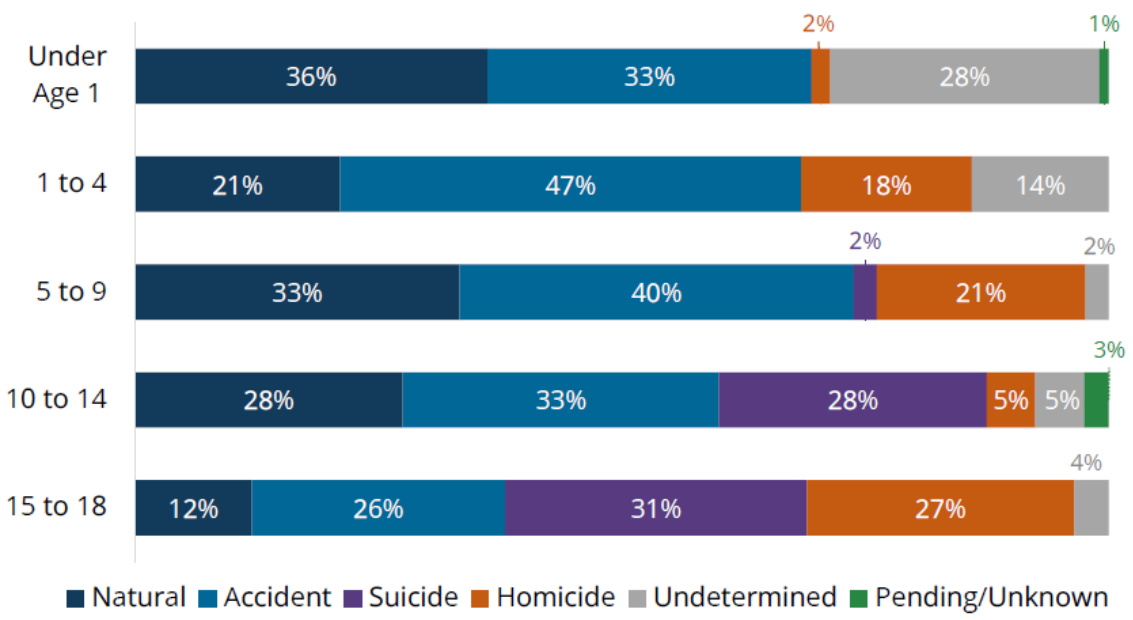
The most common manner of death determination for the 656 total Michigan infants who died in 2021 was natural (75%), followed by accident (13%) and undetermined (10%). The manner of death determination for the 116 children ages 1 to 4 and the 79 children ages 5 to 9 who died was most likely to be natural (43% and 58%, respectively), followed by accident (36% and 27%, respectively). Children ages 1 to 4 were more likely to die due to undetermined causes or homicide (9% and 10%, respectively) than were children ages 5 to 9 (3% and 8%, respectively). For the 95 children ages 10 to 14 who died, the manner of death determination was most likely to be natural (61%), followed by accident (20%) and suicide (13%). The manner of death determination for the 248 adolescents ages 15 to 18 who died was most likely to be accident (29%), followed by natural (26%), homicide (22%), and suicide (21%).[1]

Table 1. Michigan Resident Child Deaths by Manner of Death Determination and Child's Age Group (2021)

Manner of Death	Under Age 1	Ages 1 to 4	Ages 5 to 9	Ages 10 to 14	Ages 15 to 18
Natural	495 (75%)	50 (43%)	46 (58%)	58 (61%)	64 (26%)
Accident	83 (13%)	42 (36%)	21 (27%)	19 (20%)	73 (29%)
Suicide	0 (0%)	0 (0%)	1 (1%)	12 (13%)	53 (21%)
Homicide	3 (.5%)	12 (10%)	6 (8%)	5 (5%)	55 (22%)
Undetermined	68 (10%)	10 (9%)	2 (3%)	1 (1%)	3 (1%)
Pending/Unknown	7 (1%)	2 (2%)	3 (4%)	0 (0%)	0 (0%)
Total	**656**	**116**	**79**	**95**	**248**

As some CDR teams primarily review deaths that fall under the jurisdiction of the county medical examiner, local CDR teams reviewed a relatively lower percentage of the natural infant deaths that occurred in 2021. Of the deaths reviewed by local CDR teams, the manner of death determination was most likely to be natural (36%) or accident (33%) for children under the age of 1. For children ages 1 to 4 and ages 5 to 9, the manner of death determination was most likely to be accident (47% and 40%, respectively), followed by natural (21% and 33%, respectively) and homicide (18% and 21%, respectively). For children ages 10 to 14, the manner of death determination was most likely to be accident (33%), natural (28%) or suicide (28%). For adolescents ages 15 to 18, the manner of death determination was most likely to be suicide (31%), homicide (27%) or accident (26%).

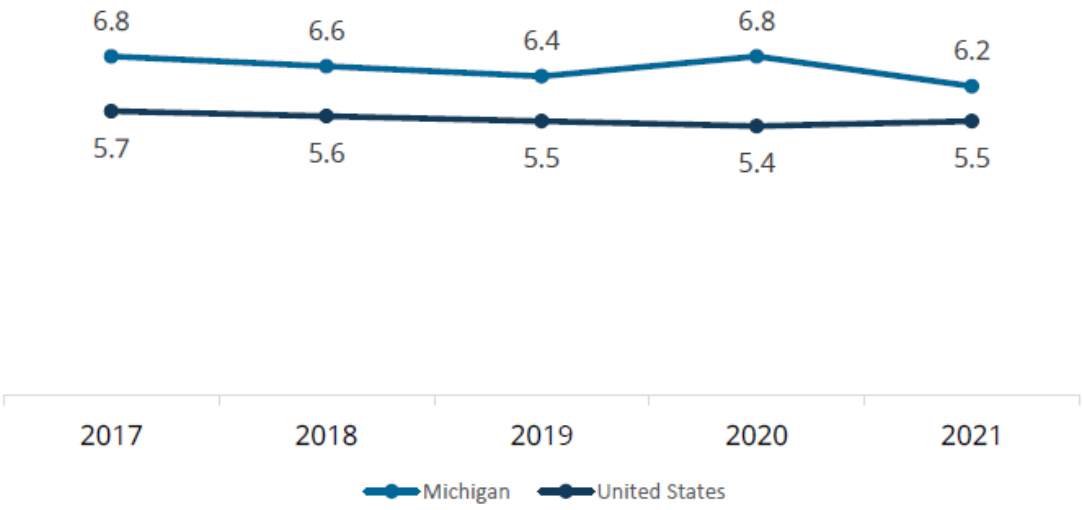
Chart 8. Manner of Death Determination for Deaths Reviewed by Local CDR Teams by Child's Age Group (2021)



Infant Mortality

Infant mortality is defined as the death of a child before their first birthday. In 2021, 558.8 infants died for every 100,000 live births in the United States. This mortality rate is 10 times greater than it is for adolescents ages 15 to 18, who represent the age group with the next highest mortality rate (54.4 deaths per 100,000 population).[5] From 2017 to 2021, the infant mortality rate per 1,000 live births in Michigan remained consistently higher than the corresponding rate of infant mortality in the United States.[6]

Chart 9. Infant Mortality Rate per 1,000 Live Births by Year of Death, Michigan and the United States (2017-2021)



Some Michigan infants are significantly more likely to die before their first birthday. In 2021, Black infants were nearly four times more likely to die than white infants (15.5 deaths per 1,000 live births compared to 4.2 deaths per 1,000 live births). Native American infants also died at a higher rate than white infants.[7] According to MDHHS, Division for Vital Records and Health Statistics, from 2018 to 2021, 11.1 Native American infants died per 1,000 live births.

In 2021, local CDR teams reviewed the deaths of 210 infants. The manner of death determination for these infants was most often natural (36%) or accident (33%), followed by undetermined (28%).

Of the 76 infants whose deaths were reviewed by a local CDR team and were determined to be due to natural causes, 45% were due to prematurity (birth prior to 37 weeks of gestation) and 21% were due to congenital anomalies (birth defects). During this same time period, 32% of all Michigan infant deaths were due to prematurity and related conditions, and 15% were due to congenital anomalies.[8]

In Michigan in 2021, accidental suffocation was the second most common cause of fatal injury for all children ages 0 to 18, accounting for 21% of all fatal injuries. Infants accounted for 90% of all children's deaths due to accidental suffocation.[1] Of the 70 infants whose deaths were reviewed by a local CDR team and were determined to be due to accidental causes, 93% were due to asphyxia, suffocation, or strangulation, most commonly in an unsafe sleep environment. The largest percentage of deaths ruled undetermined were among infants.

Identification of sleep-related infant deaths requires a multi-pronged approach as the terminology used to classify infant deaths that occur in the sleep environment continues to evolve and remains inconsistent.[9] There has been a diagnostic shift away from the use of the term "Sudden Infant Death Syndrome" (SIDS) when an infant is found unresponsive in a sleep environment. Consistent with national trends, medical examiners in Michigan are more frequently referring to a death under these circumstances as "Sudden Unexpected Infant Death" (SUID) or "Unexplained Sudden Death" with the manner of death classified as undetermined if there is not enough evidence or detailed information regarding the sleep environment to officially classify the manner of death as an accident. Intrinsic[a] and/or extrinsic[b] factors may be identified as potential contributors to the death.[9]

a. Intrinsic factors are: natural conditions or risk factors associated with abnormal physiology or anatomy that are concerning as contributors to death but are insufficient as a cause (e.g., low birth weight, preterm birth, small for gestational age, concurrent non-lethal illness, history of febrile seizures), or natural conditions of unknown significance (e.g., cardiac channelopathy or seizure gene variants of unknown significance).

b. Extrinsic factors are: conditions in the child's immediate environment that are a potential threat to life but cannot be deemed the cause of death with reasonable certainty (e.g., side or prone sleep if unable to roll to supine, over-bundling without documented hyperthermia, objects in immediate sleep environment, sleep environment not specifically designed for infant sleep, soft or excessive bedding, and sleep surface sharing), injuries or toxicologic findings that are either non-lethal or of unknown lethality, or circumstances/findings otherwise concerning for unnatural death.

To learn more about infant mortality in Michigan, please visit:

- Data, Reports, and Fact Sheets page on the Michigan Fatality Review & Prevention website for details about sleep-related infant deaths (URL: https://mifrp.org/publications/).

  The Sudden Unexpected Infant Death (SUID) Case Registry builds on the efforts of local CDR teams to compile information about the circumstances associated with SUID cases as well as information about investigations into these deaths to develop strategies to prevent future fatalities.

- The Michigan Fetal Infant Mortality Review (FIMR) website (URL: https://bit.ly/3E5ntIN)

  FIMR is an evidence-based process, which identifies and analyzes factors contributing to fetal and infant deaths through case reviews and family interviews. FIMR uses a two-tiered system that engages a multi-disciplinary Case Review Team and a Community Action Team to implement a continuous quality improvement process. There are currently 13 active FIMR teams in Michigan. FIMR's main goals are to:

  - Identify social, economic, cultural, safety, health and systems factors that contribute to mortality.
  - Craft recommendations to forward to their respective Community Action Teams based on case review findings.

- The Michigan Department of Health and Human Services Maternal Child Health Epidemiology Section website (URL: https://bit.ly/3JAVgdV)

- The Michigan Department of Health and Human Services Division of Maternal and Infant Health website (URL: www.michigan.gov/miheip)

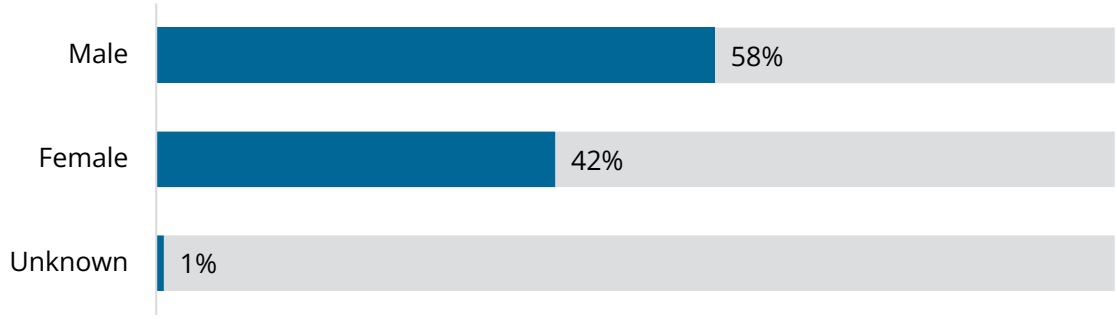
CHILD'S SEX

The nationwide mortality rate for male children is substantially higher than the mortality rate for female children at every age. In 2021, the largest percentage difference was among adolescents ages 15 to 18. In this age group, males were almost two and a half times more likely to die than females of the same age (67 and 29 deaths per 100,000 population, respectively).[2]

The data in this section about the child's sex is reported as recorded on the child's death certificate, which was likely assigned at birth based on a combination of anatomy, hormones, and chromosomes. The child's sex assigned at birth may not be representative of the child's gender identity or gender expression/presentation. According to Trans Student Educational Resources (URL: https://bit.ly/3KElVYz), gender identity is "one's internal sense of being male, female, neither of these, both, or another gender(s)" and gender expression/presentation is "the physical manifestation of one's gender identity through clothing, hairstyle, voice, body shape, etc."

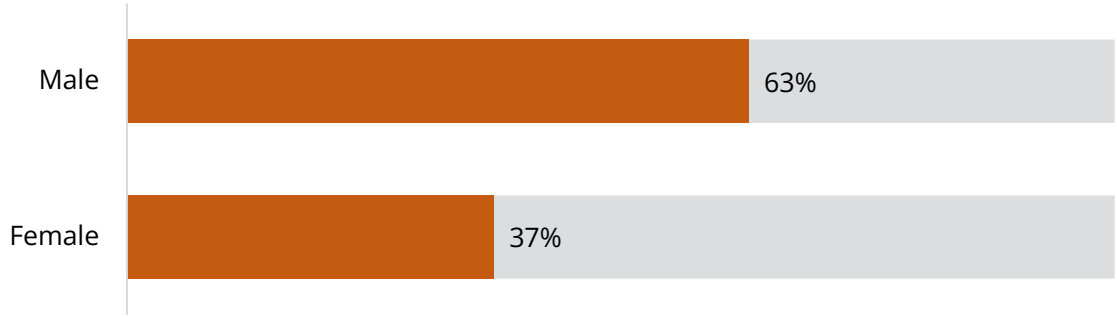
Based on the child's sex as reported on the child's death certificate, males accounted for 58% and females accounted for 42% of all Michigan children ages birth through 18 who died in 2021.[1]

Chart 10. Michigan Resident Child Deaths by Child's Sex (2021)



In 2021, 63% of the 491 children whose deaths were reviewed by local CDR teams were male.

Chart 11. Deaths Reviewed by Local CDR Teams by Child's Sex (2021)



Child's Sex and Manner of Death Determination

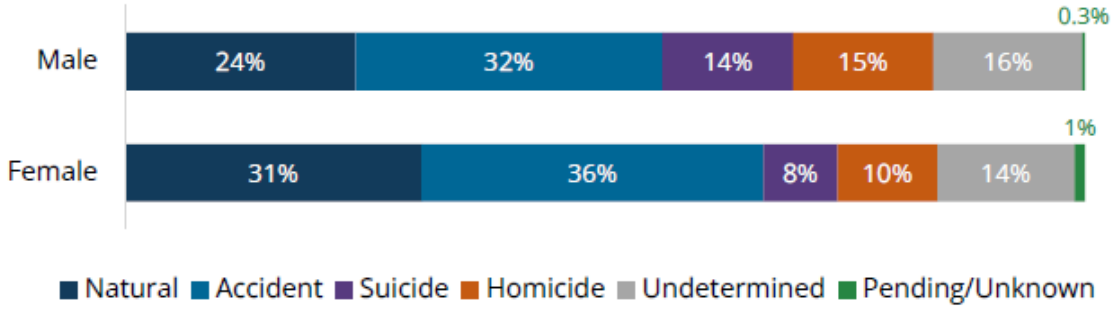
The manner of death determination for the 696 total male children who died in 2021 was most often natural (57%), followed by accident (20%). For the 497 total female children who died during this same time period, the manner of death determination was most often natural (63%), followed by accident (19%).[1]

Table 2. Michigan Resident Child Deaths by Manner of Death Determination and Child's Sex (2021)

Manner of Death	Male	Female	Unknown Sex
Natural	399 (57%)	313 (63%)	1 (100%)
Accident	142 (20%)	96 (19%)	0 (0%)
Suicide	45 (6%)	21 (4%)	0 (0%)
Homicide	51 (7%)	30 (6%)	0 (0%)
Undetermined	55 (8%)	29 (6%)	0 (0%)
Pending/Unknown	4 (1%)	8 (2%)	0 (0%)
Total	**696**	**497**	**1**

Of the 491 deaths reviewed by local CDR teams in 2021, the manner of death determination was most likely to be natural or accident followed by undetermined for both male and female children. Suicide and homicide accounted for a larger proportion of deaths reviewed by local CDR teams for male children (14% and 15%, respectively) compared to female children (8% and 10%, respectively).

Chart 12. Manner of Death Determination for Deaths Reviewed by Local CDR Teams by Child's Sex (2021)



CHILD'S RACE

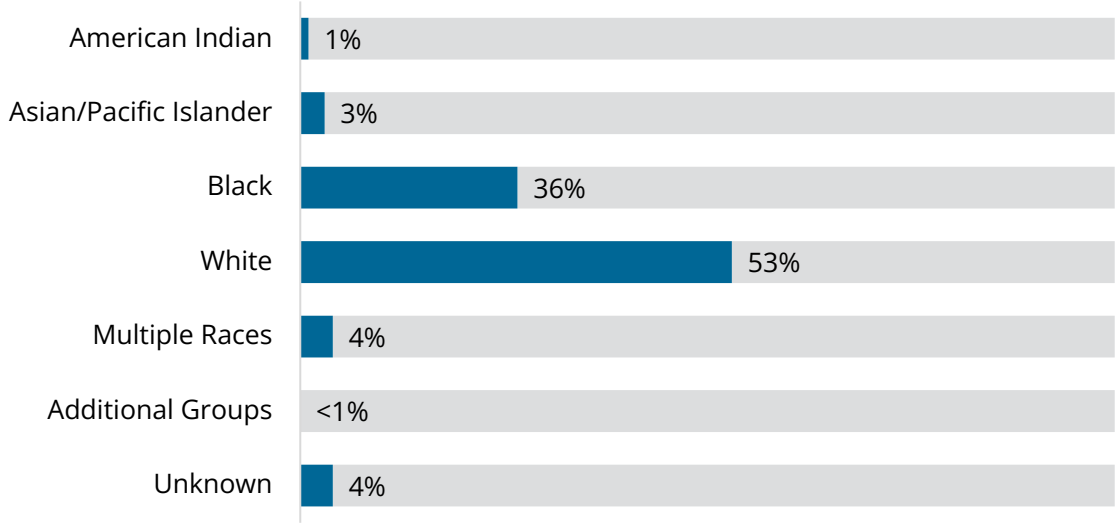
Significant racial disparities exist among child deaths due to inequities rooted in systemic and structural racism, including historical trauma, that unfairly disadvantage some individuals and communities. "...the variable "race" is not a biological construct that reflects innate differences, but a social construct that precisely captures the impacts of racism."[10]

Although racial identity is unique to every individual, and no single term can encompass the experiences of a diverse group of people, in this report we use the term "Black" to maintain consistency with how race data are recorded in the National Fatality Review-Case Reporting System. In alignment with the language presented in the Urban Institute's brief, *What Happens When People Face Unfair Treatment or Judgment When Applying for Public Assistance or Social Services?*, we have also "capitalized Black to denote the unique Black experience as one characteristic of a diverse group of people, ethnicities, and cultures ... (and) have not capitalized white, a term and label for a range of historically grouped ethnicities used to delineate a contrast with people of color."[11]

Current standard data collection and analysis practices often misclassify American Indian and Alaska Native (AIAN) populations, leading to an underestimation and suppression of data due to small numbers. Not being counted is consistent with historical attempts to eliminate or assimilate AIAN people. The Urban Indian Health Institute recommends that, "in data collection, AIAN should always be defined as AIAN alone; and if the AIAN individual identifies as another race, include the individuals who are AIAN in any combination with any other race and include those who identify as Latinx/Hispanic."[12] For the purposes of this report, American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.

In 2021, Michigan resident children who died were most likely to be white (53%). Black children accounted for 36% of all child deaths and an additional 4% of the children who died were of multiple races, 4% were of an unknown race, 3% were Asian/Pacific Islander, 1% were American Indian, and less than 1% were from additional groups.[1]

Chart 13. Michigan Resident Child Deaths by Child's Race (2021)



Notes: *Additional groups include children of all other races. American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.*

Black children were significantly more likely to die compared to children of other races. Nationwide, Black children had the highest rate of death among children ages 0-18.[2] While 17% of the population of Michigan children was Black, 36% of the children who died were Black. In 2021, the rate of death among Black children was almost three times greater than the rate of death among white children.[2]

Table 3. Rate of Death for Michigan Children by Child's Race

Child's Race	# of Deaths	Total Child Population	Rate of Death per 100,000 Children
American Indian or Alaska Native	Suppressed	19,114	Suppressed
Asian	34	81,177	41.9
Black or African American	431	381,601	112.9
Native Hawaiian or Other Pacific Islander	0	1,287	Unreliable
White	671	1,671,125	40.2
Multiple Races	51	130,557	39.1

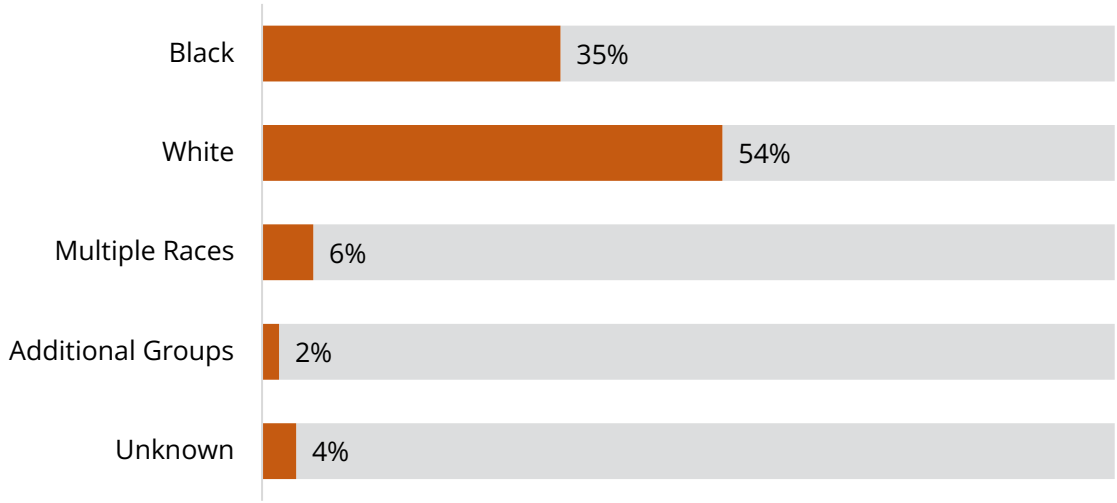
Note: *National, state, and county population estimates are July 1 resident population estimates from the Vintage 2021 six single race postcensal series released by the Census Bureau on June 30, 2022. The population files have estimates for six single race categories: American Indian or Alaska Native (AIAN); Asian; Black or African American; More than one race; Native Hawaiian or Other Pacific Islander (NHOPI); White.*

The rates and population figures by single-race for year 2021 are different from the rates and population figures for prior years on CDC WONDER, in that population figures are based on the Blended Base produced by the U.S. Census Bureau in lieu of the April 1, 2020, decennial population count. The Blended Base consists of the blend of Vintage 2020 postcensal population estimates, 2020 Demographic Analysis Estimates, and 2020 Census PL 94-171 Redistricting File (see 2020-2021 Population Estimates Methodology).

As a result, the number of deaths reported for each race in Table 3 will not align with and should not be compared to any other tables or charts in this report that present the child's race. Statistics representing fewer than 10 children are suppressed. Rates are marked as "unreliable" when the death count is less than 20.

In 2021, 35% of the children whose deaths were reviewed by local CDR teams were Black and 54% were white. An additional 6% of the children whose deaths were reviewed by local CDR teams were of multiple races, 4% were of unknown race, and 2% were of additional groups.

Chart 14. Deaths Reviewed by Local CDR Teams by Child's Race (2021)



Notes: *Additional groups include American Indian children and Asian or Pacific Islander children. American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.*

Child's Race and Manner of Death Determination

The manner of death determination was most likely to be natural followed by accident for all races.[1]

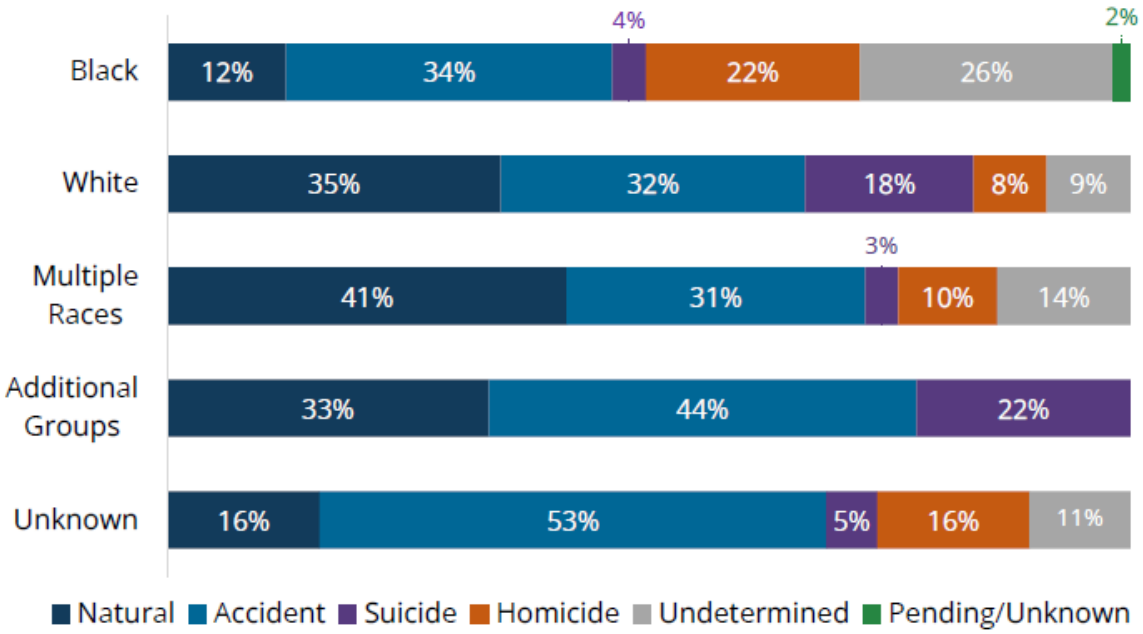
Table 4. Michigan Resident Child Deaths by Manner of Death Determination and Child's Race (2021)

Manner of Death	Black	White	Multiple Races	Additional Groups	Unknown Race
Natural	238 (56%)	381 (61%)	34 (68%)	33 (79%)	27 (57%)
Accident	79 (19%)	133 (21%)	6 (12%)	5 (12%)	15 (32%)
Suicide	8 (2%)	53 (8%)	2 (4%)	2 (5%)	1 (2%)
Homicide	45 (11%)	31 (5%)	2 (4%)	1 (2%)	2 (4%)
Undetermined	48 (11%)	27 (4%)	6 (12%)	1 (2%)	2 (4%)
Pending/ Unknown	8 (2%)	4 (1%)	0 (0%)	0 (0%)	0 (0%)
Total	**426**	**629**	**50**	**42**	**47**

Notes: *Additional groups include American Indian children and Asian or Pacific Islander children. American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.*

Of the children whose deaths were reviewed by a local CDR team in 2021, the manner of death determination for Black children was most often accident (34%), followed by undetermined (26%), and homicide (22%). The manner of death determination for white children whose deaths were reviewed by a local CDR team was most often natural (35%) followed by accident (32%). The manner of death determination for children in additional groups, including children who were American Indian and Asian or Pacific Islander, whose deaths were reviewed by a local CDR team was most often accident (44%), followed by natural (33%) and suicide (22%). The manner of death determination for children of multiple races whose deaths were reviewed by a local CDR team was most often natural (41%), followed by accident (31%) and undetermined (14%).

Chart 15. Manner of Death Determination for Deaths Reviewed by Local CDR Teams by Child's Race (2021)



Notes: *Additional groups include American Indian children and Asian or Pacific Islander children. American Indian children are those who were identified as American Indian, alone or in combination with other races, on the child's death certificate. This definition is inclusive of ancestry and Tribal affiliation identified on the death record.*

CHILD'S DISABILITY STATUS OR PRESENCE OF CHRONIC ILLNESS

Historically, the fields of medicine and public health have viewed disability as "a defect within the individual," which must be "cured, fixed, or completely eliminated."[13] Since the 1960s, the social model of disability has been gaining traction, particularly within the disability community. The social model states that "environmental factors - physical barriers, negative societal attitudes, and inadequate public policies - that fail to accommodate difference cause disability."[14]

As a result of these barriers, people with disabilities can experience discrimination that may be compounded by persistent isolation, unequal access to care, and a systematic "disregard for the health disparities experienced by some groups as a natural consequence of being in the group," such as the pervasive myth that disability automatically equates to poor health "rather than an inequity that needs to be addressed through multiple approaches."[14] We hope that by naming ableism as a contributing factor to child mortality, we can emphasize the need to value the full spectrum of abilities, include people with disabilities in the design and implementation of prevention initiatives, and create accessible prevention programming.

According to findings from the 2020 American Community Survey, almost 3.5 million children under the age of 18 in the United States had a disability. Of the children living in the United States and Michigan, 6.4% and 6.7%, respectively, reported having any type of disability.[15]

The American Community Survey defines disability as "various physical, mental, or emotional conditions that pose limitations to certain activities or tasks," and includes the following six types of disabilities.[c]

- **Vision difficulty:** Blindness or serious difficulty seeing, even when wearing glasses.
- **Hearing difficulty:** Deafness or serious difficulty hearing.
- **Cognitive difficulty (aged 5 and older):** Serious difficulty concentrating, remembering, or making decisions because of a physical, mental, or emotional condition.
- **Ambulatory difficulty (aged 5 and older):** Serious difficulty walking or climbing stairs.
- **Self-care difficulty (aged 5 and older):** Difficulty dressing or bathing.
- **Independent living difficulty (aged 15 and older):** Difficulty doing errands alone, such as visiting a doctor's office or shopping.[15]

c. The American Community Survey uses the term "difficulty" to describe each type of disability.

For all children under the age of 18 living in the United States and in Michigan, the most reported disability type was cognitive difficulty (4.6% and 4.9%, respectively). For children ages 4 and younger, 0.4% of children in both the United States and Michigan were reported to have a vision or hearing difficulty.[c, 15] Vision and hearing difficulties were the only two areas assessed through the American Community Survey for this age group. Some children under the age of 18 were reported to have two or more types of disability (1% of children under the age of 18 in the United States and 1% of the children under 18 in Michigan).

Some children were more likely to report having a disability than others, including American Indian and Alaska Native children (5.8% in the United States and 7.2% in Michigan), Black children (5.7% in the United States and 6% in Michigan), and children of multiple races (4.9% in the United States and 6% in Michigan). In comparison, white children were less likely to report having a disability (4.2% in the United States and 4.5% in Michigan).[15]

While children with disabilities were more likely to live in poverty,[15] some reports find that an increasing number of children from advantaged backgrounds may be diagnosed with neurodevelopmental and mental health conditions due to these families having "greater resources for seeking diagnoses and services for their children."[14]

Disability or chronic illness is defined in the National Fatality Review-Case Reporting System (NFR-CRS) more broadly than the definition of disability utilized by the American Community Survey and may include the following types of disability or chronic illness:

Physical or orthopedic conditions

Mental health or substance use disorders

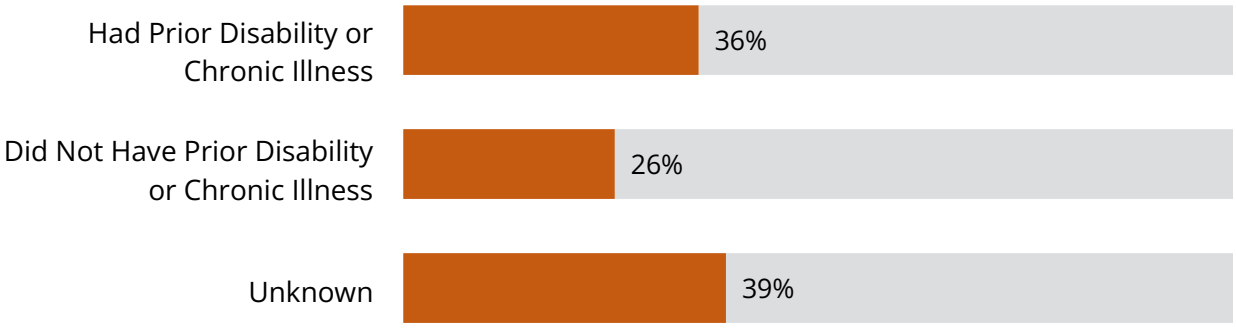
Cognitive or intellectual limitations

Sensory impairments, including those related to vision and hearing

A child may be reported to have had a disability or chronic illness in the NFR-CRS if the child "had a disability or chronic illness prior to the time of incident (leading to the child's death). Chronic implies an impairment or illness that has a substantial long-term effect on the child's day-to-day function or health."

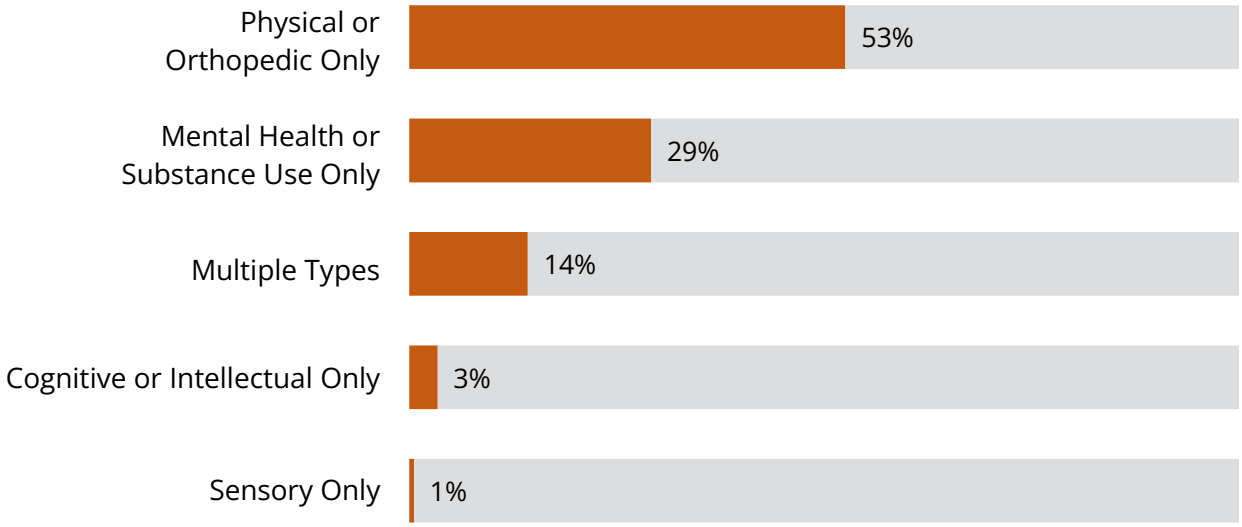
In 2021, 36% of the children whose deaths were reviewed by local CDR teams were known to have had a prior disability or chronic illness. It was not known if 39% of the children whose deaths were reviewed by a local CDR team had a prior disability or chronic illness.

Chart 16. Deaths Reviewed by Local CDR Teams by Child's Disability Status or Presence of Chronic Illness (2021)



When it was known that the child had a prior disability or chronic illness, the child was most likely to have a physical or orthopedic disability or chronic illness (53%), followed by a mental health or substance use disorder (29%), multiple types of disability (14%), a cognitive or intellectual disability (3%), or a sensory disability (1%).

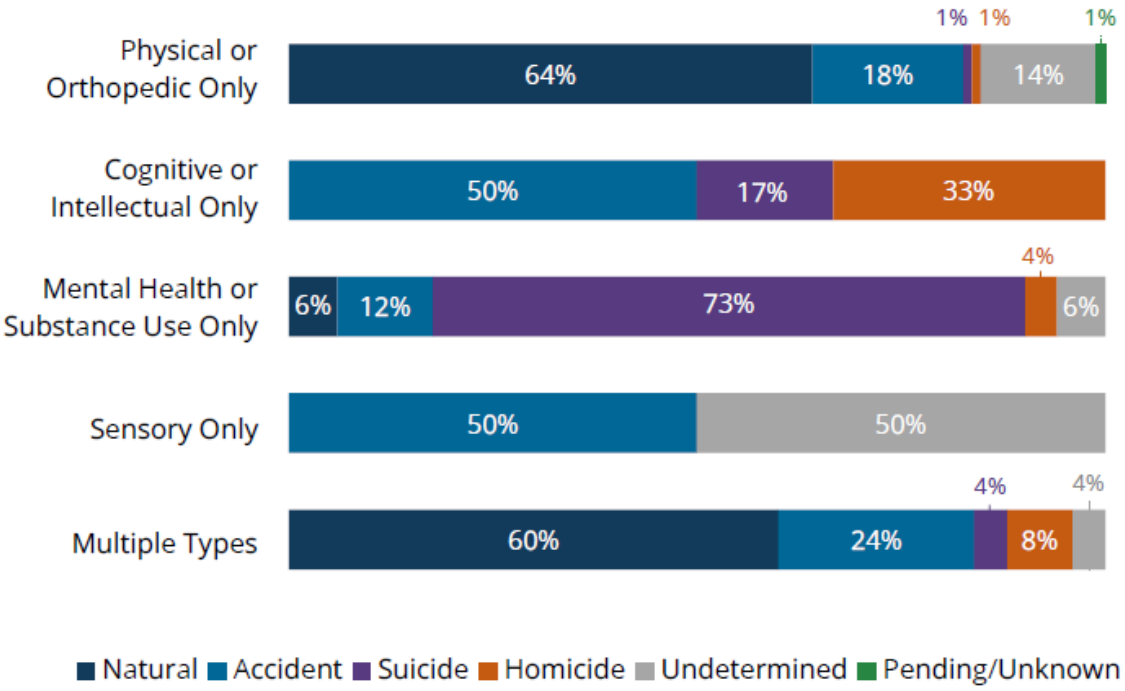
Chart 17. Deaths Reviewed by Local CDR Teams by Type of Child's Disability or Chronic Illness (2021)



Child's Type of Disability or Chronic Illness and Manner of Death Determination

Of the children whose deaths were reviewed by a local CDR team in 2021, the manner of death determination for children with a physical or orthopedic disability or chronic illness was most often natural (64%) followed by accident (18%). The manner of death determination for children with a cognitive or intellectual disability was most often accident (50%), followed by homicide (33%). The manner of death determination for children with a mental health or substance use disorder was most often suicide (73%) followed by accident (12%). The manner of death determination for children with a sensory disability was equally likely to be accident and undetermined. The manner of death determination for children with more than one type of disability or chronic illness was most often natural (60%), followed by accident (24%).

Chart 18. Manner of Death Determination for Deaths Reviewed by Local CDR Teams by Child's Type of Disability or Chronic Illness (2021)



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APPENDICES

APPENDIX A. **Total Number of Child Deaths by Year and by County of Residence**

County	2017	2018	2019	2020	2021
Alcona	2	0	1	1	0
Alger	1	0	1	0	0
Allegan	11	13	17	16	3
Alpena	2	4	4	3	2
Antrim	1	1	0	1	1
Arenac	2	0	0	2	3
Baraga	2	1	0	1	1
Barry	7	3	7	9	8
Bay	13	8	6	8	10
Benzie	3	1	1	3	1
Berrien	19	27	18	21	22
Branch	10	10	5	4	5
Calhoun	20	19	9	21	12
Cass	8	9	5	3	6
Charlevoix	3	1	1	3	0
Cheboygan	4	5	4	8	4
Chippewa	1	5	4	4	3
Clare	3	7	1	4	6
Clinton	10	3	3	6	6
Crawford	1	2	1	3	1
Delta	2	4	4	9	2
Dickinson	4	5	1	3	3
Eaton	8	5	20	14	11
Emmet	2	4	1	3	5
Genesee	73	55	61	67	58
Gladwin	1	4	3	2	3

APPENDIX A. Total Number of Child Deaths by Year and by County of Residence *(Continued)*

County	2017	2018	2019	2020	2021
Gogebic	0	0	3	1	1
Grand Traverse	5	7	8	8	9
Gratiot	2	3	3	4	8
Hillsdale	9	4	12	6	4
Houghton	6	3	1	3	4
Huron	4	2	2	5	1
Ingham	25	32	35	43	33
Ionia	7	7	5	5	7
Iosco	5	5	4	4	4
Iron	2	2	2	1	1
Isabella	10	7	8	9	6
Jackson	22	16	14	25	26
Kalamazoo	55	26	29	21	23
Kalkaska	0	2	1	0	2
Kent	75	73	81	94	73
Keweenaw	1	0	1	0	0
Lake	2	1	3	2	0
Lapeer	6	6	14	5	13
Leelanau	1	1	0	4	1
Lenawee	10	6	7	6	12
Livingston	18	19	14	6	15
Luce	1	0	4	1	1
Mackinac	0	0	2	0	0
Macomb	108	98	94	72	83
Manistee	5	2	0	6	2
Marquette	9	4	5	5	5
Mason	2	3	4	2	3
Mecosta	2	4	5	6	4
Menominee	0	0	3	2	2
Midland	3	6	4	8	4

APPENDIX A. Total Number of Child Deaths by Year and by County of Residence *(Continued)*

County	2017	2018	2019	2020	2021
Missaukee	1	0	1	0	1
Monroe	18	16	17	22	15
Montcalm	13	7	13	5	9
Montmorency	1	0	0	3	0
Muskegon	27	22	18	21	23
Newaygo	5	3	10	10	4
Oakland	121	125	96	104	106
Oceana	1	3	4	3	2
Ogemaw	1	7	1	3	3
Ontonagon	0	2	0	0	2
Osceola	3	6	5	1	1
Oscoda	1	2	0	0	3
Otsego	2	3	3	2	1
Ottawa	29	27	25	25	19
Presque Isle	5	2	1	2	1
Roscommon	1	4	2	3	4
Saginaw	22	34	27	40	25
St. Clair	13	16	20	20	16
St. Joseph	7	14	9	9	11
Sanilac	4	4	2	4	6
Schoolcraft	0	0	0	3	0
Shiawassee	8	10	7	2	9
Tuscola	7	6	5	8	5
Van Buren	10	10	5	6	10
Washtenaw	28	29	34	25	46
Wayne	337	360	330	337	345
Wexford	4	7	3	9	4
Unknown	0	1	4	0	0

APPENDIX B. Total Number of Child Deaths Reviewed by Year and by County of Review

County	2017	2018	2019	2020	2021
Alcona	0	0	0	0	0
Alger	0	0	0	0	0
Allegan	0	19	0	0	0
Alpena	0	0	1	0	2
Antrim	0	0	0	0	0
Arenac	4	0	0	0	2
Baraga	0	0	0	0	0
Barry	7	1	8	6	10
Bay	1	3	2	0	4
Benzie	0	0	3	0	0
Berrien	17	16	10	4	24
Branch	8	8	5	0	0
Calhoun	8	4	2	0	0
Cass	9	3	9	3	5
Charlevoix	0	0	0	0	0
Cheboygan	1	4	1	1	7
Chippewa	0	2	5	2	5
Clare	0	5	6	0	7
Clinton	8	4	3	7	4
Crawford	1	0	3	1	0
Delta	0	3	0	4	4
Dickinson	1	6	0	1	0
Eaton	6	4	17	11	8
Emmet	0	0	0	0	0
Genesee	24	27	20	22	43
Gladwin	2	3	4	3	0
Gogebic	4	0	0	5	0
Grand Traverse	11	8	14	7	20

APPENDIX B. Total Number of Child Deaths Reviewed by Year and by County of Review *(Continued)*

County	2017	2018	2019	2020	2021
Gratiot	4	2	3	0	7
Hillsdale	8	4	7	6	4
Houghton	0	5	0	0	0
Huron	0	1	0	0	0
Ingham	10	15	23	25	25
Ionia	6	7	6	5	8
Iosco	1	5	2	1	0
Iron	1	0	1	2	0
Isabella	5	2	6	9	2
Jackson	15	3	12	14	11
Kalamazoo	25	13	9	22	10
Kalkaska	0	0	0	0	0
Kent	20	21	23	20	26
Keweenaw	0	0	0	0	0
Lake	0	0	2	0	0
Lapeer	5	6	9	2	0
Leelanau	0	0	0	1	0
Lenawee	5	6	9	0	0
Livingston	10	14	7	10	9
Luce	1	0	0	0	0
Mackinac	0	0	0	0	0
Macomb	0	0	0	0	0
Manistee	0	3	0	0	0
Marquette	7	6	3	3	4
Mason	5	2	7	0	0
Mecosta	0	2	3	8	3
Menominee	0	0	0	1	0
Midland	1	0	0	4	0
Missaukee	1	2	0	0	0
Monroe	11	10	13	16	11

APPENDIX B. Total Number of Child Deaths Reviewed by Year and by County of Review *(Continued)*

County	2017	2018	2019	2020	2021
Montcalm	15	6	15	0	10
Montmorency	1	0	0	0	1
Muskegon	11	16	5	16	12
Newaygo	1	1	3	1	3
Oakland	37	29	24	31	33
Oceana	7	0	4	3	2
Ogemaw	0	6	2	1	3
Ontonagon	0	0	1	0	0
Osceola	10	4	5	2	0
Oscoda	0	0	0	3	2
Otsego	3	0	6	0	0
Ottawa	9	8	4	13	9
Presque Isle	0	0	0	0	0
Roscommon	1	5	0	1	0
Saginaw	9	9	43	17	5
St. Clair	11	6	24	13	16
St. Joseph	7	10	9	8	7
Sanilac	2	1	1	0	2
Schoolcraft	0	0	0	0	0
Shiawassee	4	7	7	6	7
Tuscola	6	6	6	0	0
Van Buren	12	8	6	6	6
Washtenaw	27	6	8	8	14
Wayne	138	138	121	141	100
Wexford	5	7	3	3	0