Arizona Child Fatality Review Program

Twenty-Fourth Annual Report

November 15, 2017

Mission: To reduce preventable child fatalities in Arizona through a systematic, multi-disciplinary, multi-agency, and multi-modality review process. Prevention strategies, interdisciplinary training, community-based education, and data-driven recommendations are derived from this report to aid legislation and public policy.

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For 24 years, the Arizona Child Fatality Review Program (ACFRP) has prepared an annual report on child deaths that occurred in Arizona. By reviewing these deaths, the ACFRP is able to identify the causes, contributing factors, preventability and trends which can help reduce child deaths in Arizona. In 2016, 783 children under 18 years of age died in Arizona. CFR teams reviewed 100% of these deaths and determined that 330 of these deaths (42%) were preventable including 100% of the maltreatment, suicide, and accidental deaths.

Key findings in this year's report were a 12% increase in accidental deaths from 2015 to 2016, including increases in motor vehicle crash deaths and infant deaths due to unsafe sleep environments. Motor vehicle crash deaths increased 42% from 50 deaths in 2015 to 71 deaths in 2016. Unsafe sleep deaths increased 7% from 74 deaths in 2015 to 79 in 2016. Forty-one of these infants died of sleep suffocation due to bed-sharing with adults or other children.

Preventability

In 2016, **783** children under the age of 18 years died in Arizona. Arizona Child Fatality Review Teams reviewed 100% of these deaths and determined **42%** could have been prevented (**n=330**).

Teams determined that 100% of the following deaths were preventable:

- ✓ Homicides
- ✓ Suicides
- ✓ Accidental deaths

Maltreatment (child abuse and/or neglect) directly caused or contributed to 10% of all deaths in 2016. The total number of maltreatment deaths decreased 6% from 2015 (87deaths) to 2016 (82 deaths). Substance abuse of drugs or alcohol was a contributing factor in 58 of the 82 deaths.

In 2016, substance use was a contributing factor in 107 child deaths including 20 deaths due to motor vehicle crashes and 21 firearm deaths. In 56 of these substance use related deaths the child's parent use or misuse of alcohol, marijuana, methamphetamine, opiates,

cocaine or other drugs alone or in combination either directly caused or contributed to a child's death.

The Arizona CFR Program reviews each child death that occurs in Arizona in order to identify future actions that can reduce the number of preventable deaths[1]. We have included specific recommendations in this report to prevent child deaths for individuals, communities, first responders, elected officials, and the public.

Mary Ellen Rimsza, MD
Chair, Arizona CFR State Team

Submitted to:

The Honorable Douglas A. Ducey, Governor, State of Arizona

The Honorable Steve Yarbrough, President, Arizona State Senate

The Honorable J.D. Mesnard, Speaker, Arizona State House of Representatives

This report is provided as required by A.R.S. §36-3501.C.3

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Acknowledgments

We would like to kindly acknowledge the following individuals, organizations, and agencies for their tireless efforts to help reduce child deaths and make Arizona communities safer for all Arizona residents and visitors.

- Susan Newberry, Maricopa County CFR Coordinator, who is responsible for coordinating the reviews of more than 60% of all child deaths occurring annually in Arizona. Susan has spent more than 30 years as a dedicated champion for children. She tirelessly devotes her time and energy to creating and maintaining effective collaboration, cooperation and communication among team members.

- Margaret Strength, Arizona Department of Child Safety, whose tireless commitment, provided an invaluable amount of information to the review teams as well as the program office. Her contributions are an asset to the review process which is a testament to her care of all Arizona's children.

- All agencies (e.g. hospitals, doctors, medical examiner's, child protective service agencies, and law enforcement) that promptly provided the CFR program with the records needed for teams to conduct effective reviews. Informed child fatality reviews are only possible when the teams have accurate and detailed information to review.

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Executive Summary

The Arizona Child Fatality (CFR) Program began collecting data in 1994 and has been conducting reviews of all child fatalities occurring within the state since.[1] This statutorily driven program begins the review process at the local level where teams of multi-disciplinary professionals volunteer their time to meet and discuss child death cases. Reviews are conducted to analyze the manner and cause of each death with the intent to identify key factors of preventability. The State Team meets annually to review the results of the Local Team's findings, discuss areas of prevention, and approve an annual report. The Department of Health Services provides assistance to both the State and Local Teams, manages the CFR database, and provides administrative support to the program through community partnerships.

While the number of deaths has increased since last year; overall the numbers have decreased in the past five years. The number of child deaths deemed preventable in 2016 has gone up in the following categories: accidents (e.g. motor vehicle and accidental asphyxia) and homicides. Local teams found that in 2016, 42% of all deaths could have been prevented. This conclusion is drawn from in depth reviews conducted by local CFR teams. These teams examined the factors surrounding the deaths of all children less than 18 years old who died in their community in 2016. In order to determine the causes and preventability of each child's death, teams spend many hours each year reviewing records, providing their expertise and coming up with recommendations for prevention. Their hard work results in the information within this report based upon a total of 783 deaths that were reviewed in 2016.

By identifying preventable child deaths, the CFR program serves as a resource to help communities reduce the risk factors that are associated with child deaths, promote the protective steps that may prevent a death and improve outcomes for Arizona's children. Each child's death is a tragedy not only for their family, but for society as a whole. Everyone regardless of age, race, or position can help prevent a child death. While much work has been done to prevent child deaths over the past twenty years, more work is needed.

Many people might not consider themselves prevention agents, but everyone has the ability to contribute through the various programs available in our society. Some examples of these programs include law enforcement officers who serve as car seat safety technicians, social workers who provide valuable insight into the signs and symptoms of abuse or neglect, and even a parent who simply takes the time to speak with their child daily about their daily stresses. Through the combined contributions of individuals, we collaboratively provide a positive impact on society as a whole.

[1] The ACFRP reviewed each child death under the age of 18 that occurred in Arizona. Children who are residents of Arizona, but died out of the state are neither reviewed by the AFCRP nor included in this report.

This annual report provides recommendations which help to prevent further child deaths. The State CFR Team recommendations are supported by the findings from the review of the data. Found in the body of the report are recommendations for individuals, communities, first responders, elected officials and the public.

Report Highlights

Natural Deaths (Deaths due to Medical Conditions)

- Natural deaths decreased slightly from 2015 (n= 487) to 2016 (n= 484), and accounted for 62% of all child deaths in Arizona.
  Nine percent (n=42) of the natural deaths were determined by the team to be preventable and these deaths accounted for 3% of all deaths.
- Prematurity accounted for 33% (n=162) of all natural deaths.
- Congenital anomalies, perinatal conditions, infections, cancer, neurological disorders, and cardiovascular diseases were the other leading causes of natural death.
- Seventy-one percent (n=343) of children who died from natural causes were less than 1 year old.
- Hispanic, African American, and American Indian deaths were disproportionately higher than the percentages of the population they comprise.

Unintentional Injury Deaths (Deaths due to Accidents)

- Unintentional injury deaths increased 12% from 2015 (n=160) to 2016 (n=179) and comprised 23% of all child deaths.
- CFR state team determined all unintentional injury deaths (n=179) were preventable and these deaths made up 54% of all preventable deaths.
- The leading cause of unintentional injury deaths was motor vehicle crashes and other transport which accounted for 70% of unintentional deaths.
- Thirty-five percent (n=62) of unintentional injury deaths occurred among children less than one year old.
- Boys accounted for sixty-one percent (n=106) of all unintentional injury deaths.
- African American and American Indian deaths were disproportionately higher than the percentages of the population they comprise.

Prematurity

- Deaths due to prematurity decreased 8% from 2015 (n=177) to 2016 (n=162).
- Ten percent (n=17) of prematurity deaths were determined to be preventable and these death made up 5% of all preventable deaths.
- Thirty-five percent (n=57) of the deaths due to prematurity were associated with medical complications during pregnancy. Examples include placental abruption, pre-eclampsia, advanced maternal age, gestational diabetes, and preterm labor.
- Ninety-one percent (n=147) of prematurity deaths were born before the 28th week of pregnancy (classified as Extreme Prematurity).
- Twenty-three percent (n=37) of pregnant mothers had no prenatal care, a decrease of 26% (n=46) in 2015 and 18% (n=41) in 2014.
- Six percent (n=10) of the mothers had gestational diabetes and 30% (n=48) of the parents were first generation immigrants.

- The average maternal age for the prematurity related deaths was 29 years old.
- Hispanic and African American deaths were disproportionately higher than the percentages of the population they comprise.

Sudden Unexpected Infant Deaths (SUID) and Sleep Related Suffocation Deaths

- SUID increased by 3% from 2015 (n=78) to 2016 (n=80) and accounted for 10% of all child deaths in Arizona.
- Ninety-three percent (n=74) of SUID deaths were preventable and these deaths account for 22% of all preventable deaths.
- The number of unsafe sleep deaths increased 7% from 2015 (n= 74) to 2016 (n=79).
- Fifty-one percent (n=41) infants died due to bed sharing with adults and/or other children.
- Sixty-seven percent (n=53) sudden unexpected of infant deaths were determined to be due to suffocation. In thirty-one percent (n=25) of sudden unexpected infant deaths the cause could not be determined because there was not sufficient information available to the teams regarding the death. However, these deaths were most likely also caused by suffocation.
- African American and American Indian infant deaths were disproportionately higher than the population they comprise.

Maltreatment Deaths (Deaths due to Child Abuse and Neglect)

- Child fatalities due to maltreatment decreased 6% from 2015 (n=87) to 2016 (n=82) and accounted for 10% of all child deaths in Arizona.
- All maltreatment deaths were determined by the team to be preventable and these deaths made up 25% of all preventable deaths among children.
- Blunt force trauma, MVC, drowning, suffocation, and firearm related deaths accounted for seventy percent (n=57) of maltreatment deaths.
- Seventy-six percent (n=63) of children who died due to maltreatment were less than 5 years old.
- Child neglect caused or contributed to 80% of the deaths (n=66).
- In sixty-five percent (n=51) of maltreatment deaths, the perpetrator was the child's mother or father.
- Substance use was a factor in fifty-eight percent (n=48) of maltreatment deaths.
- African American and American Indian deaths were disproportionately higher than the population they comprise.

Motor Vehicle Crash (MVC) and Other Transport Deaths

- Motor vehicle crash (MVC) and other transportation deaths increased 42% from 2015 (n= 50) to 2016 (n= 71) and accounted for 9% of all child deaths in 2016.
- Motor vehicle crash deaths made up 86% of all transport related deaths (n=61).
- All transport deaths were determined by the team to be preventable and these deaths made up 22% of all preventable deaths among children.

- Thirty-six percent of motor vehicle crash deaths (n=21) occurred among children 15 through 17 years of age.
- Passengers accounted for 64% of motor vehicle crash deaths among children.
- American Indian and African American deaths were disproportionately higher than the percent of population they comprise.

Homicides

- Homicides increased 31% from 2015 (n=32) to 2016 (n=42) and accounted for five percent of all child deaths.
- All of the homicide deaths were determined by the team to be preventable and these deaths made up 13% of all preventable deaths among children.
- Fifty-seven percent (n=24) of the homicide deaths were due to child abuse/neglect.
- Blunt force trauma (n=19) and firearm related injury (n=19) were the most common methods used to carry out homicides.
- Forty-three percent of homicide deaths (n=18) occurred among children one through four years of age.
- Parents were the perpetrator in thirty-six percent (n=17) of the homicide deaths.
- African American and Hispanic deaths were disproportionately higher than the percent of population they comprise.

Suicides

- Child suicides decreased 19% from 2015 (n=47) to 2016 (n=38) and accounted for 5% percent of all child deaths.
- All of the suicide deaths were determined by the team to be preventable and these deaths made up 12% of all preventable deaths among children.
- A history of family discord was the most commonly identified preventable factor in suicides followed closely by drug/alcohol use and an argument with a parent.
- Seventy-four percent (n=28) of suicide deaths occurred in children 15 through 17 years of age.
- American Indian and Asian/Pacific Islander deaths were disproportionately higher than the percent of population they comprise.

Firearm Deaths

- Firearm deaths increased from 29% from 2015 (n=28) to 2016 (n=36) and accounted for five percent of all child deaths.
- All of the firearms deaths were determined by the team to be preventable and these deaths made up 11% of all preventable deaths among children.
- Drug abuse was identified as a preventable factor in 58% (n=21) of firearm related deaths.
- Eighty-one percent (n=29) of firearm related deaths occurred in children 15 through 17 years of age.
- Fifty-three percent (n=19) of the 36 children who died from firearms related deaths were

Hispanic children.

Drowning Deaths

- Drowning deaths decreased 10% from 2015 (n=30) to 2016 (n=27) and accounted for 3% of all child deaths.
- All of the drownings deaths were determined by the team to be preventable and these deaths made up 8% of all preventable deaths among children.
- Seventy-eight percent (n=21) of drowning deaths occurred in children one through four years of age.
- Seventy percent (n=19) of the deaths occurred in a pool or hot tub.
- Lack of supervision was a factor in 84% (n=24) of drowning deaths.
- White, non-Hispanic and Hispanic deaths were disproportionately higher than the percent of population they comprise.

Substance Use Related Deaths

- Substance use was a factor in 14% of all child fatalities (n=107).
- In 46% of substance use related deaths (n=56), the parent was misusing or abusing alcohol or drugs.
- In 33% of substance use related deaths (n=40) the child who died was misusing or abusing drugs. Forty-one percent of substance use related deaths (n=44) resulted in deaths due to unintentional injuries.
- Males were 1.7 times more likely to experience a substance use related death.
- Adolescents 15 through 17 years had the highest risk of experiencing a substance use related death (39%, n=42).

Disparities

- Deaths continued to be disproportionately higher among some race/ethnicities in Arizona during 2016 and varied by cause and/or manner of death.
- Hispanic child deaths were overrepresented in deaths due to natural causes, prematurity, drowning, and homicides.
- African American children were disproportionately more likely to die from natural causes, including prematurity, unintentional injuries such as motor vehicle crashes, drowning, SUID, maltreatment related deaths, and homicide.
- American Indian children were disproportionately more likely to die from natural causes including prematurity, unintentional injuries such as motor vehicle crashes, SUID, maltreatment, and suicides.
- White, non-Hispanic children comprised higher percentages of suicides, drownings, and firearm related deaths.

Future Actions for Prevention

The following are a summary of the overarching prevention recommendations found in the report:

- Promote public awareness of healthy behaviors prior to pregnancy for women of reproductive age, especially if they are at high risk for pregnancy complications.
- Promote safe sleep education on the dangers of bed sharing (infants sleeping with an adult or other child) and the "ABCs of safe sleep". The ABCs are that babies should sleep Alone, on my Back, and in a Crib in order to prevent sleep suffocation.
- Support and implement community suicide prevention and awareness programs, such as Mental Health First Aid and "Hear Something, Say Something", that educate families, community members, teachers, and students to recognize and seek for children who may be experiencing a mental health crisis such as depression and bullying that can lead to suicide.
- Promote community and family awareness about drowning risks through public awareness campaigns that address the need for age-appropriate supervision of infants and children near water and barriers to young children's access to pools.
- Support sufficient funding for behavioral health services for children, youth and their families.
- Support sufficient funding for substance abuse prevention and treatment programs.

Glossary

ADES - Arizona Department of Economic Security

ADCS - Arizona Department of Child Safety (formerly child protective services under Arizona Department of Economic Security

ADHS - Arizona Department of Health Services

Cause of death – The illness, disease or injury responsible for the death. Examples of natural causes include heart defects, asthma and cancer. Examples of injury-related causes include blunt impact, burns and drowning.

CFR Data Form - A standardized form, approved by the State CFR Team, required for collecting data on all child fatality reviews.

CFR State Program - Established in the ADHS, provides administrative and clerical support to the State Team; provides training and technical assistance to Local Teams; and develops and maintains the CFR data program.

Confidentiality Statement - A form, which must be signed by all review process participants, that includes statute information regarding confidentiality of data reviewed by local child fatality teams.

Drowning death - Child dies from an accidental or intentional submersion in a body of water.

Firearm related death – Death caused by an injury resulting from the penetrating force of a bullet or other projectile shot from a powder-charged gun.

Fire/flame death – Death caused by injury from severe exposure to flames or heat that leads to tissue damage or from smoke inhalation to the upper airway, lower airway or lungs.

Injuries in-or-around the home related death – These are unintentional or undetermined deaths that occur in-or-around the home environment (e.g. bedroom, driveway, and yard).

Homicide – Death resulting from injuries inflicted by another person with the intent to cause fear, harm or death.

IHS – Indian Health Services

Infant – A child younger than one year of age.

Intentional injury – Injury resulting from the intentional use of force or purposeful action against oneself or others. Intentional injuries include interpersonal acts of violence intended to cause harm, criminal negligence or neglect (e.g., homicide) and self-directed behavior with intent to kill oneself (e.g., suicide).

Local CFR Team - A multi-disciplinary team authorized by the State CFR Team to conduct reviews of child deaths within a specific area, i.e. county, reservation or other geographic area.

Maltreatment – An act of physical abuse or neglect against a child (please see the Technical Appendix and definitions for physical abuse, neglect, and perpetrator).

Manner of death – The circumstances of the death as determined by postmortem examination, death scene investigation, police reports, medical records, or other reports. Manner of death categories include: natural, accident (e.g., unintentional), homicide (e.g., intentional), suicide (e.g., intentional), therapeutic complication and undetermined. In this report, manner is used interchangeably with "intent" or "type."

Motor vehicle crash related death – Death caused by injuries from a motor-vehicle incident, including injuries to motor vehicle occupant(s), pedestrian(s), pedal cyclist(s) or other person.

Neglect - This is defined as the failure to provide appropriate and safe supervision, food, clothing, shelter, and/or medical care when this causes or contributes to the death of the child.

Perpetrator - Individual identified as possible perpetrator of physical, sexual or emotional abuse, or neglect. Caregiver may include individual providing supervision of child including parent's boyfriend/girlfriend, friend, neighbor, child care provider, or other household member.

Physical abuse - This means the infliction of physical harm whether or not the inflictor planned to carry out the act or inflicted harm. The abuse may have occurred on or around the time of death, but also will include any abuse that occurred previously if that abuse contributed to the child's death. **NOTE: Shooting deaths by a parent, guardian or caregiver will also be identified as this type of maltreatment.**

Prematurity death - A death that was due to a premature birth (less than 37-week gestation) and there were no underlying medical conditions that resulted in the death.

Preventable death - A child's death is considered to be preventable if the community or an individual could have done something that would have changed the circumstances leading to the child's death. A death is preventable if reasonable medical, educational, social, legal or psychological intervention could have prevented the death from occurring. The community, family and individual's actions (or inactions) are considered when making this determination.

Record Request Forms - A form required to request records for the purpose of conducting a team review.

Sleep related death – A unique grouping of infant injury deaths inclusive of select injury causes (unintentional suffocation in bed, unspecified threat to breathing, and undetermined causes) in which the infant was last known to be asleep when last seen alive (see Technical Appendix).

Substance use – The CFR program defines substance use related deaths as deaths where substance use was found as a direct or contributing factor leading to child deaths. To identify substance use as a factor, each case was reviewed and determined whether **any** individual involved in the death of a child, including, but not limited to the child's parent or caretaker, an acquaintance, stranger, or the child during or about the time of the incident leading to the death, used or abused substances, such as illegal drugs, prescription drugs, and/or alcohol.

Suffocation/Asphyxia death – Death resulting from inhalation, aspiration or ingestion of food or other object that blocks the airway or causes suffocation; intentional or accidental mechanical suffocation, including, strangulation or lack of air in a closed place.

State CFR Team - Established by A.R.S. 36-3501 et seq., the State CFR Team provides oversight to Local CFR teams, they prepare an annual report of review findings, and develop recommendations to reduce preventable child deaths.

Suicide – Death from self-directed intentional behavior where the intent is to die as a consequence of that behavior.

Sudden Unexpected Infant Death (SUID) – death of a healthy infant who is not initially found to have any underlying medical condition that could have caused their death. It includes the deaths that might have previously been categorized as "crib deaths" if the death occurred during sleep, however not all of these deaths are sleep related. Most of the SUIDs are due to suffocation and unsafe sleep environments.[2]

Undetermined – Deaths that the medical examiner is unable to decide whether the manner of death was natural, accident, homicide, or suicide. A death may be listed as undetermined due lack of or conflicting information, or because it is not clear if it was an intentional or an unintentional injury.

Unintentional injury (Accidents) – This is when an injury occurred where there was no intent to cause harm or death; an injury that was not intended to take place. This is also often referred to as an "accident."

[2] See the Technical Appendix for further explanation of SUIDs and its subcategories.

Introduction

Injuries and medical conditions are among the leading causes of death for Arizona's children. Unlike diseases, most injuries do not occur randomly. A thorough examination of each death reveals factors that are both predictable and preventable. Historical data shows that infants are most often injured by suffocation resulting from an unsafe sleep environment, toddlers are more likely to drown, and older children are more vulnerable to motor vehicle or firearm related injury. Analyzing risk factors allow injuries to be anticipated and thus prevented when the appropriate protective measures are in place.

The Arizona Child Fatality Review (CFR) Program was established to review all possible factors revolving around a child's death. The intent of the program is to identify ways of reducing or eliminating preventable fatalities for future generations. Legislation was passed in 1993 (A.R.S. § 36-342, 36-3501) authorizing the creation of the CFR Program. In 1994 the review process and data collection began. Today there are 11 local teams that conduct initial reviews with oversight from the State Team and its two committees.

This report provides a comprehensive review of fatalities among children and youth through 17 years of age occurring in Arizona. Descriptive statistics and trend analysis are used to present summary information about cases as well as the leading causes under each manner of death by factors such as age, gender and race/ethnicity. Demographic and prevention information represented in the report are used to help broadly inform public health initiatives and the community. Recommendations for prevention are decided upon by both State and local review teams based upon the information collected and reviewed on each child death.

Conducting a Case Review

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According to the National Center for Child Death Review, there are six basic steps to conduct an effective review meeting:

1) Share, question, and clarify all case information.
2) Discuss the investigation.
3) Discuss the delivery of services (to family, friends, schoolmates, community).
4) Identify risk factors (preventable factors or contributing factors).
5) Recommend systems improvements (based on any identified gaps in policy or procedure).
6) Identify and take action to implement prevention recommendations.

Methods

Arizona has 11 Local County CFR Teams who complete reviews at the county level. Second level reviews of SUID and Maltreatment Deaths are done at the state level by committees of the State Team. The review process begins when the death of a child under 18 years old is identified through a vital records report. The CFR program sends a copy of the death certificate to the local CFR team in the deceased child's county of residence. If the child is not a resident of Arizona, the local team in the county where the death occurred will conduct the review. These teams are located throughout the state and membership includes local representatives from the Arizona Department of Child Safety (DCS), the county medical examiner's office, the county health department, local law enforcement, and the County Attorney's Office. Membership also includes a pediatrician or family physician, a psychiatrist or psychologist, a domestic violence specialist, and a parent.[3] Information collected during the review is then entered into the National Child Death Review Database. The resulting dataset is used to produce the statistics found in this annual report.

Descriptive statistics are used in the report to present summary information about cases, as well as the leading causes of death by manner, age, gender, and race/ethnicity. Frequencies and cross-tabulation tables are shown throughout the report. Since most of the counts are small, tests for statistical significance are not done. The demographic and prevention information represented in this report are primarily used to help broadly inform public health initiatives and the community.

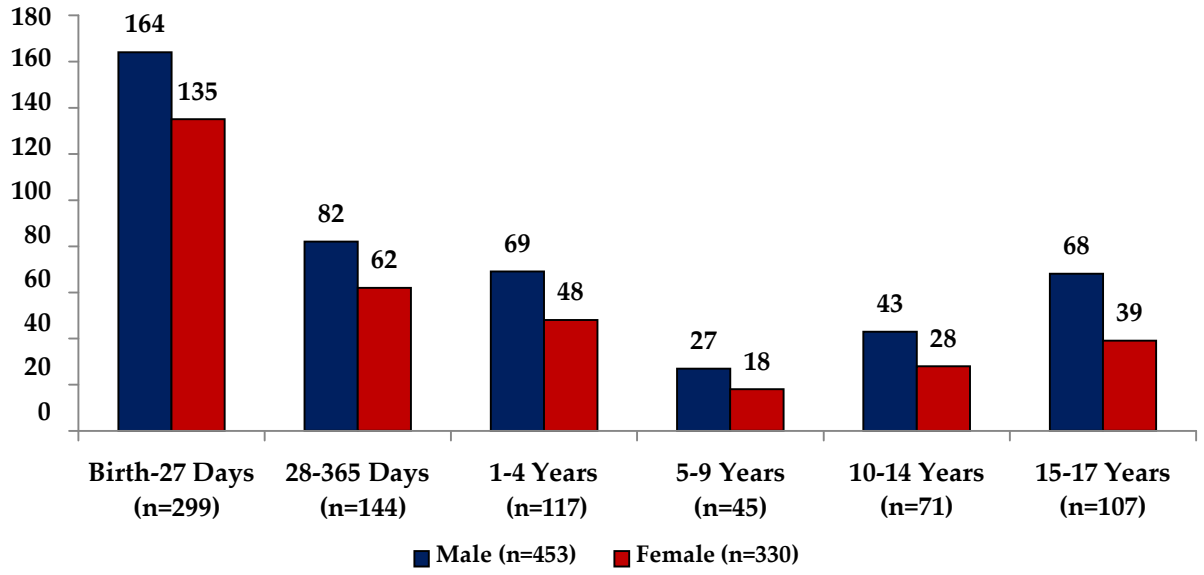
In Arizona, the cause of death refers to the injury or medical condition that resulted in death (e.g. firearm-related injury, pneumonia, cancer). Manner of death includes natural (e.g., cancer), accident (e.g., unintentional car crash), homicide (e.g., assault), suicide (e.g., self-inflicted intentional firearm injury), and undetermined. Manner of death is not the same as cause of death, but specifically refers to the intentionality of the cause. For example, if the cause of death was a firearm-related injury, then the manner of death may have been intentional or unintentional. If it was intentional, then the manner of death was suicide or homicide. If it was unintentional, then the manner of death was an accident. In some cases, there was insufficient information to determine the manner of death, even though the cause was known. It may not have been clear that a firearm death was due to an accident, suicide or homicide; and in these cases the manner of death was listed as undetermined.

[3] For a full list of participants see the Appendix of State and Local CFR Teams.

Demographics

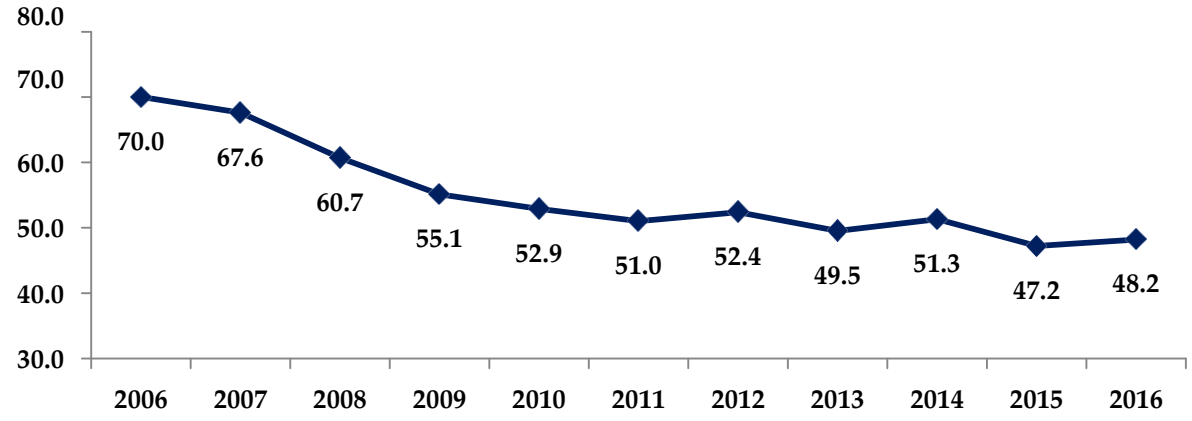
During 2016, there were 783 fatalities among children younger than 18 years of age in Arizona, an increase from the 768 deaths in 2015. Males accounted for 58% of deaths (n=453) and females comprised the remaining 42% (n=330) (Figure 1).

Figure 1. Number of Deaths among Children Ages 0-17 Years, by Age Group and Sex, Arizona, 2016 (n=783)



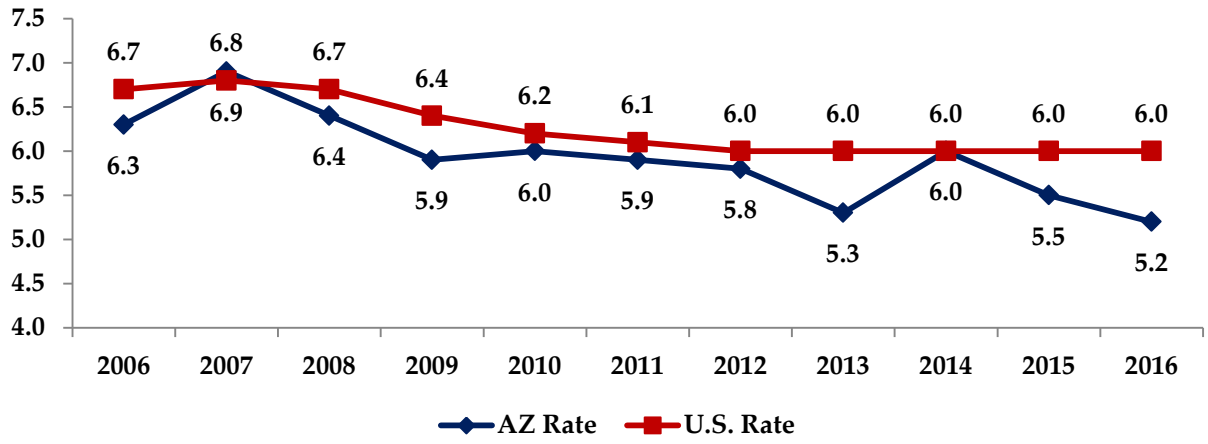
The Arizona child mortality rate increased 2% from 2015 (47.2 deaths per 100,000 children) to 2016 (48.2 deaths per 100,000 children) (Figure 2). Over the last six years, the mortality rate has decreased 5.5% overall from 2011 (51.0 deaths per 100,000 children) to 2016 (48.2 deaths per 100,000 children).

Figure 2. Mortality Rates per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



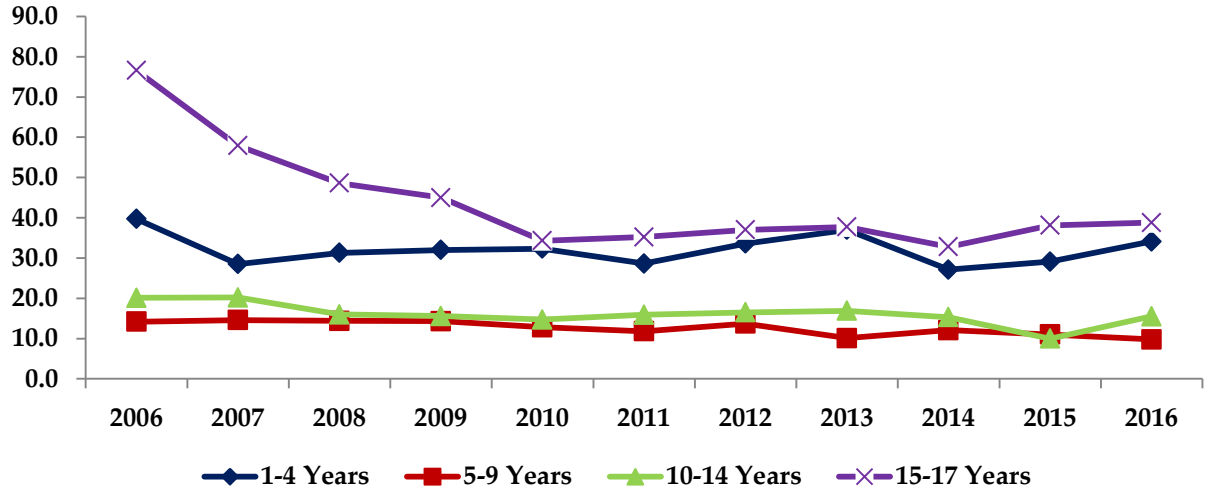
The infant mortality rate decreased 5% from 5.5 deaths per 1,000 live births in 2015 to 5.2 deaths per 1,000 live births in 2016. Figure 3 illustrates Arizona's infant mortality rate compared to the U.S. mortality rate from 2006-2016. Arizona consistently has had lower infant mortality rates than the U.S. except in 2007 (Figure 3).

Figure 3. Infant Mortality Rates per 1,000 Live Births, Less than 1 Year Old, Arizona & U.S., 2006-2016[4]



Over the last decade, the Arizona child mortality rate decreased in every age group. In 2016, the mortality rates for children 1 through 4 years of age, 10 through 14 years of age, and 15 through 17 years of age increased while the mortality rate for children aged 5 through 9 years from the last year decreased (Figure 4).

Figure 4. Mortality Rates per 100,000 Children, Ages 1-17 Years, by Age Group, Arizona, 2006-2016

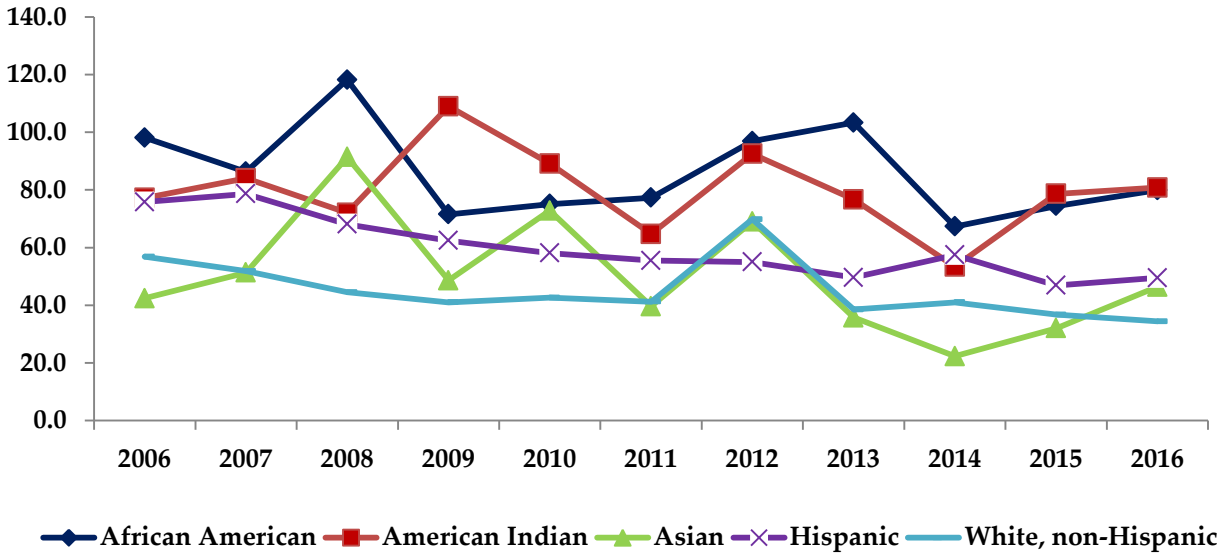


[4] Infant Mortality contains all babies less than 1 year of age that died in Arizona. Infants that are residence of Arizona, but died out of the state are not included in this mortality rate.

Figure 5 shows the child mortality rates for the last eleven years by race and ethnicity. While there is some yearly fluctuation of the rates within each of the five categories, the graph illustrates that African American and American Indian children consistently maintain higher rates of death compared to other races/ethnicities.

Though the graph below indicates the rates for African American and American Indian children have decreased significantly from 2013 to 2014, the population estimate methodology changed in 2014 and therefore changed the denominators used to calculate the mortality rates. The change in the race/ethnicity population denominators may have contributed to the increases in White, non-Hispanic and Hispanic mortality rates between 2013 and 2014 as well (see table 70 in the appendix for population denominators by race/ethnicity).

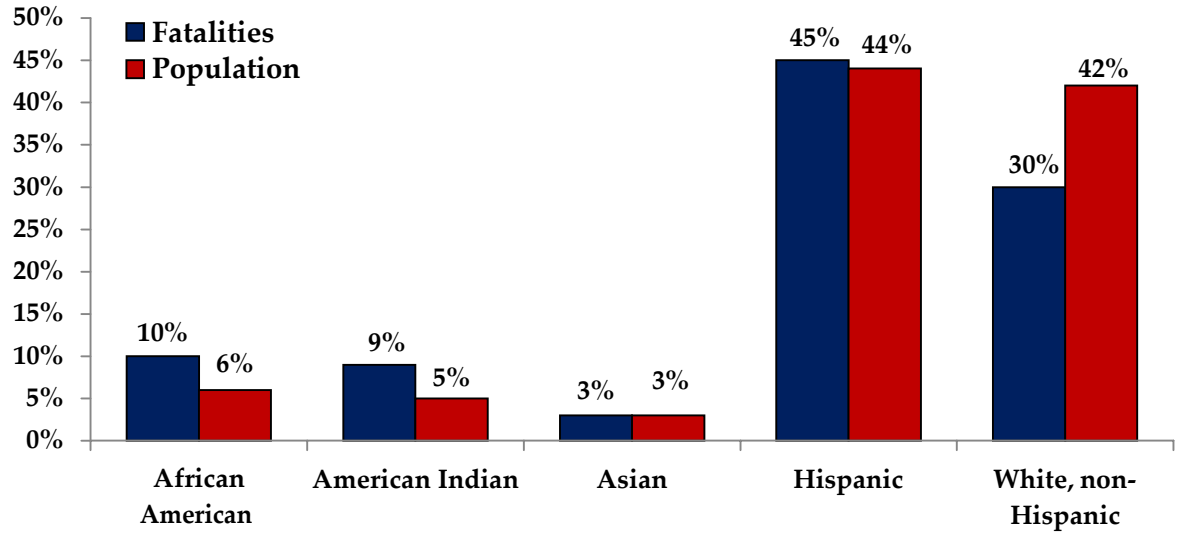
Figure 5. Mortality Rates of Children Ages 0-17 Years, by Race/Ethnicity Group, per 100,000 Children, Arizona, 2006-2016



African American children comprised 6% of the Arizona child population in 2016 but made up 10% of all child fatalities. American Indian children comprised 9% of all children fatalities in 2016 but only made up 5% of the total child population (Figure 6).

Though White, non-Hispanic children made up a significantly lower percentage of deaths than the percentage of the population they represent, there are some categories in which they were overrepresented compared to other race/ethnicities. Each section heading includes disparities information by race/ethnicity and gender.

Figure 6. Percentage of Deaths among Children, Ages 0-17 Years by Race/Ethnicity Group Compared to Population, Arizona, 2016 (n=755)[5]



Preventable Deaths

The main purpose of the CFR program is to identify preventable factors in a child's death. Throughout the report the term "preventable death" is used. Each multi-disciplinary team is made up of professionals who review the circumstances of a child's death using records ranging from autopsies to law enforcement reports. The team then determines if there were any preventable factors present prior to the death. They used one of the following three labels to determine preventability; 1) Yes, probably 2) No, probably not 3) Team could not determine. A determination is based on the program's operational definition of preventability in a child's death.

A child's death is considered to be preventable if the community (education, legislation, etc.) or an individual could reasonably have done something that would have changed the circumstances that led to the child's death.

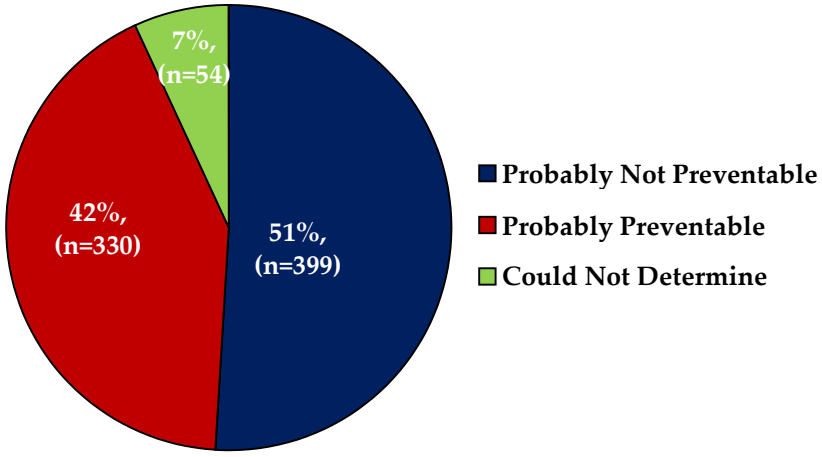
"Yes, probably," means that some circumstance or factor related to the death could probably have been prevented. "No, probably not" indicates that everything reasonable was most likely done to prevent the death, but the child would still have died. A designation of "Team could not determine" means that there was insufficient information for the team to decide upon preventability.

[5] Does not include the 28 deaths whose race/ethnicity is unknown or more than 2 races

When discussing all deaths, the report is referring to the total 783 child deaths that took place in 2016. When the text refers to preventable deaths these are the fatalities that the review teams deemed to be preventable. The majority of the data discussed in this report are based on those fatalities determined as preventable by the teams. This is important so that efforts are targeted to the areas where prevention initiatives will be most effective.

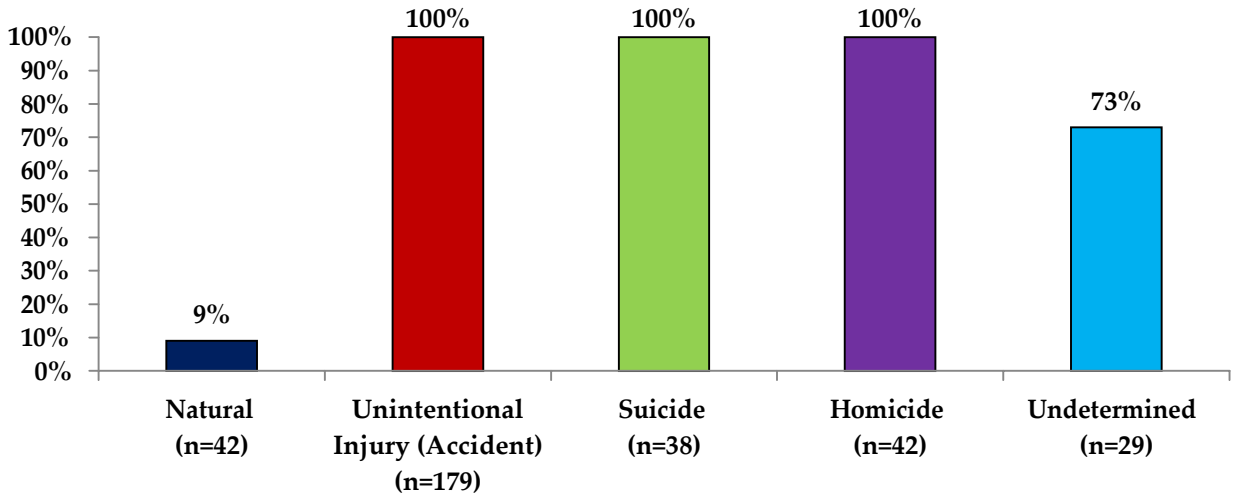
In 2016, CFR teams determined 330 child deaths were probably preventable (42%), 399 child deaths were probably not preventable (51%), and could not determine the preventability in 54 deaths (7%) (Figure 7).

Figure 7. Number and Percentage of Deaths among Children Ages 0-17, by Preventability, Arizona, 2016 (n=783)



CFR teams determined 100% of the unintentional injury deaths were preventable (n=179), 100% of homicides were preventable (n=42), and 100% of suicides were preventable (n=38). Only 9% of natural deaths were determined to have been preventable (n=42) (Figure 8).

Figure 8. Number and Percentage of Preventable Deaths for Children Ages 0-17 Years, by Manner, Arizona, 2016 (n=330)



Preventability varies by age group. Children between the ages of 5 through 9 years old had the lowest percentage of preventable deaths (5%, n=18). The highest percentage of preventable deaths was among youth between the ages of 15 through 17 years old (26%, n=86), and children 28 through 365 days (26%, n=85) (Figure 9).

Figure 9. Percentage of Preventable Deaths for Children Ages 0-17 Years, by Age Group, Arizona, 2016 (n=330)

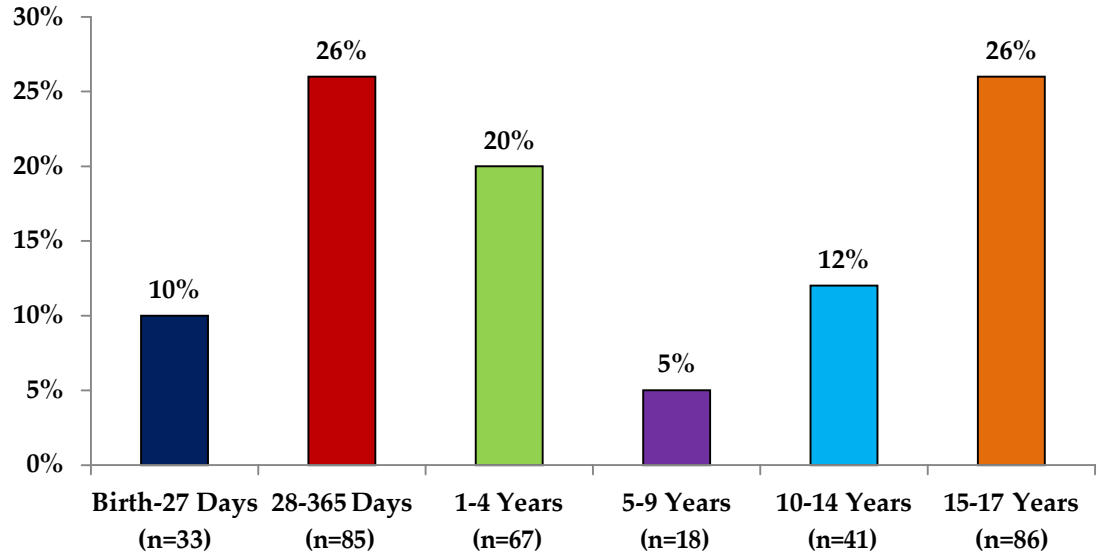


Table 1 shows the leading five causes of death for children by age group in Arizona. Those boxes highlighted in red are some of the leading causes of preventable injury deaths. Two of the top causes were suffocation, which was the most common cause of preventable death in infants, and firearm related injury, which was the most common cause of preventable death for teens 15 through 17 years of age. Motor vehicle crashes were the most common cause of preventable death among children 5 through 14 years old, and drownings were the most common cause of preventable death for children aged 1 through 4 years old.

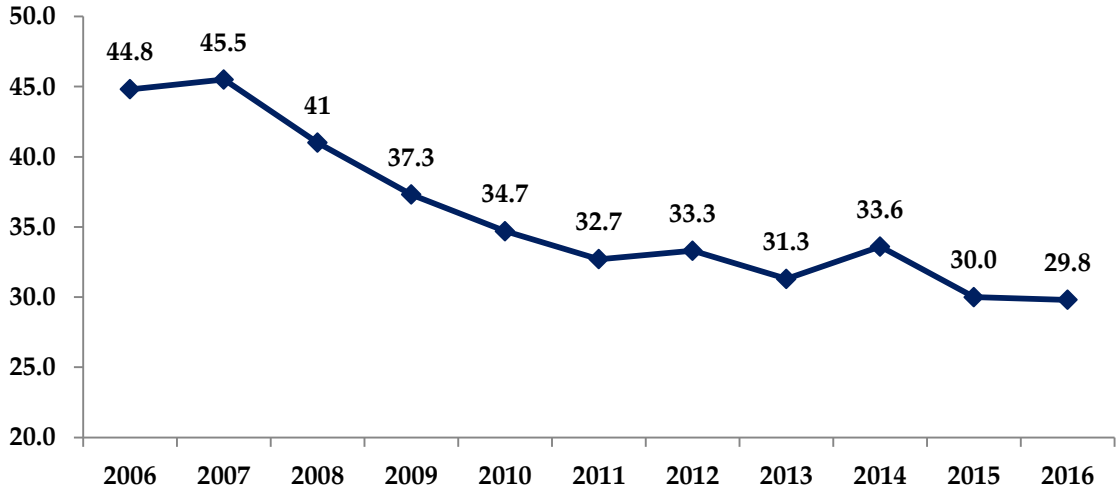
Table 1. Leading Causes of Death by Age Group, Arizona, 2016

0-27 Days 38% n=(299)	28-365 Days 18% n=(144)	1-4 Years 15% n=(117)	5-9 Years 6% n=(45)	10-14 Years 9% n=(71)	15-17 Years 14% n=(107)	All Deaths 100% n=(783)
Prematurity (n=145)	Suffocation (n=46)	Drowning (n=21)	Motor Vehicle Crash & Other Transport (n=7)	Motor Vehicle Crash & Other Transport (n=17)	Firearm Injury (n=29)	Prematurity (n=162)
Congenital Anomaly (n=66)	Undetermined (n=29)	Motor Vehicle Crash & Other Transport (n=19)	Cancer (n=8)	Strangulation (n=9)	Motor Vehicle Crash & Other Transport (n=29)	Congenital Anomaly (n=104)
Other Perinatal Condition (n=54)	Prematurity (n=16)	Congenital Anomaly (n=14)	Other Infection (n=<6)	Neurological & Seizure Disorders (n=9)	Strangulation (n=13)	Motor Vehicle Crash & Other Transport (n=71)
Neurological & Seizure Disorders (n=8)	Congenital Anomaly (n=15)	Other Infection (n=8)	Congenital Anomaly (n=<6)	Cancer (n=6)	Poisoning (n=8)	Other Perinatal Condition (n=56)
Cardiovascular (n=6)	Cardiovascular (n=6)	Undetermined (n=8)	Other Medical Condition (n=<6)	Cardiovascular (n=<6)	Cancer (n=8)	Suffocation (n=55)

Natural Deaths

In Arizona, as well as nationally, deaths classified as natural deaths due to a medical condition account for the largest percentage of child deaths every year. Natural deaths decreased 11% from 2014 (n=546) to 2016 (n=484). Prematurity accounted for 33% (n=162) of natural deaths, other medical conditions accounted for 66% of natural deaths (n=320). Infants 0 through 27 days old composed 60% of all natural deaths (n=290). Hispanic children accounted for 49% (n=236) of natural deaths and were overrepresented compared to the 44% of the population they compose. White, non-Hispanic children made up 28% (n=137) of the deaths. Prematurity (n=162), congenital anomalies (n=104), and perinatal conditions (n=56) were the leading causes of natural death.

Figure 10. Mortality Rates Due to Natural Causes per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016

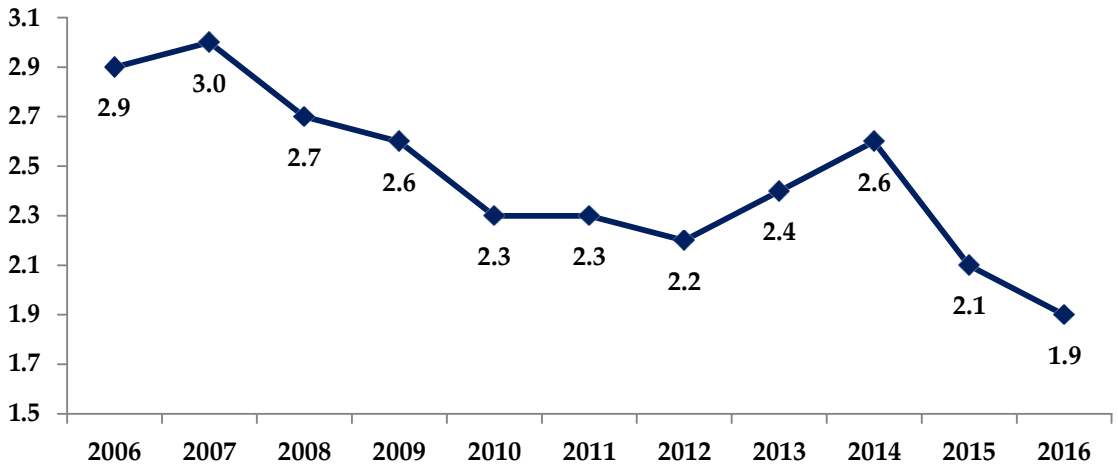


Prematurity

For the purposes of this report, a death due to prematurity is when the infant was born before 37 weeks gestation and the infant did not have a lethal congenital malformation or other perinatal condition that was the primary cause of death. In 2016, twenty-one percent (n=162) of all Arizona child deaths were due to prematurity. When a premature birth is the result of a perinatal condition, the cause of death is classified as a perinatal condition, rather than prematurity. Forty-three percent (n=24) of deaths due to perinatal conditions (n=56) were less than 28 weeks gestation at birth.

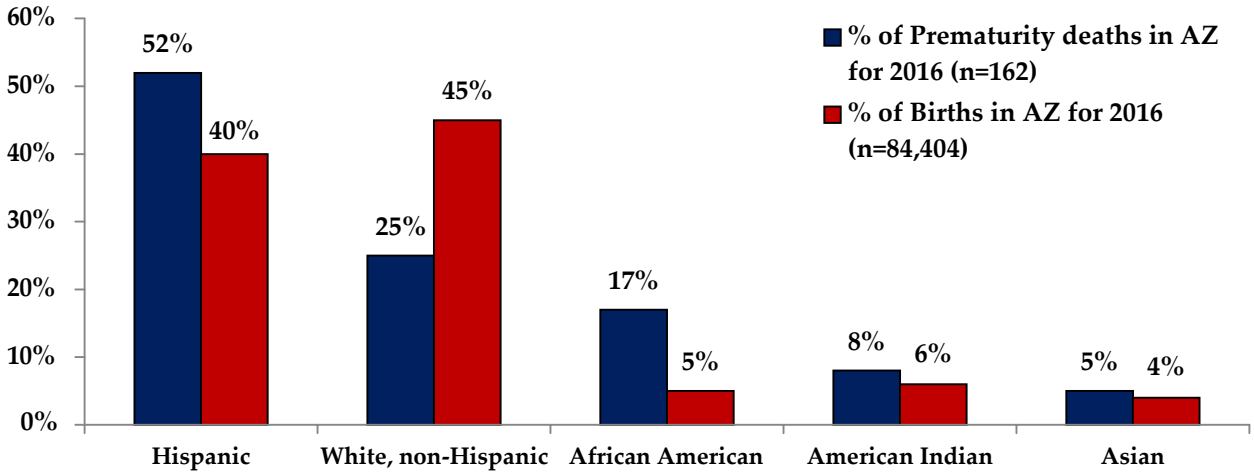
Over the last six years, the prematurity rate has declined and the rate has varied between 2.3 to1.9 deaths per 1,000 live births. The prematurity rate reached its lowest point in 2016.

Figure 11. Prematurity Mortality Rate per 1,000 Live Births, Less than 1 Year Old, Arizona, 2006-2016



In 2016, Hispanic children remain at the highest risk in Arizona for prematurity related death. Fifty-two percent (n=84) of the prematurity related deaths were Hispanic infants compared to making up only 40% of the total birth population in 2016. Though the numbers are smaller, the percentage of African American child deaths had an even greater disparity based on the percentage of the population they represent. American Indian and Asian child deaths also had higher risk than White, non-Hispanic children (Figure 12).

Figure 12. Percentage of Child Deaths due to Prematurity Compared to Percentage of Births, by Race/Ethnicity Group, Arizona 2016[6]



[6] Does not include the 11 deaths whose race/ethnicity is unknown or more than 2 races.

Prevention

Determining the exact cause of premature birth can be difficult. This report identifies the preventable risk factors that are known to be associated with premature births for each of the infant cases reviewed. The steady decrease in the prematurity rate supports continued surveillance into the variety of risk and protective factors associated with prematurity. Some of the most common risk factors are medical complications, late prenatal care or the absence of prenatal care, the overall health of the mother, socioeconomic status, gestational age, substance use or abuse by the mother or her partner, mother's age, and domestic violence in the home.

In 2016, the most common risk factors for prematurity deaths included medical complications during pregnancy (85%, n=138), preterm labor (70%, n=113), and no prenatal care (23%, n=37). There were 13 prematurity deaths with drug/alcohol abuse and 13 with smoking as a risk factor. The viability or survival rate of premature infants also depends on the gestational age at birth. When infants are less than 28 weeks of gestation at birth they are classified as extreme prematurity. Extreme prematurity accounted for 91% of prematurity deaths (n=147) (Table 2).

Lack of prenatal care is a serious risk factor for premature birth. In twenty-three percent (n=37) of the prematurity deaths the mother reported that she did not receive any prenatal care. Forty-three percent of the mothers whose infants died due to prematurity started prenatal care within the first trimester of pregnancy (n=71). In two percent of the prematurity deaths, the mother was 16 through 19 years of age at the time of the birth (n=4). Fifty-one percent of the mothers were 20 through 29 years of age (n=82); thirty-seven percent were 30 through 39 years of age (n=60), and four percent of mothers were 40 years and older (n=7). In six percent of the cases the age of the mother was unknown (n=9).

Eight percent of mothers had less than a high school education (n=13); forty-four percent completed high school (n=71); and thirty-four percent attended at least some college (n=55); four percent were post-graduates (n=7); and for another six percent the mother's educational status was unknown (n=9).

Table 2. Risk Factors for Prematurity Deaths, Arizona, 2016

Factor*	Number	Percent
Extreme Prematurity (born < 28 weeks of pregnancy)	147	91%
Medical complications during pregnancy	138	85%
Preterm labor	113	70%
No prenatal care	37	23%
Substance use	13	8%
Smoking	13	8%
Cervical insufficiency	12	7%
Chorioamnionitis (bacterial infection)	10	6%
*More than one factor may have been identified for each death		

One of the difficulties in adequately managing and preventing a premature birth is that the etiology often is multifactorial, leaving no single intervention strategy as best effective. However, studies have shown that the post neonatal period mortality rate is high for children in the U.S., and babies born to lower income mothers are at highest risk of death.[7] There are several protective factors that can help including good preconception health, early access to prenatal care, and community awareness about good health practices. Strengthening these can help reduce incidence and target prevention efforts to improve birth outcomes for groups at higher risk.[8] Some common maternal health conditions that may lead to pre-term birth include obesity, high blood pressure, and diabetes.[9]

Prematurity Prevention Recommendations

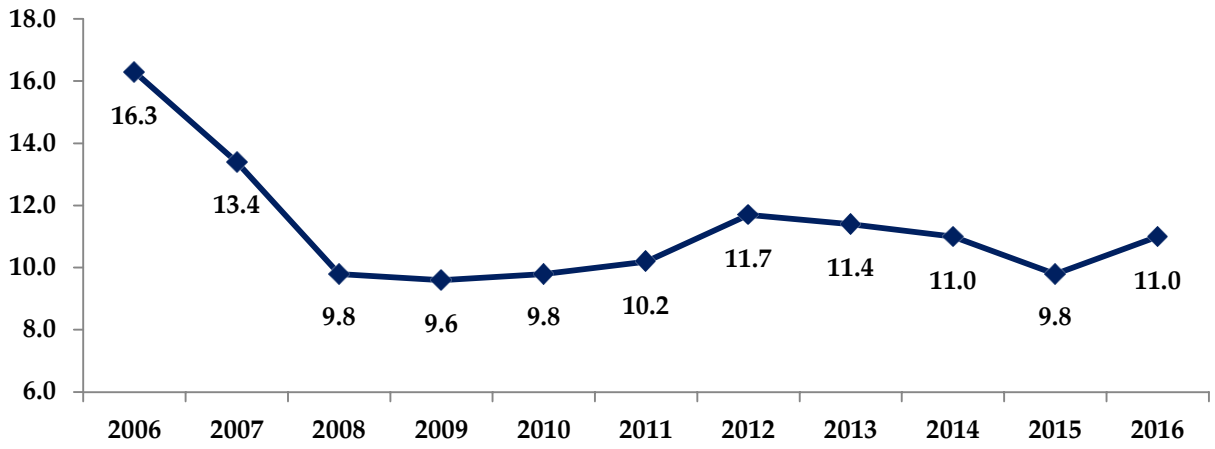
- In order to have a healthy baby, take care of your health before pregnancy by maintaining a healthy weight, adopting healthy eating habits, and avoiding alcohol and other drugs.
- Seek prenatal care as soon as you become pregnant.
- Stop smoking if you are pregnant in order to reduce pregnancy complications and have a healthy baby.
- Ensure that all Arizona women of child bearing age have access to medical care by providing educational resources regarding their health insurance options in both English and Spanish.

[7] http://economics.mit.edu/files/9922
[8] http://www.amchp.org/Transformation-Station/Documents/AMCHP%20Preconception%20Issue%20Brief.pdf
[9] https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregcomplications.htm

Unintentional Injury (Deaths Due to Accidents)

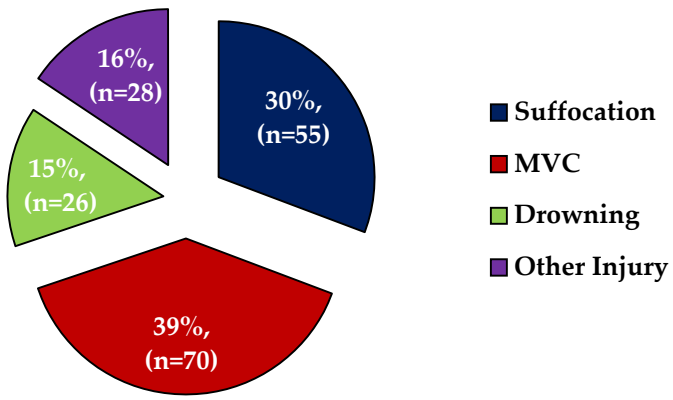
The mortality rate for unintentional injury deaths increased 12% from 2015 (n=160) to 2016 (n=179) (Figure 13). Over the last six years, the unintentional mortality rate varied from 9.8 to 11.7 deaths per 100,000 children. Thirty-five percent of unintentional injury deaths occurred in children less than one year of age (n=62).

Figure 13. Unintentional Injury (Accident) Mortality Rates per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



In 2016, motor vehicle crashes (MVC) and suffocation were the leading causes of unintentional injury deaths and accounted for 70% of these deaths. Other injuries include drownings, poisoning, falls, or fire/burn, or firearm injuries (Figure 14).

Figure 14. Leading Causes of Unintentional Injury (Accident) Deaths for Children Ages 0-17 Years, Arizona, 2016



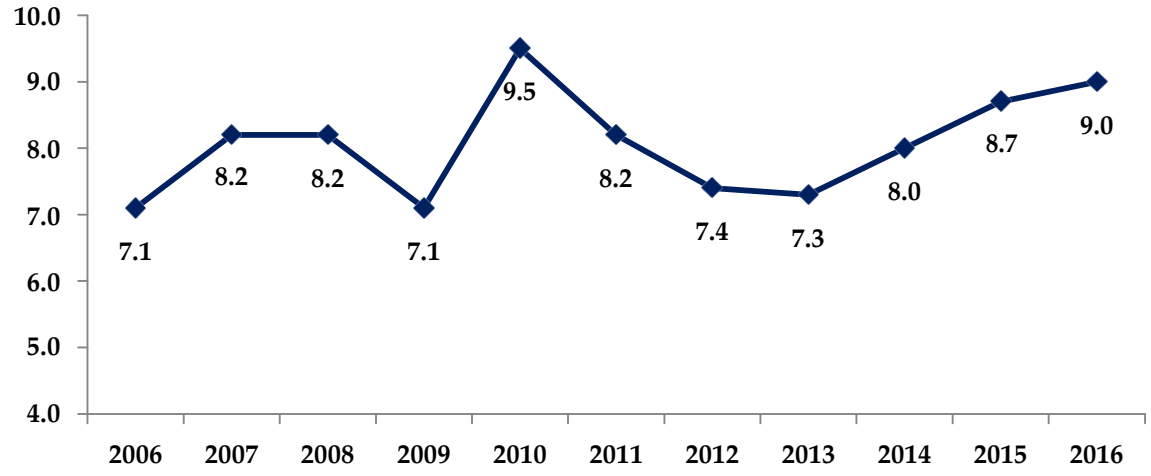
Injury Deaths In-or-Around the Home

Injury deaths in-or-around the home are unintentional or undetermined deaths that occur in-or-around the home environment (e.g. bedroom, driveway, and yard). Although other deaths due to suicide, natural causes, or homicide may also occur in the home environment, these categories are not included in this section. Injury deaths in-or-around the home increased 3% from 2015 (n=142) to 2016 (n=146).

Injuries in-or-around the home accounted for 19% of all Arizona child fatalities.

Over the last six years, the injuries in-or-around the home mortality rate has gradually increased and varied between 7.3 to 9.0 deaths per 100,000 children. In 2014, the methodology for determining injury deaths in-or-around the home changed. The addition of new variables that was not included previously may account for the rise in injury deaths in-or-around the home over the last six years.

Figure 15. Injury In-or-Around the Home Mortality Rate per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016

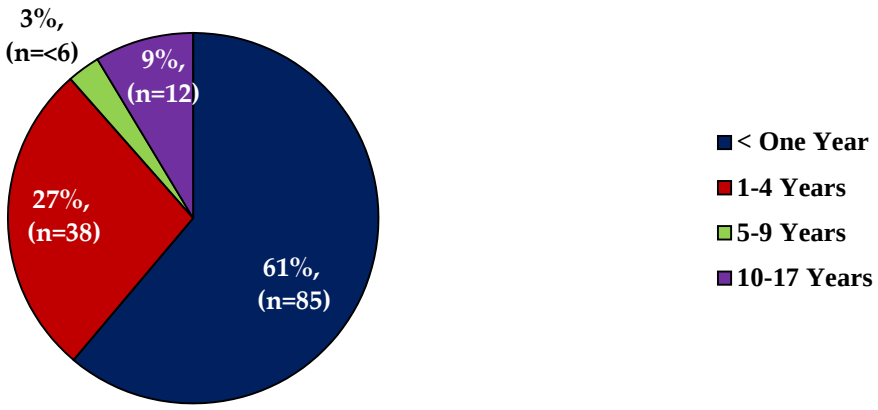


Prevention

In 2016, children less than five years of age accounted for 84% of injury deaths in-or-around the home (n=123); and more than half of the deaths were infants less than one year (58%, n=85) (Figure 16). Males (63%, n=92) were 1.7 times more likely to experience an injury death in-or-around the home than females (37%, n=54). Majority of these deaths were among White, non-Hispanic and Hispanic children. White-non Hispanic children (n=56) made up 38% of injury deaths in-or-around the home, 33% for Hispanic children (n=48), 14% for African American

children (n=20), and American Indian children (n=15) made up 10%. Twenty percent of injury deaths in-or-around home were also classified as maltreatment deaths due to neglect by the child's caretaker (n=29).

Figure 16. Number and Percentage of Injury Deaths In-or-Around the Home for Children Ages 0-17 Years, by Age Group, Arizona, 2016



The most common cause of death was suffocation (n=54) accounting for 38% of fatalities, undetermined deaths (n=25) made up 17%, and drowning incidents (n=22) accounted for 15% of injury deaths in-or-around the home (Table 3).

Table 3. Number and Percentage of Injury Deaths In-or-Around the Home, by Cause, Arizona, 2016 (n=146)

Cause	Number	Percent
Suffocation	54	38%
Undetermined	25	17%
Drowning	22	5%
MVC/Transport	10	7%
Poisoning	9	6%

The most commonly identified preventable factors for injuries in-or-around the home in infants were unsafe sleep environments (44%, n=64), lack of supervision (38%, n=55), and bed-sharing (26%, n=38) (Table 4).

Table 4. Preventable Factors for Injury Deaths In-or-Around the Home, Arizona, 2016

Factor*	Number	Percent
Unsafe sleep environment	64	44%
Lack of supervision	55	38%
Bed-sharing	38	26%
Substance use	34	23%
Access to water	15	10%
*More than one factor may have been identified for each death		

There are a variety of protective factors that can be implemented to reduce these types of deaths. This includes educating families about the dangers of unsafe sleep environments, the importance of placing the child on their back to sleep, explaining the risks of bed sharing, having proper pool fencing and providing adequate supervision to young children.

Injury Prevention Recommendations in the Home Setting

Prevent Infant Sleep Suffocation

- Practice the "ABCs of Safe Sleep". The ABCs are: babies should sleep alone, on their back and in a crib in order to prevent sleep suffocation
- Place babies to sleep every time in a crib or bassinette that has a firm mattress covered by a fitted sheet.
- Encourage parents to place their baby's crib or bassinette in their bedroom.
- Keep soft objects, such as crib bumpers, pillows, and loose bedding out of baby's crib.
- Encourage pregnant women to quit smoking and to provide a smoke free environment for their babies after birth.
- Pediatricians and other professionals should ask about sleep practices and provide safe sleep education at infant health supervision visits.
- All hospitals that provide health care services to infants should establish policies that endorse and model the ABCs of safe sleep recommendations from birth.
- Parents should make sure all those who care for their infant understand safe sleep practices (use of a crib, avoidance of bed sharing, and positioning infants on their back to sleep every time).
- Only place infants on their stomach when they are awake and supervised.
- Early childhood home visitors should educate families about the risks of bed-sharing and check for safe sleep practices in the home.
- Arizona Perinatal Trust should continue to promote safe sleep guidelines in birthing hospitals.
- Childcare providers should establish policies that promote and enforce safe sleep practices.

Prevent Injuries In-or-Around the Home

- Check smoke alarm batteries every six months to make sure they are working.
- Install safety gates to keep children from falling down staircases and window guards or stops to prevent falls from windows.
- Make sure that all medications, including vitamins and adult medicines, are stored out of reach and out of sight or children.
- Store poisonous items out of reach or use safety locks on cabinets within reach. These items also include liquid packets for the laundry and dishwasher.
- Save the Poison Help line in your phone: 1-800-222-1222. Put the toll-free number for the Poison Control Center into your home and cell phones
- Give young children your full and undivided attention when they are in the bathtub or

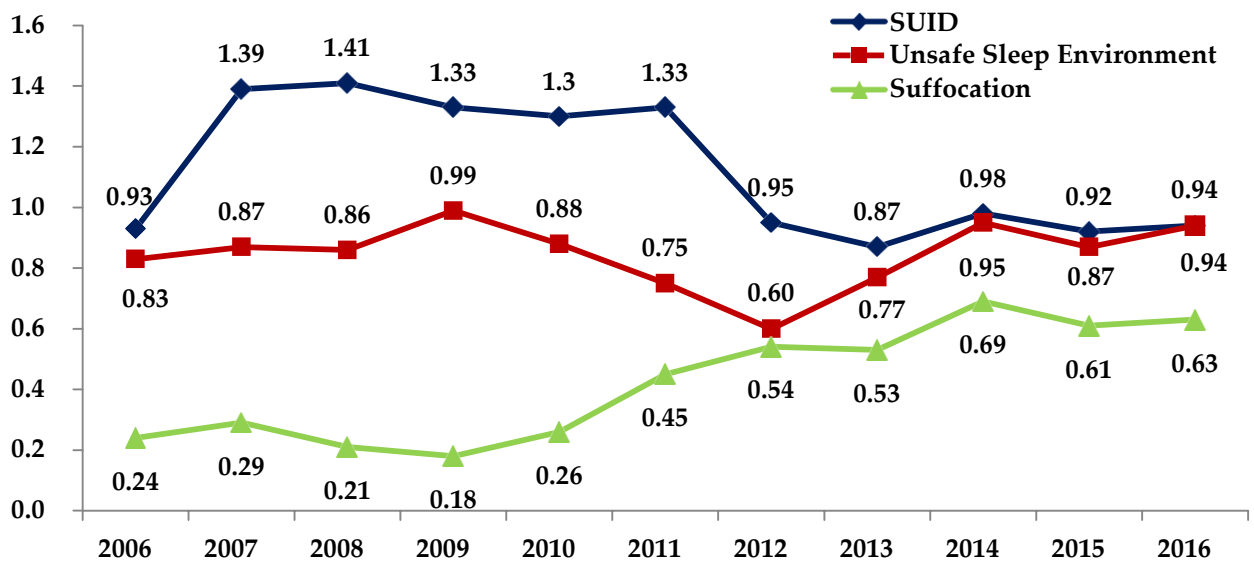
around water.

- Install a four–sided isolation fence, with self–closing and self–latching gates, around backyard swimming pools.
- Pool fences should completely separate the house and play area from the pool.
- Secure TVs and furniture to the wall using mounts, brackets, braces, anchors or wall straps to prevent tip-overs.
- Avoid heatstroke-related injury and death by never leaving your child alone in a car, not even for a minute. Always lock your doors and trunks – even in your driveway. And keep your keys and key fobs out of the reach of kids.

Sudden Unexpected Infant Death (SUID) and Sleep Related Suffocation Deaths

SUID is defined as the death of a healthy infant who is not initially found to have any underlying medical condition that could have caused their death. It includes deaths that might have previously been categorized as "crib deaths" if the death occurred during sleep. Many SUID cases are due to suffocation and unsafe sleep environments, but not all SUID cases are unsafe sleep related. The number of SUID cases increased 3% from 2015 (n=78) to 2016 (n=80). Over the last six years, the SUID mortality rate have declined 29% and varied between 0.87 to 1.3 deaths per 1,000 live births, while the mortality rates for unsafe sleep environment and suffocation have both increased and varied 0.60 to 0.95 deaths per 1,000 live births and 0.45 to 0.69 deaths per live births, respectively.

Figure 17. Mortality Rates due to Sudden Unexpected Infant Death (SUID), Unsafe Sleep Environments, and Suffocation per 1,000 Live Births, Less than 1 Year Old Arizona, 2006-2016



In 2016, males accounted for 61% of SUID (n=49). White, non-Hispanic children accounted for 39% of SUID (n=31), Hispanic children accounted for 31% of SUID (n=25), African American children accounted for 15% of SUID (n=12), and American Indian children accounted for 10% of SUID (n=8).

Prevention

Local CFR teams determined seventy-four of the SUID deaths were preventable (93%) and these deaths accounted for 22% of all preventable deaths. The most commonly identified cause of SUID was sleep suffocation (67%, n=53). In 31% (n=25) the cause could not be determined. Although these deaths were most likely suffocation, teams would identify the cause of death as "undetermined" if there was not sufficient information available to conclusively identify the cause of death as suffocation (Table 5). The major risk factors in many SUIDs are situations where an infant is placed to sleep on his/her stomach or side; on an unsafe sleeping surface, such as an adult mattress, couch, or chair; soft objects, pillows, or loose coverings in a sleep environment; has been exposed to cigarette smoke either prenatally or postnatal; and bed-sharing with an adult or other child.

Table 5. Number and Percentage of Sudden Unexpected Infant Deaths, by Cause, Arizona, 2016 (n=80)

Cause	Number	Percent
Suffocation	53	67%
Probable Suffocation	25	31%

An unsafe sleep environment, including placement of infant in an unsafe sleep position, was associated with 99% of SUID fatalities (n=79) (Table 6). Bed-sharing with adults (93%, n=38) and/or other children (22%, n=9) accounted for 49% of SUID fatalities (n=41). Other factors of SUID fatalities include, 51% of infants died while sleeping in an adult bed (n=41), 16% infants died sleeping on a couch or a floor, and 30% died while sleeping on their side or stomach. The local teams determined 94% of unsafe sleep fatalities (n=73) were preventable.

Table 6. Preventable Factors for Sudden Unexpected Infant Deaths, Arizona, 2016

Factor*	Number	Percent
Unsafe sleep environment	79	99%
Bed-sharing	41	49%
-With adult	38	93%
-With child	9	22%
Sleep Position	24	30%
-On stomach	14	58%
-On side	10	42%
Substance use	16	20%
*More than one factor may have been identified for each death		

Table 6A. Caregiver Supervising Infant, Prior to Sudden Unexpected Infant Death, Arizona, 2016

Caregiver	Number	Percent
Parent	62	78%
-Mother	45	73%
-Father	17	27%
Other Relative (Grandparent, Cousin, or Sibling)	11	14%
Other (Babysitter, Unlicensed Daycare, or Unspecified Caregiver)	7	9%

These deaths could have potentially been prevented by using safe sleep practices. Safe sleep practices include placing young infants to sleep on their back instead of on their side or stomach, inside a crib, always using a firm sleep surface, and keeping soft objects as well as loose bedding out of the crib. In 2016 the American Academy of Pediatrics expanded their recommendations for a safe sleep environment. This included a shift from focusing only on SUID to focusing on a safe sleep environment that can reduce the risk of all sleep related infant deaths, including SUID. The recommendations include supine positioning, use of a firm sleep surface, breastfeeding, room-sharing without bed-sharing, routine immunizations, consideration of using a pacifier, and avoidance of soft bedding.[10]

Preventing Sleep related Suffocation Death

- Parents and other caregivers should always place babies to sleep alone on their backs, in a crib that does not have toys or extra bedding.
- Parents should make sure all those who care for their infant understand safe sleep practices (use of a crib, avoidance of bed-sharing and positioning infants on their back to sleep).
- Early childhood home visitors should educate families about and reinforce safe sleep practices.
- Health care providers, staff in newborn nurseries and NICUs should establish policies that endorse and model the ABC's of safe sleep recommendations from birth.
- Encourage all health care providers working with parents to discuss safe sleep practices and risk factors at every visit.
- Always return the infant back to their safe sleep environment after breast/bottle feeding.
- Arizona Perinatal Trust should continue to promote safe sleep guidelines in birthing hospitals.
- Child care providers should establish policies that promote and enforce safe sleep practices.
- Support public awareness campaigns and distribution of resources regarding the risk factors associated with sudden unexplained and sleep related infant deaths.
- Support and expand the use of the Arizona Unexpected Infant Death Investigation Checklist by Law enforcement, first responders, and medical investigators through regular training.
- ADHS continue to reinforce safe sleep practices.

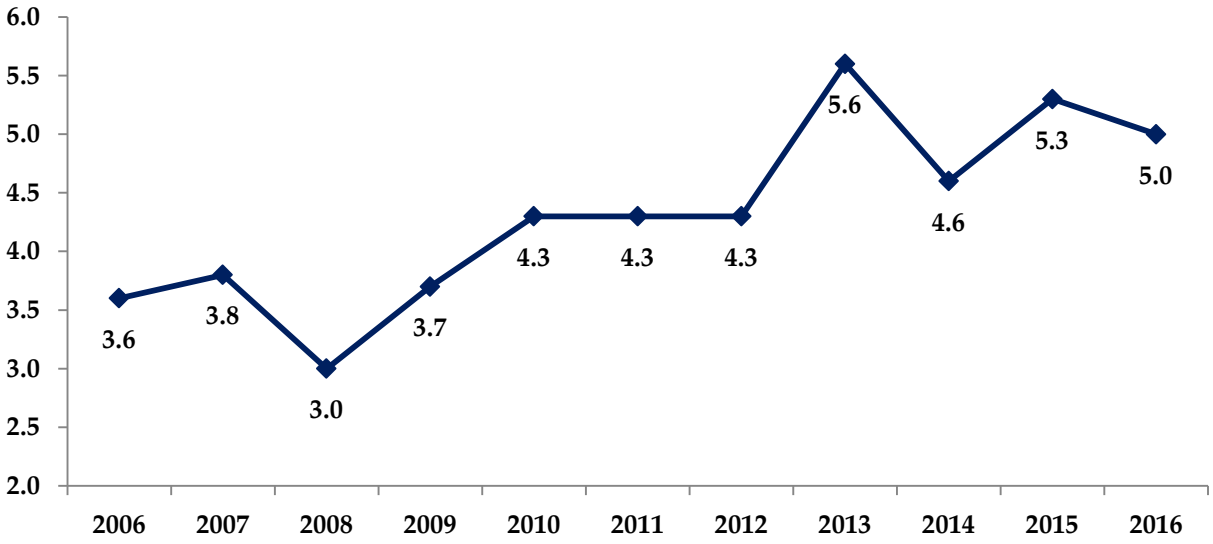
[10] http://pediatrics.aappublications.org/content/early/2016/10/20/peds.2016-2938

Maltreatment Deaths (Deaths due to Child Abuse and Neglect)

Ten percent (n= 82) of Arizona child fatalities in 2016 were due to maltreatment. From 2015 to 2016 the mortality rate due to maltreatment decreased 6% from 5.3 deaths per 100,000 children to 5.0 deaths per 100,000 children (Figure 18). In 2015, 87 children died due to maltreatment compared to 82 in 2016. In 2016, physical abuse such as blunt force trauma, or use of firearm weapon caused or accounted for 32% of maltreatment deaths (n=26) among children. Child neglect caused or accounted for 80% of the maltreatment deaths (n=66). Both physical abuse and neglect may have been present in a child's death. It is important to note that while there have been some fluctuations in the rates between the years, the overall mortality rate due to maltreatment has increased by 16% since 2011.[11]

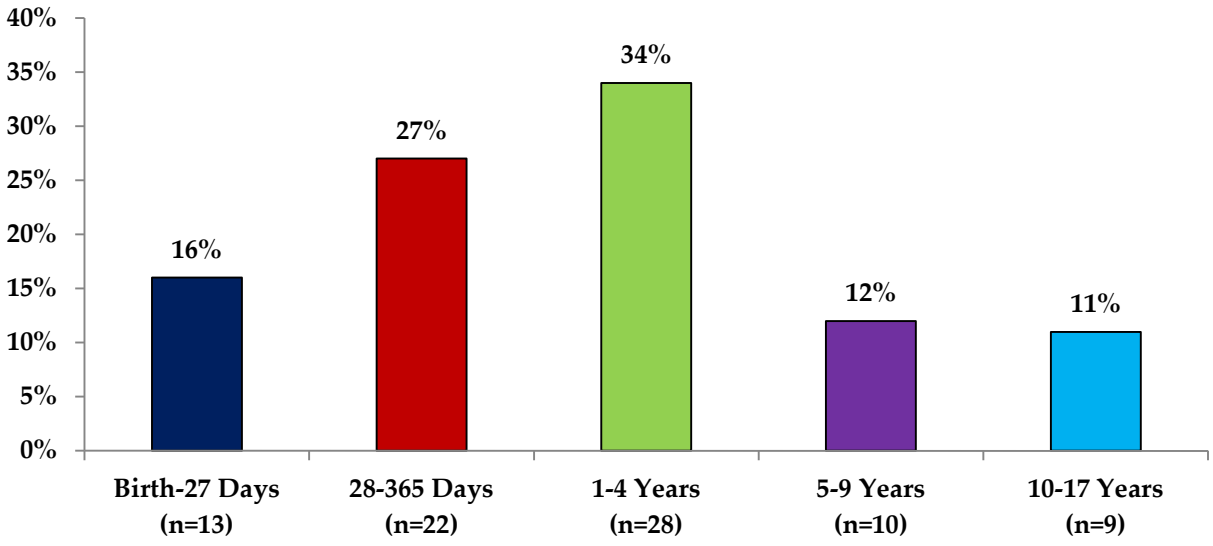
Males represented 54% (n=44) of the maltreatment deaths, versus 46% (n=38) among females. Thirty-four percent (n=28) of children who died due to maltreatment were Hispanic, 27% (n=22) were White, non-Hispanic, 22% (n=18) were African American, 11% (n=9) were American Indian, and 6% were among children who race/ethnicity group is multiple race or unknown. Seventy-seven percent of the children who died from maltreatment were less than five years old (n=63).

Figure 18. Mortality Rates due to Maltreatment per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



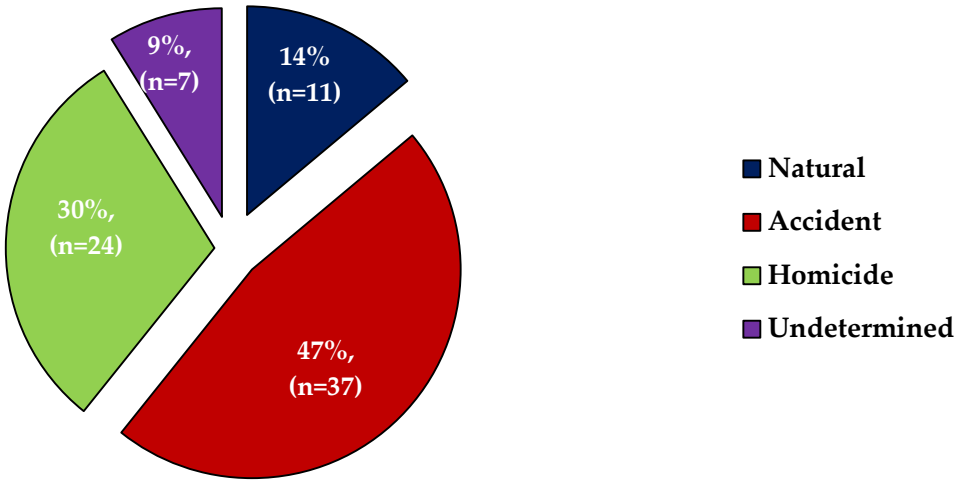
[11] Please see the Technical Appendix for a full explanation and definition on maltreatment.

Figure 19. Percentage of Maltreatment Deaths for Children Ages 0-17 Years, by Age Group, Arizona, 2016 (n=82)



In 2016, the leading manner of death for maltreatment fatalities in Arizona was unintentional injuries. Accidents resulted in forty-seven percent (n=38) of unintentional injuries. Homicides comprised thirty percent (n=25) of the maltreatment deaths. Fourteen percent (n=11) of maltreatment deaths were due to a natural manner (Figure 20). Examples of maltreatment deaths due to a natural manner of death include prenatal substance use resulting in premature birth or a caregiver's failure to obtain medical care.

Figure 20. Number and Percentage of Maltreatment Deaths for Children Ages 0-17 Years, by Manner, Arizona, 2016 (n=82)



Blunt/sharp force trauma, MVC, drowning, prematurity, and firearm injury were the leading causes of maltreatment related deaths among children in Arizona (Table 7).

Table 7. Maltreatment Deaths Among Children by Top Causes of Death, Arizona, 2016 (n=82)		
Cause	Number	Percent
Blunt/sharp Force Trauma	19	23%
MVC	14	17%
Drowning	10	12%
Prematurity	7	9%
Firearm Injury	7	9%
Suffocation	7	9%
All Other Injuries	18	22%

Of the eighty-two maltreatment deaths, 76% of deaths (n=63) involved only one perpetrator, and 23% of deaths (n=19) involved two perpetrators. Forty-seven percent of maltreatment deaths involving two perpetrators were identified as the child's mother and father. Overall, the child's mother made up 54% (n=55) of perpetrators in maltreatment deaths, and the child's father accounted for 20% of deaths (n=20) (Table 8).

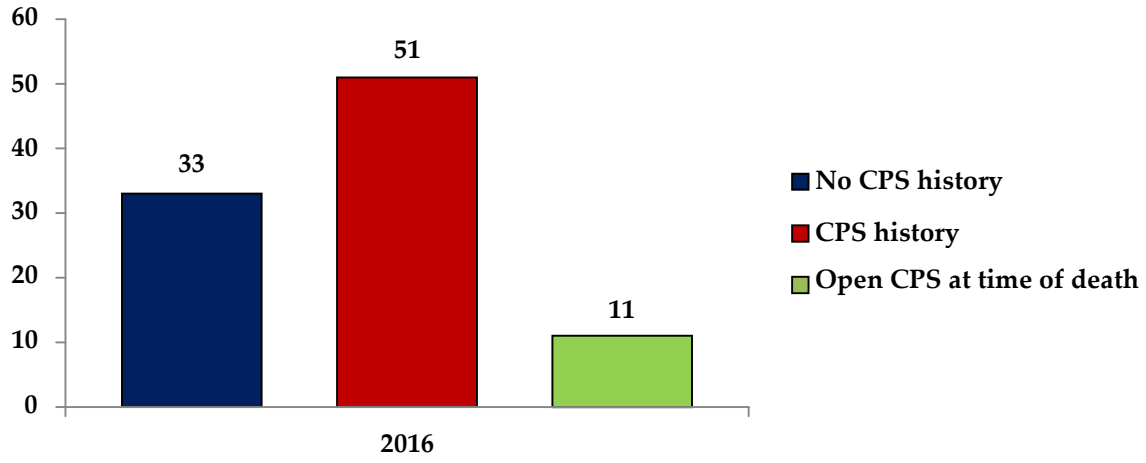
Table 8. Number and Percentage of Perpetrators Involved in Maltreatment Deaths Among Children, by Perpetrator Type, Arizona, 2016 (n=101)		
Perpetrator*	Number	Percent
Mother	55	54%
Father	20	20%
Parent's Partner	11	11%
Relative (Sibling, Grandparent, Cousin, etc.)	10	10%
Other Caregiver (Babysitter, Childcare, etc.)	5	5%
*There may be more than one perpetrator for each death		

Child Protective Services Involvement with Families of Children Who Died Due to Maltreatment

Local CFR teams attempt to obtain records from child protective services (CPS) agencies, including Arizona Department of Child Safety (ADCS) and CPS agencies in other jurisdictions, such as tribal authorities and other states. Review teams consider a family as having previous involvement with a CPS agency if the agency investigated a report of maltreatment for any child in the family prior to the incident leading to the child's death. Unsubstantiated reports of maltreatment are also included in this definition; however calls to ADCS that did not meet criteria to be made into a report, and were taken as "information only", are not included.

In 2016, sixty-two percent (n=51) of the 82 children who died from maltreatment were from families with prior involvement with a CPS agency. Among the families who had prior involvement with CPS, 13% (n=11) of families had an open case at the time of the child's death, and 40% (n=33) of families had no history of CPS involvement (Figure 21). The number of children from families with prior CPS involvement decreased from 53 in 2015 to 51 in 2016. The number of families with an open CPS case at the time of the child's death also decreased 35% from 2015 (n=17) to 2016 (n=11).

Figure 21. Maltreatment deaths: involvement with any child protective services agency, Arizona, 2016



Prevention

Child maltreatment is any act or series of acts of commission or omission by a parent or other caregiver (e.g., clergy, coach, and teacher) that results in harm, potential for harm, or threat of harm to a child. There are several modifiable risk factors that exist when a child is at risk for maltreatment. These factors, usually in combination, may involve the parent or caregiver, the family, the child or the environment.[12]

- *Parent or caregiver factors*: personality characteristics and psychological well-being, having a history of maltreatment as a victim and/or perpetrator, history or patterns of substance use/abuse, incorrect attitudes and/or knowledge about caring for a child i.e. adequate nutrition, safe sleep practices and age
- *Family factors*: marital discord, domestic violence, single parenthood, unemployment, financial problems and stress
- *Child factors*: child's age and level of development, disabilities, and problem behavior
- *Environmental factors*: poverty and unemployment, social isolation and lack of social support and community violence

[12] https://www.childwelfare.gov/pubpdfs/2011guide.pdf

One hundred percent of child maltreatment deaths were determined to have been preventable (n=82). The CFR teams identified preventable factors in each of these deaths. The most common preventable factor was substance use or abuse which was associated with 58% (n=48) of the deaths. An unsafe sleep environment accounted for 11% (n=9) of maltreatment deaths, lack of supervision accounted for 10% (n=8) (Table 9). More than one factor may have been identified for each death.

Table 9. Preventable Factors for Maltreatment Deaths Among Children, Arizona, 2016		
Factor*	Number	Percent
Substance use	48	58%
Lack of Supervision	9	11%
Unsafe sleep environment	8	10%
Lack of proper restraint use in a motor vehicle	6	7%
*More than one factor may have been identified for each death		

When a child is at risk for maltreatment there are a number of protective factors that can be strengthened to reduce the risk. These include mentally healthy caregivers, a healthy relationship with a parent or caregiver, parental resilience and strong social connections.

Child Abuse and Neglect (Maltreatment) Prevention Recommendations

- Report suspected abuse or neglect by parents or caregivers to the Department of Child Safety at 1-888-SOS-CHILD (1-888-767-2445) and to law enforcement agencies.
- Support sufficient funding for timely behavioral health treatment services for parents and their children.
- Support sufficient funding for substance abuse assessment and treatment services for parents and their children.
- Support increased funding for childcare assistance programs so that all low-income working families can have access to safe childcare for their children.
- If in need of safe childcare, parents and caregivers can contact these agencies: Arizona Childcare Resource & Referral (1-800-308-9000) or the Association for Supportive Child Care (1-800-535-4599) for assistance. These agencies will match parents seeking childcare with appropriate community resources.
- Ensure there is sufficient funding for the Arizona Department of Child Safety, Juvenile Court System, Attorney General's Office and community based services to effectively prevent and respond to child abuse and neglect.
- The Arizona Congressional Delegation should support the development of a national child abuse registry that can provide critical information on past episodes of abuse and neglect that occurred in other jurisdictions and outside of Arizona.
- Pediatricians and other healthcare providers should implement the American Academy of Pediatrics recommendations to integrate postpartum depression surveillance.
- Encourage communities to support evidenced based programs focused on prevention such as home visiting.

Motor Vehicle Crash and Other Transport Deaths

Since 2012, motor vehicle crash (MVC) and other transport deaths among children were gradually declining. However, motor vehicle crash and other transport deaths increased 42% from 2015 (n=50) to 2016 (n=71); and accounted for 9% of all child deaths in Arizona. From 2011-2016, the motor vehicle crash and other transport mortality rate varied from 3.1 to 5.9 deaths per 100,000 children (Figure 22). Motor vehicle crashes alone accounted for 86% of transportation related deaths among children. The MVC mortality rate increased 53% from 2015 (n=40) to 2016 (n=61) (Figure 23).

There are a number of risk factors that are associated with these deaths.

- *Age and gender*: males aged 15–17 are at greatest risk, children under 11 are less able to make safe decisions and teens and young adults have the lowest seatbelt use ratings
- *Improperly or unrestrained children*, especially children under five, are at increased risk of severe injury or death in the event of a motor vehicle crash
- Cyclists, motorcyclists or motorcycle passengers not wearing helmets are at greater risk of severe head injury or death
- Substance use/abuse by both children and adults
- Poor supervision
- Excessive speed, distracted, and reckless driving including using mobile devices and texting

Figure 22. Mortality Rate Due to Motor Vehicle Crashes (MVC) and Other Transport per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016

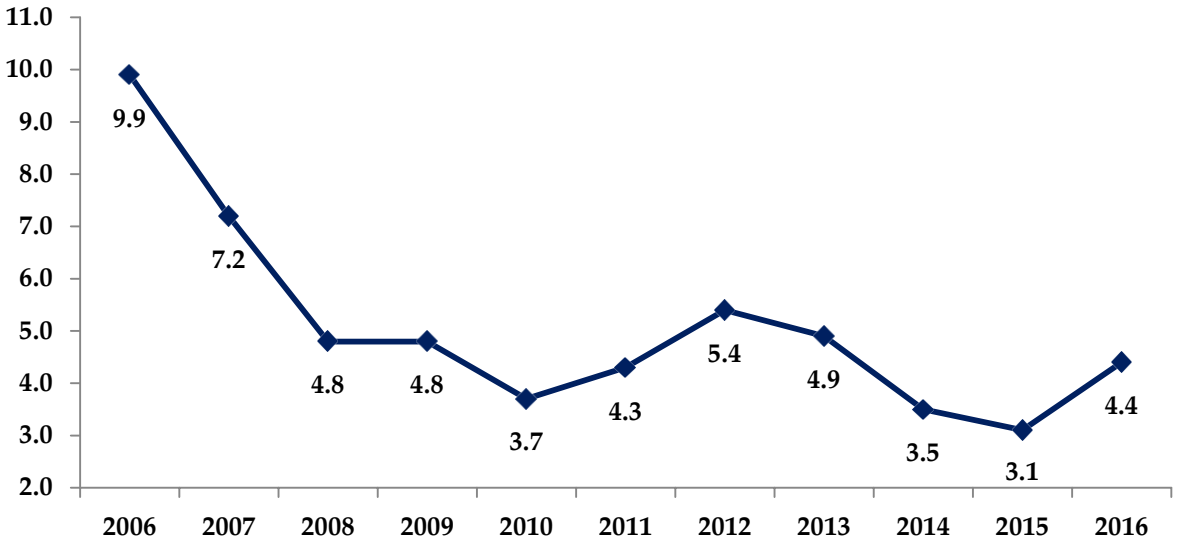
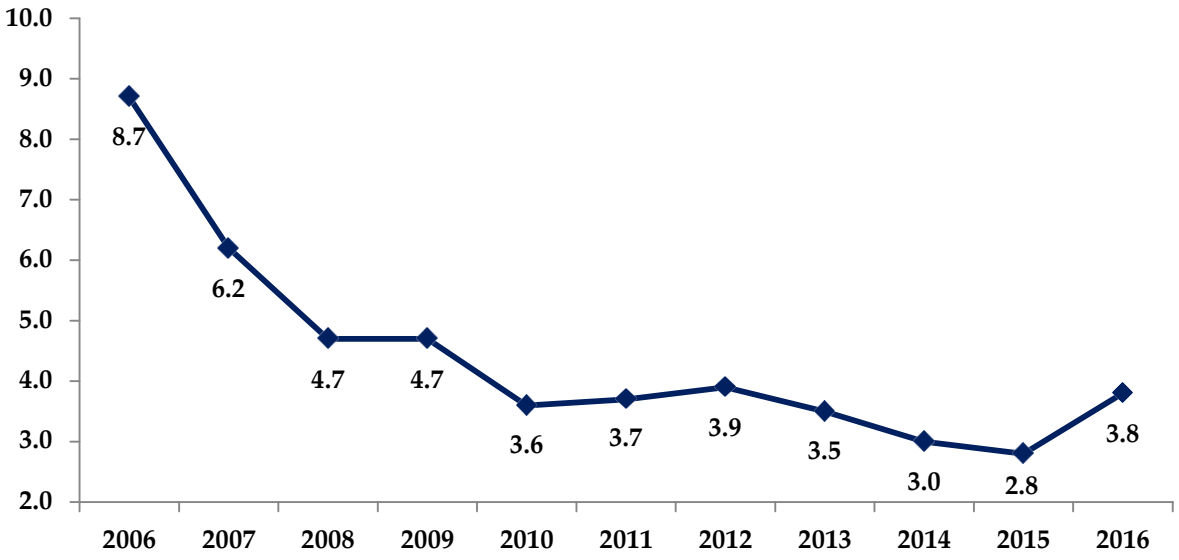


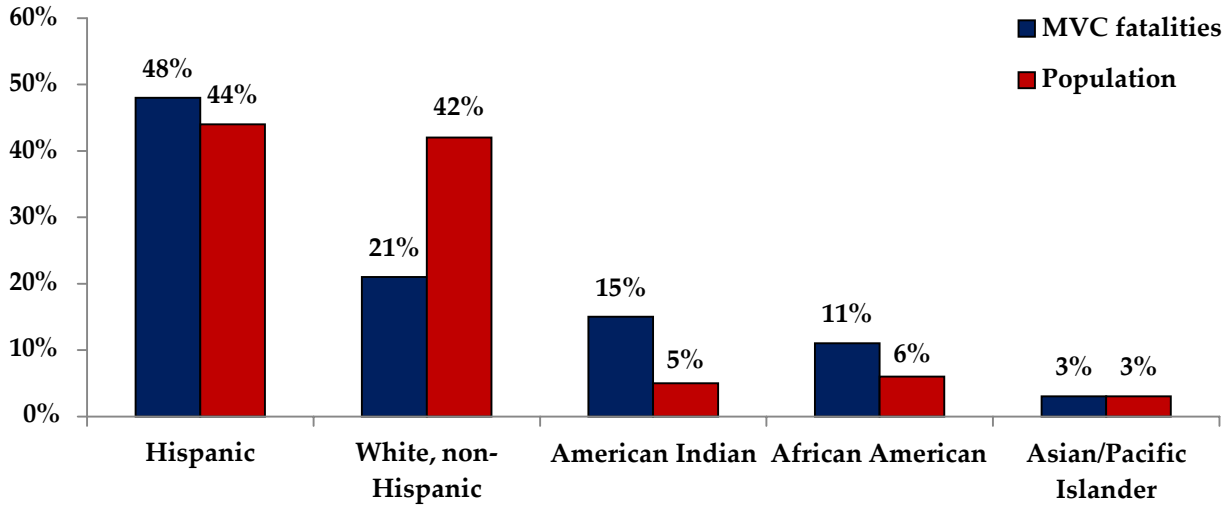
Figure 23. Mortality Rate Due to Motor Vehicle Crashes (MVC) per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



Prevention

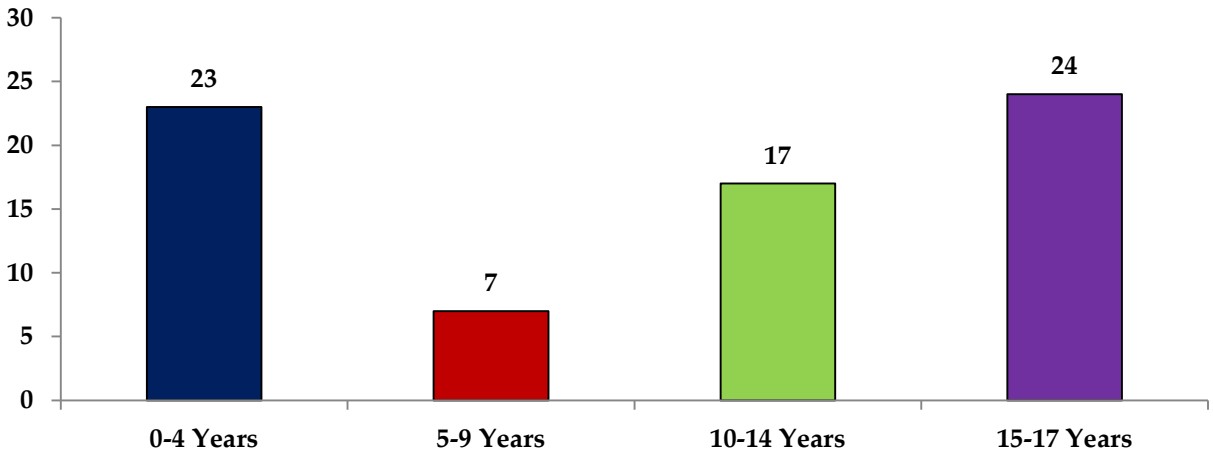
In 2016, local CFR teams determined that all of the motor vehicle crash and other transport fatalities were preventable (n=71) and accounted for 22% of all preventable deaths. Among these fatalities, certain groups still carry a larger part of the mortality burden and may benefit from targeted prevention initiatives. Hispanic, American Indian, and African American children represented a higher percentage of motor vehicle crash and other transport deaths when compared to their percentage of population in Arizona (Figure 24).

Figure 24. Percentage of Motor Vehicle and Other Transport Deaths by Race/Ethnicity Group, Compared to Populations, Arizona, 2016



Teenagers 15 through 17 years of age constituted 34% (n=24) of all motor vehicle crash and other transport fatalities (Figure 25). The second highest age group were those birth through four years of age which accounted for 32% (n=23) of all transport fatalities followed by children 10 through 14 years of age accounting to 24% (n=17) of transports deaths.

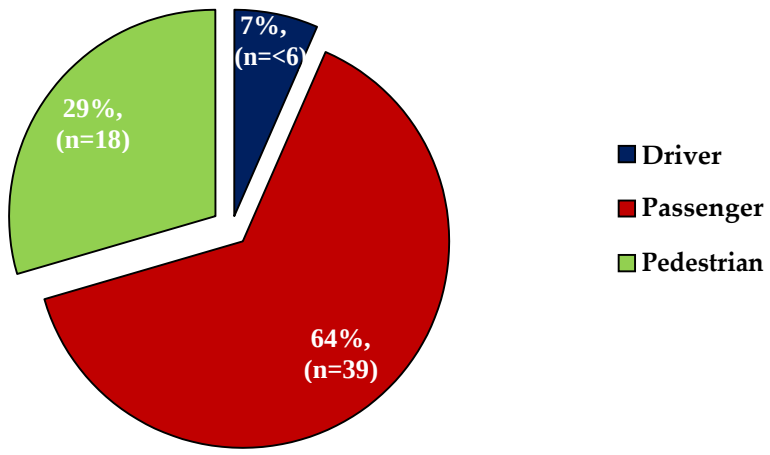
Figure 25. Number of Motor Vehicle and Other Transport Deaths, Ages 0-17 Years, by Age Group, Arizona, 2016 (n=71)



Hispanic children (n=34) accounted for 48% of all motor vehicle and other transport deaths, 21% for White, non-Hispanic children (n=15), 15% for American Indian children (n=11), and African American children (n=8) accounted for 11% of all transport fatalities. Of the children who died from motor vehicle crash and other transport deaths, 61% were vehicle passengers, 27% were pedestrians, and 13% were drivers. Passenger fatalities were more likely to occur among children 15 through 17 years of age (n=13), 10 through 14 years of age (n=12), and then 1 through 4 years of age (n=9). Pedestrian fatalities were more likely to occur among children 1 through 4 years of age (n=10). Driving fatalities were more likely to occur among children 15 through 17 years of age (n=9).

Motor vehicle crashes accounted for 86% of all transport deaths (n=61). Hispanic children (n=30) accounted for 49% of motor vehicle crash fatalities, 16% for White, non-Hispanic children (n=10), 16% for American Indian children (n=10), and African American children (n=8) accounted for 11% of all motor vehicle crash fatalities. Of the children who died in motor vehicle crashes deaths, 64% were vehicle passengers, and 29% were pedestrians. Passenger fatalities were more likely to occur among children 15 through 17 years of age (n=13), 10 through 14 years of age (n=9), and then 1 through 4 years of age (n=8).

Figure 26. Number and Percentage of Motor Vehicle Crash Deaths, Ages 0-17 Years, by Occupant, Arizona, 2016 (n=61)



Off-road vehicles (ORV) accounted for 13% of all transport deaths. Children 10 through14 years of age had more fatalities than all other ages. The operator or driver of the motorized vehicle accounted for 55% of ORV fatalities, while passengers accounted for 44% of ORV deaths. Majority of ORV deaths were among White non-Hispanic children. Majority of ORV fatalities were from an All-Terrain Vehicle (ATV) and occurred when the ATV rolled over and landed on descendent.

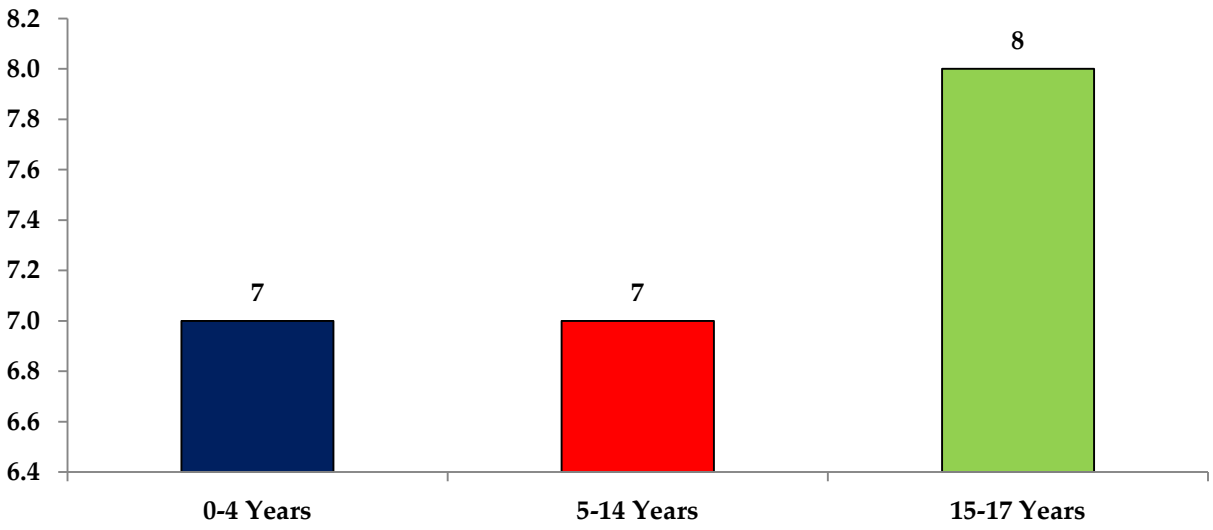
The highest number of transport related deaths was due to lack of vehicle restraint. Additional preventable risk factors associated with transport related deaths in Arizona include speeding, reckless driving, driver inexperience, driver distraction, and substance use (impairment) (Table 10).

Table 10. Preventable Factors for Transportation Related Deaths Among Children, Arizona, 2016		
Factor*	Number	Percent
Excessive speed	23	32%
Lack of vehicle restraint	22	31%
Driver inexperience	18	25%
Reckless driving	17	24%
Substance use (Impairment)	16	23%
Driver distraction/ Driver fatigue	13	18%
*More than one factor may have been identified for each death		

Local CFR teams determined all of the motor vehicle crash and other transportation deaths were preventable, and accounted for 22% of all preventable deaths. Preventable factors include strengthening protective factors such as using proper child restraints every time a vehicle is in operation, not driving while impaired, and following passenger safety guidelines as well as established motor vehicle laws. The continuation of targeted education and awareness efforts to the most at risk populations is essential.

Twenty-two children were known to have been improperly restrained or unrestrained in vehicles (31%) (Figure 27). This indicates that while child safety restraint laws have reduced the number of motor vehicle crash fatalities, further prevention efforts are still needed.

Figure 27. Number of MVC and Other Transport Deaths with Improper or Unknown Restraint Use, Ages 0-17 Years, by Age Group, Arizona, 2016 (n=22)



Motor Vehicle and Other Transportation Prevention Recommendations

- Place children in the appropriate child safety restraints when operating a motor vehicle.
- Model good behavior by always wearing a seatbelt and never operate a vehicle while distracted or under the influence of alcohol or other drugs that impair driving.
- Parents should establish written teenager-parent contracts that place restrictions on the teen driver.
- Enact stricter distracted driving laws to include the prohibition of texting while driving.
- Enact a primary seat belt law to allow law enforcement officers to cite a driver and occupants for not wearing a seat belt in the absence of other traffic violations.
- Strengthen the graduated driver licensing system to build driving skills and experience among new drivers.

- Law enforcement officers should continue rigorous DUI enforcement and educate the community regarding the consequences of driving under the influence of alcohol and/or drugs.
- Promote awareness about child passenger and motorized vehicle safety and encourage participation in events such as car-seat checkups, safety workshops, and sports clinics.

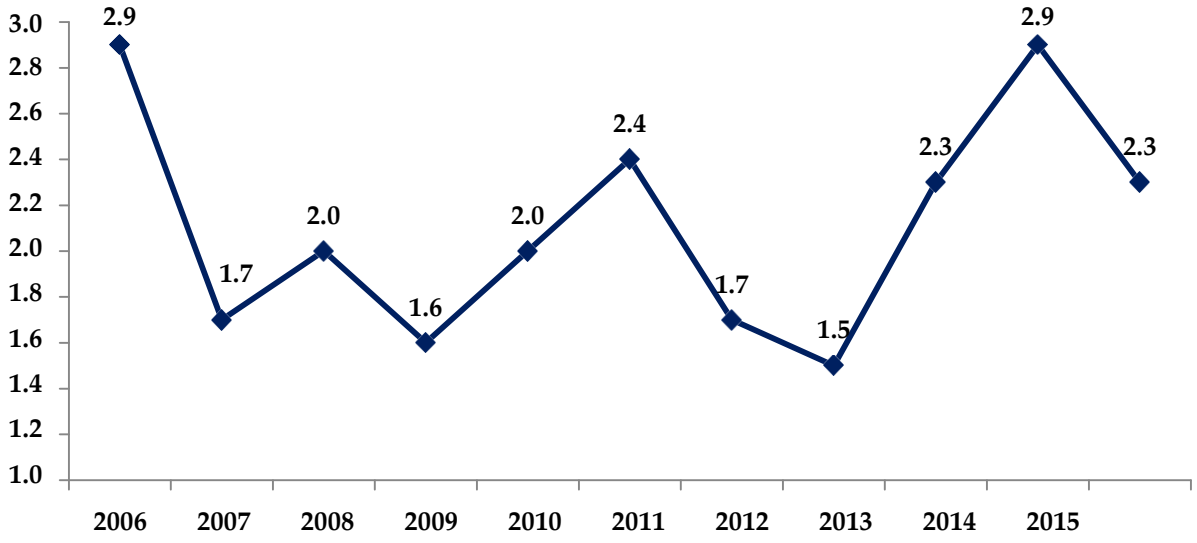
Suicides

Suicides decreased 19% from 2015 (n=47) to 2016 (n=38) and accounted for 5% of all child deaths. Over the last six years, the mortality rate varied from 1.7 to 2.9 deaths per 100,000 children.

There are number of identifiable risk factors associated with suicide deaths.

- Behavioral health issues and disorders, particularly mood disorders, depressant and anxiety disorders
- Substance use and abuse
- Impulsive and/or aggressive tendencies
- History of trauma or abuse
- Major physical illnesses
- Family history of suicide and previous suicide attempts
- Easy access to lethal means
- Lack of social support and a sense of isolation
- Stigma associated with asking for help
- Lack of health care, especially mental health and substance abuse treatment

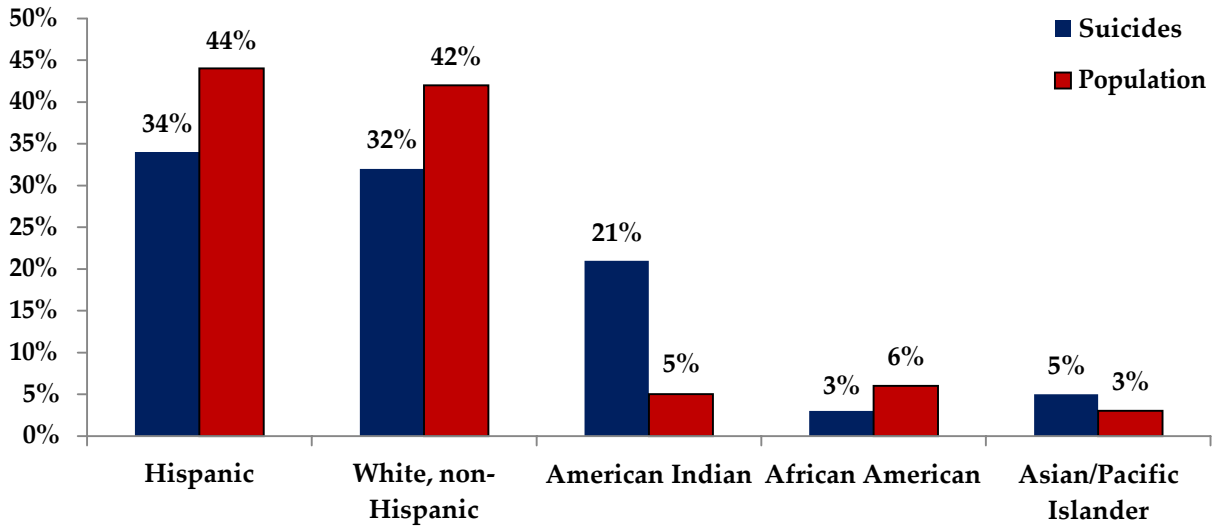
Figure 28. Mortality Rates due to Suicide per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



Majority of suicide deaths occur in males and the trend continued in 2016. Males comprised 66% of the suicide deaths (n=25) compared to 34% of suicide deaths (n=13) among females. The distribution of suicide by race/ethnicity varies year by year. White, non-Hispanic children made up 32% of the suicide deaths (n=12) and Hispanic children accounted for an additional 34% of suicide deaths (n=13) (Figure 29).

America Indian children were overrepresented compared to their population and accounted for approximately 21% of the suicide deaths (n=8).

Figure29. Percentage of Suicide Deaths by Race/Ethnicity Group, Compared to Populations, Arizona, 2016 (n=38)



Youth ages 15 through 17 years remained at highest risk for suicide death accounting for 74% of suicides deaths (n=28), while children 5 through 14 years of age made up 26% of suicide deaths (n=12).

Fifty-five percent of suicide deaths were carried out by strangulation (n=21) and firearm injuries made up another thirty-two percent of deaths (n=12). Other injuries such as poisoning, cut/pierce, and fall are other injuries contributing to suicide deaths.

Prevention

As with other categories of death, understanding the circumstances, risk factors, and events leading up to the suicide aids in developing appropriate interventions for future prevention efforts. Several risk factors were identified by local CFR teams that may have contributed to the child's despondency prior to the suicide. The most common factors noted were that children had a history of family discord (47%), were known to have a history of substance use (39%), and had an argument with parent (39%) (Table 11).

Table 11. Factors That May Have Contributed to the Child's Despondency Prior to Suicide, Arizona, 2016	
Factor*	Percent
History of family discord	47%
History of substance use	39%
Argument with parent	39%
History/recent break-up	21%
History of parent divorce	18%
Failure in school	13%
History of issues related to sexual orientation	13%
History of problems with the law	13%
Argument with boyfriend or girlfriend	11%
History of physical abuse	<6%
History of sexual abuse	<6%
Victim of bullying	<6%
*More than one factor may have been identified for each death	

For many of the child suicides, important information regarding risk factors was unknown or unavailable to review teams, even after law enforcement records were available.

Local review teams determined all suicides were preventable. Of the top preventable risk factors for child suicides, signs of suicide (53%, n=20) and) substance use was the most commonly identified (39%, n=15) (Table 12).

Table 12. Preventable Factors for Child Suicides, Arizona, 2016		
Factor*	Number	Percent
Signs of Suicide	20	53%
Substance Use	15	39%
*More than one factor may have been identified for each death.		

Table 12A. Signs of Suicide, Arizona, 2016 (n=20)		
Factor*	Number	Percent
Talked about Suicide	19	95%
Prior suicide threat made	17	85%
Prior suicide attempt made	9	45%
*More than one factor may have been identified for each death.		

There are ways to help children, youth, and their families strengthen protective factors and prevent suicide. Some of these factors include seeking early treatment of effective clinical care for mental, physical and substance abuse issues; restricting access to lethal means of suicide; building strong family and support connections; gaining and retaining skills in problem solving, conflict resolution and stress management; having family, friends, and acquaintances taking any discussion of suicide seriously and seeking help.

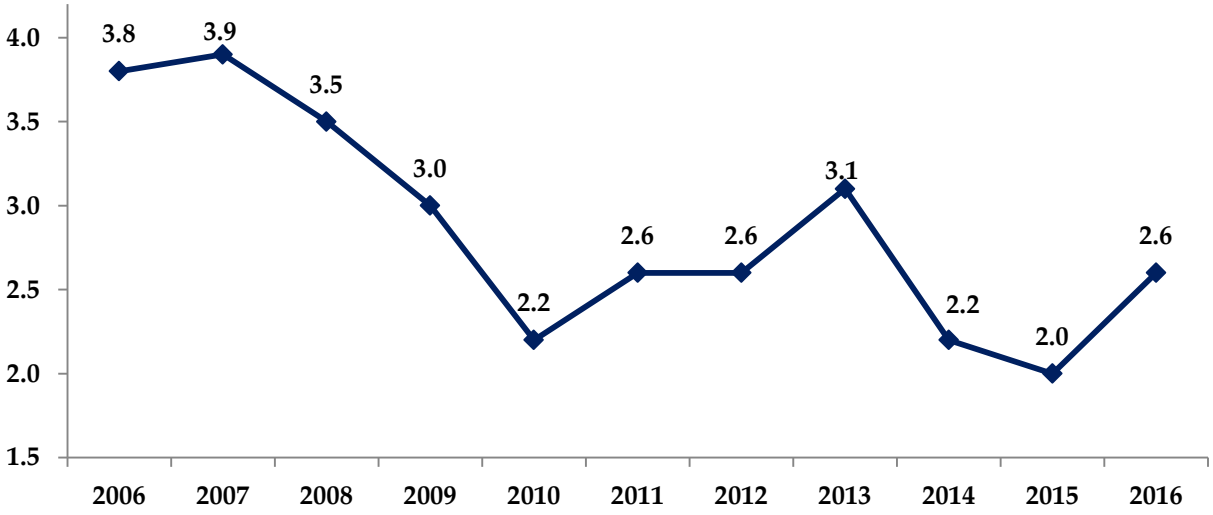
Suicide Prevention Recommendations

- Arizona schools should collaborate with the Arizona Suicide Prevention Coalition to support and implement school and community prevention programs, such as Mental Health First Aid, that train teachers and students how to address suicide, bullying, and related behaviors.
- Schools can increase awareness about suicide prevention by connecting communities and families with resources.
- Monitor children with known behavioral problems (substance abuse and delinquency) or possible mental disorders (depression or impulse control problems) for signs and symptoms of suicide and immediately seek treatment and care.
- Completely remove firearms from homes where children or adolescents are showing signs of mental health issues, depression, substance abuse, or suicide.
- Monitor your child's social media for any talk about suicide and take immediate action.
- Teen Lifeline provides a Peer Counseling Hotline for teens in crisis: 602-248-8336 (TEEN) for Maricopa county or statewide 800-248-8336 (TEEN).
- Schools should work closely with suicide prevention groups to expand and implement bullying awareness and prevention programs such as the "See Something, Say Something".
- Support funding for behavioral health and substance use assessment and treatment services for youth and their families.

Homicides

In 2016, forty-two children were victims of homicide in Arizona accounting for 6% of all child deaths. The mortality rate for homicide increased by 30% from 2015 to 2016 (Figure 30). Over the last six years, the homicide mortality rate has remained relatively static.

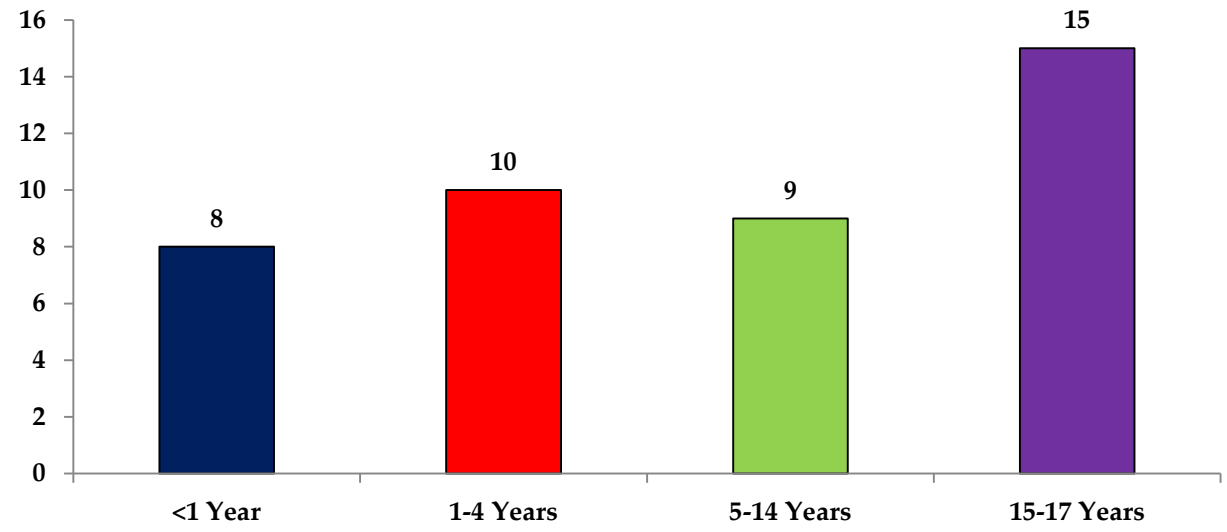
Figure 30. Mortality Rate due to Homicides per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



Unlike the previous two years, males (57%, n=24) were more likely to be victims of homicide than female (43%, n=18) in 2016. Hispanic children experienced the highest number of child homicides accounting for 45% (n=19) of deaths, followed by 24% (n=10) from African Americans, and 21% (n=9) from White, non-Hispanic children.

Children aged 15 through 17 years of age had the highest number of homicide deaths (n=15) followed by children aged 1 through 4 years (n=10) (Figure 31).

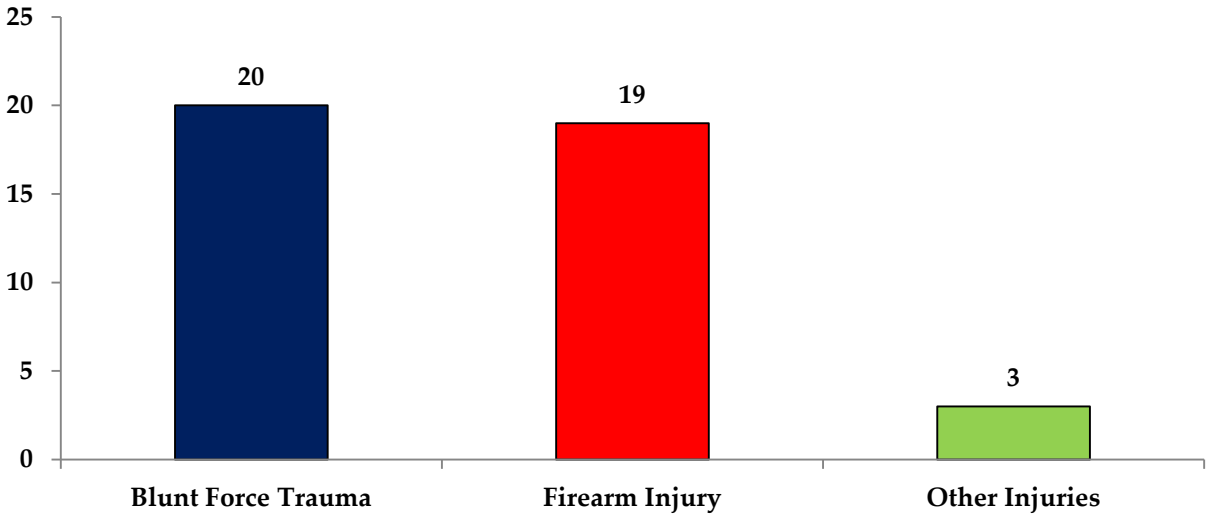
Figure31. Number of Homicides for Children Ages 0-17 Years, by Age Group, Arizona, 2016 (n=42)



Prevention

Local teams review the unique circumstances surrounding each child homicide in order to determine any patterns in the causes of death and identity of the perpetrator. In 2016, blunt force trauma was used to commit 48% (n=20) of homicide deaths in children. Firearms was used to commit another 45% (n=19) of homicide deaths in children (Figure 32).

Figure 32. Number of Homicides for Children Ages 0-17 Years, by Cause of Death, Arizona, 2016 (n=42)



Of the forty-two homicide deaths, 88% were committed by a known aggressor. Thirty-six percent of perpetrators were identified as the child's parents (n=17). There were several cases where more than one perpetrator was involved in the homicide death of the child. Also, there were several cases where the perpetrator killed more than one child (Table 13).

Table 13. Homicides Among Children by Perpetrator, Arizona, 2016 (n=46)		
Perpetrator*	Number	Percent
Other (Acquaintance, or Stranger)	10	22%
Mother	9	20%
Father	8	17%
Relative (Sibling, Grandparent, Cousin, etc.)	7	15%
Parent's Partner	6	13%
Friend (Friend, Boy or Girlfriend)	6	13%
*There may be more than one perpetrator for each death		

All homicide deaths were determined by the team to be preventable and these deaths made up 13% of all preventable deaths among children. The most common preventable factor was drug involvement, followed by alcohol use and access to firearms (Table 14).

Table 14. Preventable Factors for Child Homicides, Arizona, 2016		
Factors*	Number	Percent
Substance Abuse	35	83%
Access to Firearms	19	45%
Lack of Supervision	10	44%
*More than one factor may have been identified for each death		

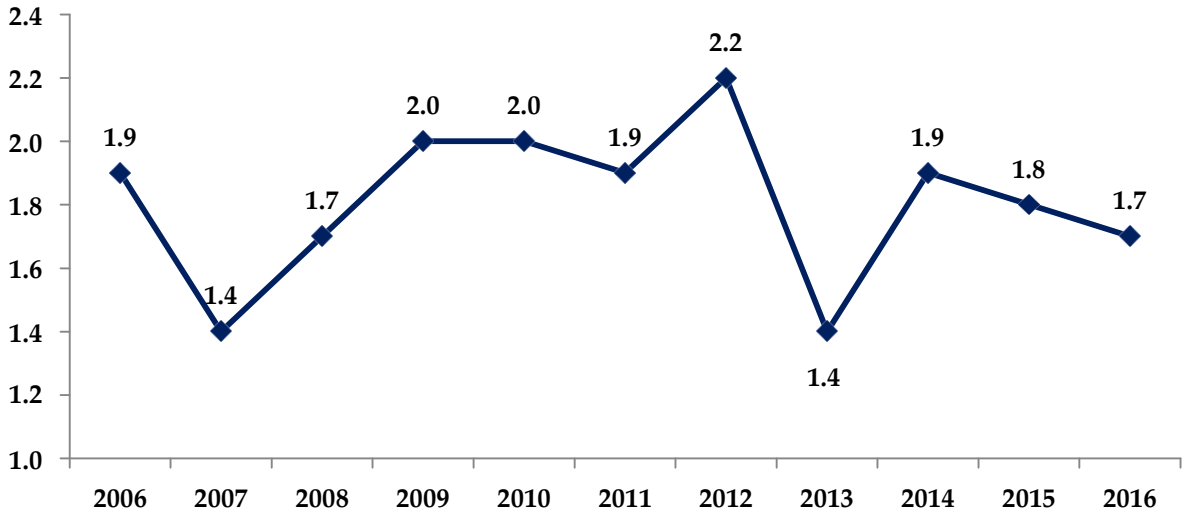
Homicide Prevention Recommendations

- If feeling stressed or overwhelmed, parents and caregivers can seek assistance through the National Parent Helpline at 1-855-427-2736, the Birth to Five Helpline at 1-877-705-KIDS (Available Monday-Friday 8:00 am to 8:00 pm), the Fussy Baby Helpline at 1-877-705-KIDS ext. 5437 (Available Monday-Friday 8:00 am to 8:00 pm or Childhelp National Child Abuse Hotline at 1-800-4-A-CHILD (24 hours, 7 days per week). These resources offer crisis intervention, information, literature, and referrals to thousands of emergency, social service, and support resources. All calls are confidential.
- Support sufficient funding for behavioral health treatment services for children, youth and their families.
- Support sufficient funding for substance use assessment and treatment services for children, youth and their families.

Drowning Deaths

Drowning accounted for twenty-seven child deaths and 3% of all child deaths in Arizona in 2016. Drowning deaths decreased by 10 % from 2015 (n=30) to 2016. Over the last six years, the drowning rate was at its highest in 2012 and at its lowest in 2013. The drowning mortality rate decreased 23% from 2012 to 2016. Males composed 74% of drowning deaths.

Figure 33. Mortality Rate due to Drowning per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



Prevention

Drowning is a highly preventable cause of death with identifiable risk factors that can be recognized and addressed.

- *Sex*: males are twice as likely to drown as girls
- *Age*: children under the age of five are at highest risk for drowning
- Substance use or abuse: either by the caregiver or child
- Access to water: residential pools not adequately fenced

In 2016, review teams determined all of the drowning deaths (n=27) were preventable and these deaths made up 8% of all preventable deaths. There are three main preventable factors associated with child drowning in Arizona (Table 15). Lack of supervision was the most commonly identified factor in 89% of drowning fatalities (n=24), followed by access to water accounting for 63% of the drowning fatalities (n=17).

Table 15. Preventable Factors for Child Drowning, Arizona, 2016		
Factor*	Number	Percent
Lack of supervision	24	89%
Access to water	17	63%
*More than one factor may have been identified for each death		

The group at highest risk of drowning are children aged one through four years old, accounting for 78% of the drowning deaths in 2016 (n=21). White, non-Hispanic children made up 52% of the deaths (n=14); followed by Hispanic children who composed an additional 33% of the drowning deaths (n=9).

Seventy percent (n=19) of children drowned in a pool, hot tub or spa. The second most prevalent place for drowning deaths was in open bodies of water (Table 16).

Table 16. Location of Child Drowning Fatalities, Arizona, 2016 (n=27)		
Location	Number	Percent
Pool/hot tub/spa	19	70%
Other (Bathtub, Open Water, etc.)	8	30%

Drowning fatalities in Arizona have been reduced overall in the past several years, but vigilance in promoting protective factors must continue. Prevention strategies include removing the hazard by draining unnecessary accumulations of water i.e. pools and bathtubs; creating barriers by building and maintaining fencing around pools and other bodies of water when possible; and protecting children at risk: promote learning to swim, train lifeguards and practice proper supervision of children near water.

Lack of supervision and access to water are the leading risk factors in drowning deaths, so prevention efforts need to continue to promote proper supervision of young children around water and "touch supervision" of young non-swimmers. Touch supervision is defined as the adult who is responsible for supervising the non-swimmer remain within an arm's length of the child they are supervising.

Drowning Prevention Recommendations

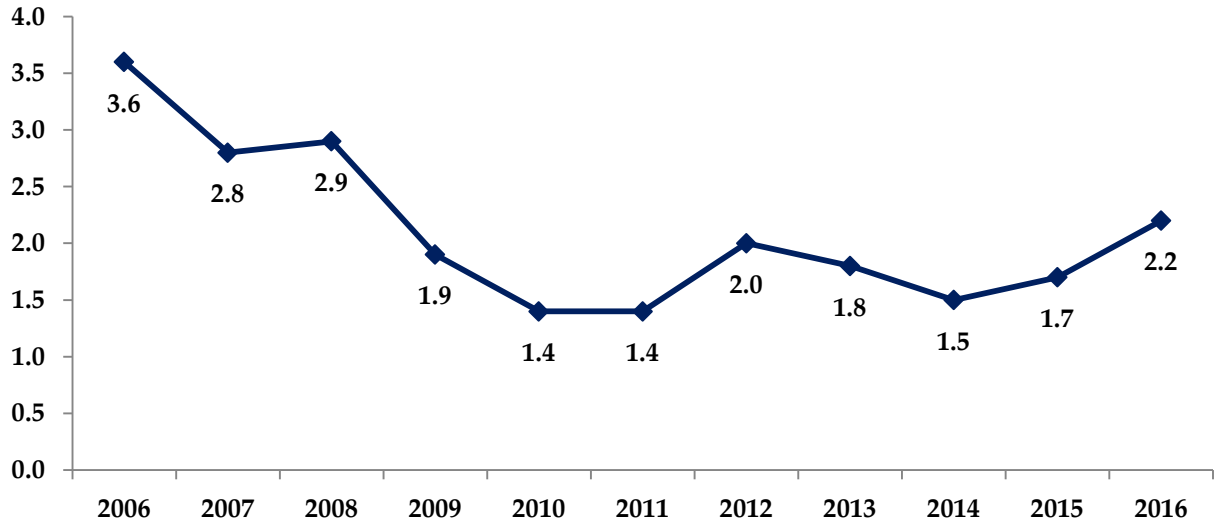
- Teach children to swim and about water safety at an appropriate age.
- Never leave a young child alone and without "touch" supervision around all bodies of water.
- Know child and infant CPR.
- Secure public and private pools by installing fencing and self-latching gates that are kept in good repair.
- Support public drowning prevention education including public service announcements
- Support legislation regarding proper pool fencing.
- To prevent drowning, parents and other caregivers should designate at least one responsible adult to monitor the pool area when children are present. They should also not rely solely on flotation devices to protect the child from drowning. Continue to use "touch supervision," where the adult can reach out and touch the child at all times.
- Have children wear life jackets in and around natural bodies of water, such as lakes or the ocean, even if they know how to swim. Life jackets can be used in and around pools for young swimmers too.

Firearm Related Deaths

Firearm related fatalities increased by 29% from 2015 (n=28) to 2016 (n=36). In 2016, firearm related deaths accounted for 5% of all deaths. Over the last six years, the firearm mortality rate has steadily increased (Figure 34).

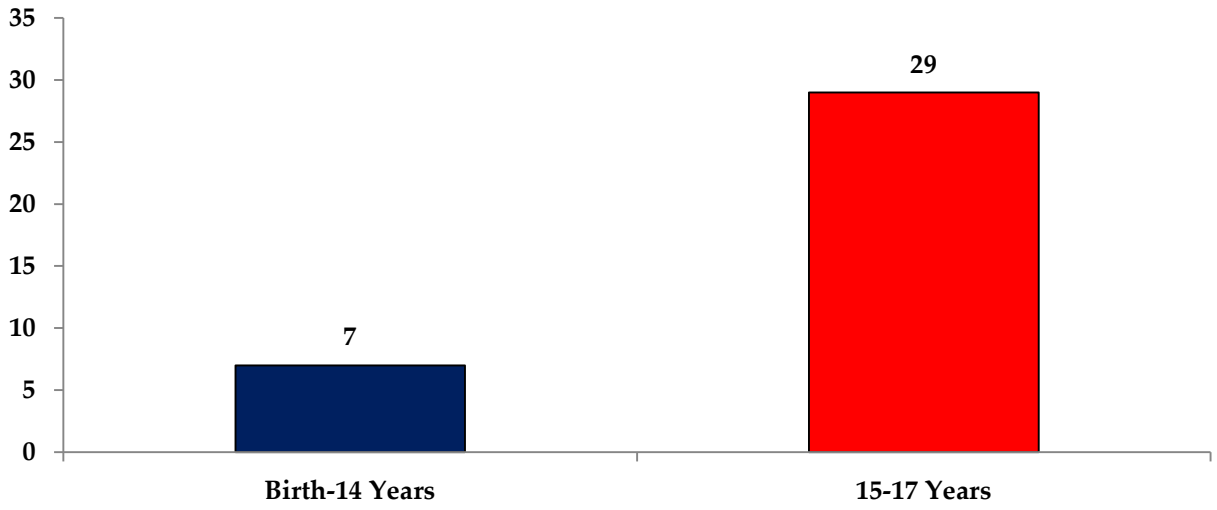
Males were the victims (n=24) of 67% of firearm related fatalities compared to the 33% of female victims (n=12). Hispanic children were the most affected by firearm fatalities representing 53% of the deaths, and White, non-Hispanic children made up another 22% of deaths.

Figure 34. Mortality Rates due to Firearms per 100,000 Children, Ages 0-17 Years, Arizona, 2006-2016



In 2016, children 15 through 17 years old accounted for 81% of firearm related deaths (n=29) (Figure 35).

Figure 35. Number of Firearm Related Deaths for Children Ages 0-17 Years, by Age Group, Arizona, 2016 (n=36)



Suicides and homicides accounted for 86% of firearm-related deaths in 2016. Thirty-three percent of firearm related deaths were a result of suicide (n=12) and fifty-three percent of firearm related deaths were homicides (n=19). Handguns accounted for 86% of the firearm related fatalities in 2016 (n=31) (Table 17).

Table 17. Types of Firearms Involved in Child Deaths, Arizona, 2016 (n=36)		
Type	Number	Percent
Handgun	31	86%
Other	5	14%

Thirty-three percent of firearm related deaths involved guns owned by parents. Thirty-six percent of other firearm related deaths were from guns stolen or from an unknown owner (Table 18).

Table 18. Owners of Firearms Involved in Child Deaths, Arizona, 2016 (n=36)		
Owner	Number	Percent
Parent	12	33%
Friend/Acquaintance	6	17%
Unknown	13	36%
Other	5	14%

In a majority of firearm related deaths, the storage location of the firearm was unknown to the review teams (44%, n=16). Eleven of the firearms were not stored in secured locations (31%) (Table 19).

Table 19. Locations of Firearms Involved in Child Deaths, Arizona, 2016 (n=36)		
Location	Number	Percent
Not Stored/Unlocked cabinet	11	31%
Unknown	16	44%
Other	9	25%

Prevention

All of the firearms related deaths were determined to be preventable by review teams. Firearm related deaths made up 11% of all preventable deaths. Substance use was a risk factor identified in 58% of firearm related deaths (n=21) (Table 20).

Table 20. Preventable Factors for Firearm Related Deaths Among Children, Arizona, 2016		
Factor*	Number	Percent
Substance Use	21	58%
Not Stored/Unlocked	11	31%
*More than one factor may have been identified for each death		

Firearm-Related Death Prevention Recommendations

- Advocate for sufficient pediatric mental health resources in both inpatient and outpatient settings.
- Develop adequate mental health screenings through prompt psychiatric consultation for emergency department psychiatric patients as well as school and community mental health services.
- Owners should store all firearms in a safe condition; unloaded and in a secure locked location.
- Collaborate with the firearm injury prevention programs.
- Enroll in firearm safety training courses.
- Hold community events promoting gun safety education.

Substance Use Related Deaths

The CFR program defines substance use related deaths as deaths where the child or any individual involved in the death of the child used or abused substances, such as alcohol, illegal drugs, and/or prescription drugs and this substance use was a direct or contributing factor in the child's death.

To identify substance use related deaths, the CFR teams reviewed the records on each death for information on substance use by the child, the child's parents or other caretakers, or others who were involved in the incidents leading to the death.

In 2016, substance use was a factor in 14% of all child fatalities (n=107). Forty-one percent of substance use related deaths (n=44) resulted in deaths due to unintentional injuries. Males were 1.7 times more likely to experience a substance use related death(Figure 36). Children 15 through 17 years had the highest risk of experiencing a substance use related death (39%, n=42).

Figure 36. Number and Percentage of Deaths for Children Ages 0-17 Years, where Substance Use was found as a Direct or Contributing Factor leading to Death, by Manner, Arizona, 2016 (n=107)

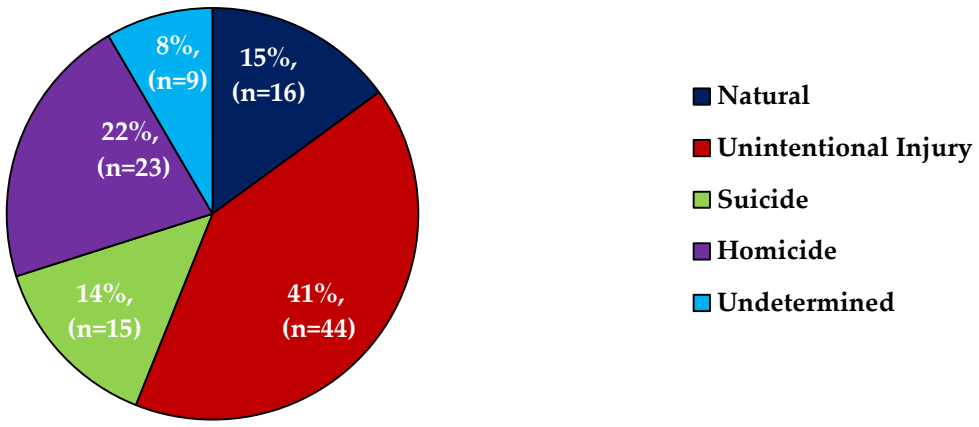
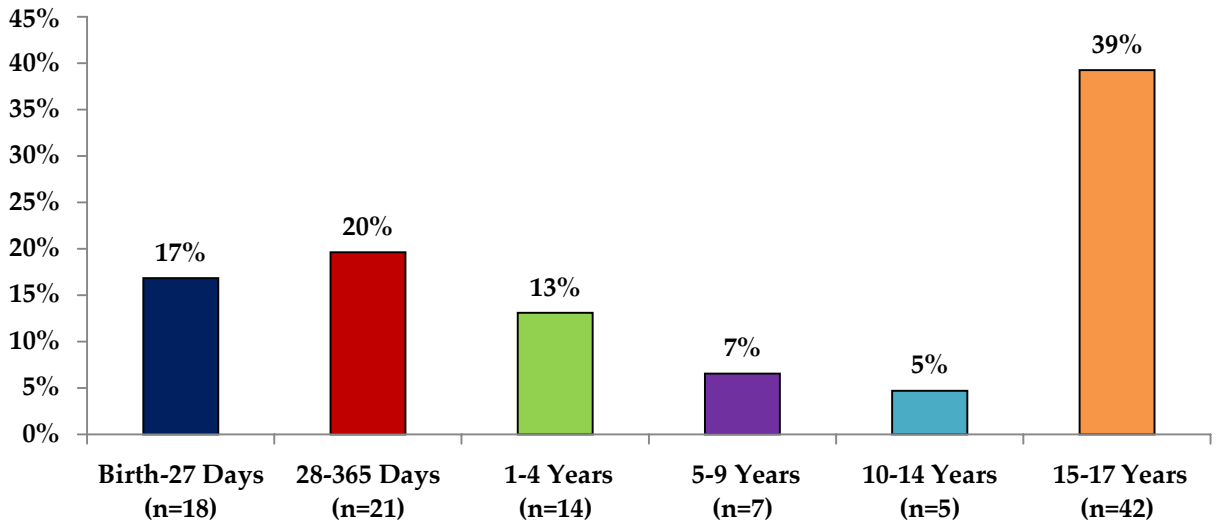


Figure 37. Percentage of Deaths, where Substance Use was a Direct or Contributing Factor to Death of Children Ages 0-17 Years, by Age Group, Arizona, 2016



Of the substance use related deaths where substance use was found to be a direct or contributing factor in the child's death, 20% of these deaths (n=21) were due to firearm injury, 19% of these deaths (n=20) were due to motor vehicle crashes and other transport, 12% of these deaths (n=13) were due to poisoning, and 11% of these deaths (n=12) were due to suffocation (Table 21).

Table 21. Number and Percentage of Deaths where Substance Use was a Direct or Contributing Factor to the Death of Children, Arizona, 2016

Cause	Number	Percent
Firearm Injury	21	20%
MVC/Transport	20	19%
Poisoning	13	12%
Suffocation	12	11%
Prematurity	11	10%
Other Injury	9	8%
Blunt Force Trauma	8	7%
Undetermined	8	7%
Medical*	<6	<5%
*Excluding SIDS and prematurity		

Of the substance use related deaths, marijuana was identified in 30% of deaths (n=46), alcohol was identified in 25% of deaths (n=38), opiates was identified in 10% (n=16), and

methamphetamine was identified in 12% of deaths (n=19). In some cases more than one drug was found to be a direct or contributing factor in the death of a child.

Table 22. Substances found as a Direct or Contributing Factor to Child Deaths, Arizona, 2016		
Substance Used*	Number	Percent
Marijuana	46	30%
Alcohol	38	25%
Other (Includes Unknown, Non-Opioid Prescribed, or other Illegal drugs not listed in this table)	23	15%
Methamphetamine	19	12%
Opiate (Includes Opioid Prescribed or Heroin)	16	10%
Cocaine	11	7%
*More than one substance may have been identified for each death		

A majority of substance use related deaths involved the child or the child's parent as the main user contributing to the death of the child. In 46% of substance use related deaths (n=56), the parent was misusing or abusing alcohol or drugs. In 33% of substance use related deaths (n=40) the child who died was misusing or abusing drugs. Among substance use related deaths, where the parent's substance use was found as a direct or contributing factor to child death, alcohol (39%, n=22) and marijuana (36%, n=20) were the most common substance identified. Parent use of alcohol was a contributing factor to motor vehicle crash deaths (n=9). Parent use of marijuana was a contributing factor to prematurity (n=6) and suffocation (n=5) deaths. Where the child's substance use was found to be a direct or contributing factor to their death, other drugs (unknown, non-opioid prescribed, or other Illegal drugs, 35%, n=14) and marijuana (30%, n=12) were the most common substance identified (Figure 38). Child use of other drugs was a contributing factor to poisoning (n=6) and firearm injury related deaths. Child use of marijuana was also a contributing factor to firearm injury related deaths (n=7).

Figure 38. Number of Substances found as a Direct or Contributing Factor to Child Deaths, by Parent or Child User, Arizona, 2016

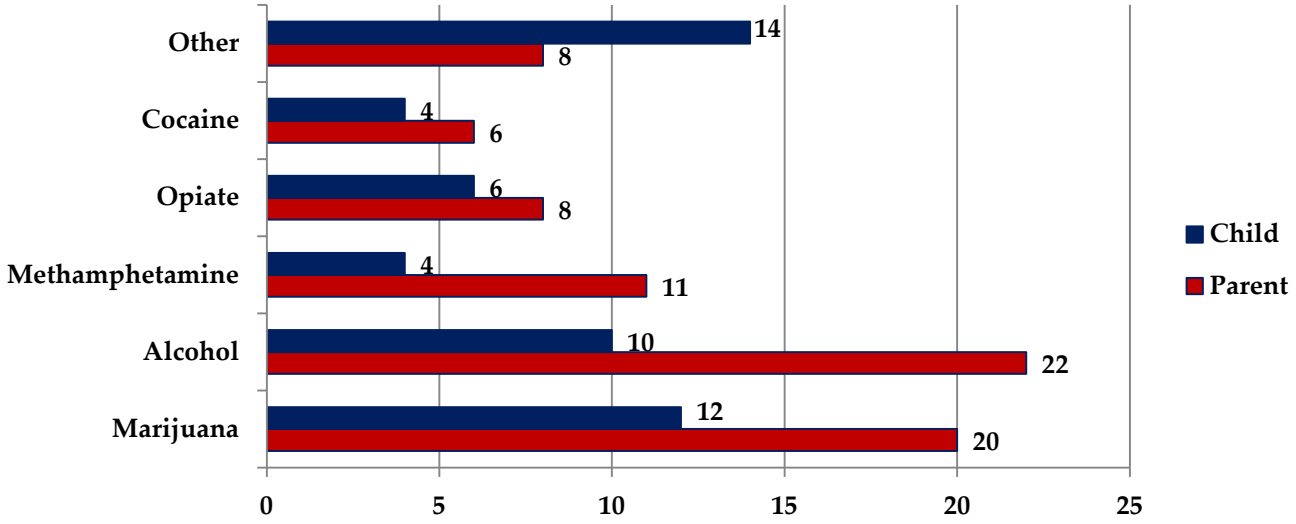


Table 23. Substances Use found as a Direct or Contributing Factor to Child Deaths, by User, Arizona, 2016		
Person*	Number	Percent
Parent	56	46%
Child (Self)	40	33%
Acquaintance (Not a friend)	6	5%
Friend (Family Friend, Boy or Girlfriend)	6	5%
Stranger	5	4%
Other	9	7%
*Some deaths involved more than one person misusing or abusing substances		

Substance Use Prevention Recommendations

- Increase funding to support prevention and early intervention activities.
- Encourage health care providers to screen all children and adults for alcohol misuse and substance use.
- Provide affordable and accessible counseling and other interventions to substance users.
- Store all prescription medications in a locked cabinet and discard unused medications safely and properly when they are no longer being taken.
- Provide funding for community-based education on how to identify early symptoms of substance abuse in all communities in Arizona.

Technical Appendix

Classifications

Injury deaths: Death certificates of all persons who died in Arizona are collected and maintained by the ADHS Bureau of Population Health and Vital Statistics. For the years 2011 through 2016, all deaths of Arizona residents and out-of-state residents aged birth through 17 were identified by underlying cause of death with International Classification of Disease codes, Version 10 (www.who.int/classifications/icd/en/). CFR local teams take the demographic and incident information from death certificates of children and youth aged birth through 17 for the purpose of completing comprehensive reviews and subsequent aggregate data analysis. To categorize injury, intent, and mechanism, teams followed a guideline similar to the National Center for Health Statistics ICD-10 external cause of injury matrix available at: (www.cdc.gov/nchs/injury/injury_matrices.htm). Deaths caused by injuries, where the intent is known, are identified using the definitions below and the related ICD-10 codes:

Unintentional injury: An injury or poisoning fatality that took place without any intent to cause harm or death to the victim, also referred to as an accident. These are identified using ICD-10 codes V01-X59.

Homicide: An intentional injury resulting in death from the injuries inflicted by an act of violence carried out by another individual whose action was intended to cause harm, fear, and/or death. Homicide deaths are identified using ICD-10 codes X85-Y09.

Suicide: An injury death caused by an individual's purposeful intent to die as a result of their actions. Suicides are identified using ICD-10 codes X60-X84.

Undetermined injury death: These can be injury death in which investigators and medical examiners have insufficient information available to fully determine a cause and/or manner of death. Undetermined injury deaths are identified using ICD-10 codes Y10–Y34.

***Maltreatment*:** Maltreatment is a form of child abuse and neglect, an act or failure to act on the part of the parent or caregiver of a child resulting in the serious physical or emotional harm of the child. Some of the most common injuries CFR teams encounter while reviewing maltreatment cases involve physical abuse which includes internal abdominal and blunt force head injuries leading to a fatality. When reviewing neglect cases, CFR teams determine if parents or caregivers failed to provide the child's daily necessities including clothing, food, safe shelter, medical care and appropriate supervision. Deaths attributed to neglect are typically failure to thrive, accidents resulting from unsafe environments, and prenatal substance exposure. The circumstances surrounding maltreatment deaths can vary greatly. Some

maltreatment fatalities are the result of long term abuse and neglect both unintentional and intentional, however some cases result of a single incident.

To gain greater understanding of the contribution of abuse and neglect to child mortality, the Arizona CFR teams answer several questions regarding maltreatment during a review. Classification of a death due to maltreatment must meet the following four conditions:

1. Was there "An act or failure to act by a parent, caregiver, or other person as defined under State law which results in physical abuse, neglect, medical neglect, sexual abuse, emotional abuse, or an act or failure to act which presents an imminent risk of serious harm to a child" as it applied to the circumstances surrounding the death? (From the U.S. Department of Health and Human Services definition of maltreatment).
2. The relationship of the individual accused of committing the maltreatment to the child must be the child's parent, guardian, or caretaker.
3. A team member, who is a mandated reporter, would be obligated to report a similar incident to the appropriate child protective services agency.
4. Was there an act or failure to act during critical moments that caused or contributed to the child's death?

The program also reports deaths classified as maltreatment in other categories by manner and cause of death. For example, one classifies a death from abusive head trauma caused by the use of a blunt force object as a homicide and a maltreatment death. Teams may also classify an accidental or natural death as a maltreatment death if the team concludes a caretaker's negligence or actions contributed to or caused the fatality. For example, the death of a child in a motor vehicle crash due to the actions of a parent who drove while intoxicated would be considered a maltreatment fatality.

Examples of neglect contributing to a child's death include, but are not limited to the following:

- Any death in which intoxication by drugs (prescription, over-the-counter, legal or illegal) or alcohol of the parent, guardian, or caregiver contributed to the death.
- Sleep related deaths when a parent/guardian/caregiver bed-sharing with or places an infant into an unsafe sleep environment while under the influence of drugs (prescription, over-the-counter, legal or illegal) or alcohol, or knowingly allows a child to be placed into an unsafe sleep environment under the care of someone under the influence of drugs (prescription, over-the-counter, legal or illegal) or alcohol.
- Natural deaths when medical neglect contributed to the death including failure to comply with a prescribed treatment plan, failure to obtain treatment, and/or failure to provide necessary medications e.g. an asthma related death where a caregiver did not provide the child with an inhaler.

- Prenatal exposure to illicit drug use or alcohol that causes or contributes to the death of the child e.g. a child born prematurely due to prenatal drug exposure to methamphetamines.
- Motor Vehicle Crash:
  - Parent/caregiver/supervisor drives under the influence of alcohol or drugs (prescription, over-the-counter, legal or illegal) with child passenger or knowingly allows child to be a passenger with driver under the influence.
  - If a child under the age of five years was a passenger and was not properly restrained (situations where a child was placed in the right type of restraint but the seat may not have been properly installed are not included as maltreatment).
  - Parent/caregiver/supervisor drives recklessly with child passenger and it was related to the child's death.
- Drowning:
  - Parent/caregiver/supervisor leaves a child near or in a body of water such as a pool, lake, or river without sober and inadequate adult supervision. This is if the child's age, mental capacity, or physical capacity puts the child at risk of drowning e.g. child is under the age of 5, and/or is unable to swim.
  - Parent/caregiver/supervisor leaves infant or toddler in a tub, unsupervised.
- Gunshot wound when a parent/caregiver/supervisor leaves a loaded weapon unsecure where a child would have access to the weapon.
- Exposure when a parent/caregiver/supervisor leaves young a child/infant alone in a car or outdoors.
- Poisoning when a parent/caregiver/supervisor allows medication or dangerous household products to be accessible to a child or teen with known behavioral health issues e.g. If there is a teen in the household with history of substance abuse or suicidal ideation and prescription medication, such as opiates, are not in a secured location.
- Suicide when a parent/caregiver/supervisor failed to secure hazards e.g. unsecured weapon, prescription drugs or did not seek care for the child when aware of any suicidal ideation.

Reporting: The number of child maltreatment deaths presented in this report is not comparable to child maltreatment deaths reported by the Arizona Department of Child Safety (DCS) (Formerly Arizona Department of Economic Security Child Protective Services) for the National Child Abuse and Neglect Data System (NCANDS). NCANDS includes maltreatment deaths identified through child protective services investigations, and because some maltreatment deaths identified by Local CFR teams may not have been reported to child protective services agencies or were within the jurisdiction of Tribal Nations or other states, these deaths would not be included in DCS' annual report to NCANDS. However, when a Local CFR team identifies a death due to maltreatment not previously reported to a child protective services agency, the Local CFR Program notifies child protective services of the team's assessment so they can initiate an investigation.

Per A.R.S. § 8-807, DCS is required to post information on child fatalities due to abuse or neglect by the child's parent, custodian or caregiver. This information is posted after a final determination of the fatality due to abuse or neglect has been made by DCS. The determination is made by either a substantiated finding or specific criminal charges filed against a parent, guardian, or caregiver for causing the fatality or near fatality.

Sudden unexpected infant deaths and sleep related suffocation deaths: In Arizona, all sudden unexpected infant deaths (SUID) are determined using a protocol based on the CDC's SUID guidelines. Based upon these guidelines, review teams will follow the protocol to determine if unsafe factors were in place at the time of the child's death. If any such factors are identified, then the death will be classified as one of the following:

(1) With sufficient evidence that supports the infant's airway was obstructed, it will be deemed as asphyxia or suffocation with an accidental manner;

(2) If there is not enough evidence to determine intent, but the cause of death of suffocation is clear then it will be labeled with an undetermined manner of death.

(3) If all evidence is reviewed and cause of death is suspected, but there is not enough information to fully determine the cause or manner then the death will be labeled as undetermined for both cause and manner.

Sleep related injury deaths in this report are identified by reviewing all potential cases of children less than one year of age, with causes and manners of death using the ICD-10 codes of W75, W84 (suffocation injuries) and Y33, Y34 (injuries of undetermined cause and intent). In addition, some natural cause of death if the death was sudden and unexpected and the infant was in a sleep environment. A death is considered to be sleep related if the child was found in a sleep environment or the last time they were seen alive was while they were asleep.

Limitations: Data is based upon vital records information and information from local jurisdictions. Arizona has a medical examiner system with each county having its own jurisdiction. Law enforcement also varies around the state. Arizona is home to 22 different Native American tribes each of whom has their own sovereign laws and protocols. Jurisdiction and records sharing for each tribal government varies. These intricate relationships and individual jurisdictions mean that sources and information may vary.

Factors impacting protocols to certify SUID and sleep related deaths include death scene investigation by trained investigators and law enforcement, completion of the death scene investigation form, and the final determination of death by a certified forensic pathologist. The Arizona CFR program works to mitigate these limitations by providing statewide training to law enforcement on the statutorily required Arizona Infant Death Checklist, and completing

both local and state level reviews of all identified SUID cases. In 2016, of the 80 deaths where a death scene investigation was completed, authorities filled out an infant death checklist in 51 of the cases. The cases in this report use the final cause and manner of death that are determined by the state SUID Review Team. This expert panel reviews all available information to determine the classification. However, the use of this methodology accounts for the differences between the numbers in the report and the numbers reported by vital records and medical examiners.

Limitations of the overall data: It is significant to note that the report has certain limitations. While every child death is important, the small numbers in some areas of preventable deaths reduce the ability to examine some trends in detail. The numbers are used to inform public health efforts in a broader sense, but the sample size reduces the ability to make true statements about statistical significance in any differences or causal relationships. It is also of note that much of the collected data is done through qualitative methods such as the collection of witness reports on child injury deaths. This means that there is always the potential for bias when the information is taken. Other variables that may not be captured on the death certificate or other typical records may include family dynamics, mental health issues, or other hazards.

CFR team meetings: Local CFR team review meetings are closed to the public. All team members must sign a confidentiality statement before participating in the review process. The confidentiality statement specifically defines the conditions of participation and assures that members will not divulge information discussed in team meetings. To further maintain confidentiality, identifying information in data and research reports are omitted.

All cases reviewed by the CFR team are kept completely confidential. Information shared in the meetings is protected under ARS 36-3502 and shall not be shared with anyone outside the meeting. Every effort is made in this report to keep information private, and is intended only to provide summary statistics of all child deaths in Arizona.

The State CFR team reviews the data from the local review teams, including the local review team recommendations, to develop recommendations for the annual report.

Review Process

Local teams conduct case reviews throughout the year. Once the local team coordinator or chairperson receives the death certificate they send out requests for relevant documents, which may include the child's autopsy report, hospital records, DCS records, law enforcement reports, and any other information that may provide insight into the circumstances surrounding the child's death. Additionally, the birth certificate is reviewed if the child was younger than one year of age at the time of their death. Legislation requires that hospitals and state agencies release this information to the Arizona CFR Program's local teams. **Note: Statute requires team members to maintain confidentiality and they are prohibited from contacting the child's family for any reason.**

During the review, team members from representing agencies provide information on each case as applicable. If an agency representative is unable to attend, the pertinent information is collected by the local team coordinator and presented at the review meeting.

Information collected during the review is then entered into the National Child Death Review Database (CDR). This database is a comprehensive tool that provides the ability to enter the many variables resulting from each case review. Some of the detailed case information captured includes the demographics of the child, caregiver information, information concerning the supervisor of the child when the fatality occurred, incident information, investigation of the incident, cause and manner of the death, and any other circumstances surrounding the fatality.

The CDR database is regularly reviewed and updated by the National Center and the State CFR Program Office to ensure it is as effective as possible in capturing the most relevant information for preventing future fatalities. This data is put through a system of quality assurance checks by the State CFR Program Office and the resulting dataset is used to produce the statistics found in this report.

The State Team meets annually to review the analysis of these findings. State Team membership is statutorily driven and requires representatives from a variety of community and governmental agencies including:

- Attorney's General Office
- Bureau of Women's and Children's Health in the Arizona Department of Health Services
- Division of Behavioral Health in the Arizona Department of Health Services
- Arizona Health Care Cost Containment System
- Division of Developmental Disabilities in the Arizona Department of Economic Security
- Department of Child Safety
- Governor's Office of Youth, Faith, and Family

- Administrative Office of the Courts
- Parent assistance office of the Supreme Court
- Arizona Chapter of the American Academy of Pediatrics
- Medical Examiner who is a forensic pathologist
- Maternal Child Health Specialist who works with members of Tribal Nations
- Private nonprofit organization of Tribal Governments
- The Navajo Nation
- United States Military Family Advocacy Program
- Prosecuting Attorney's Advisory Council
- Law Enforcement Officer's Advisory Council with experience in child homicide
- Association of County Health Officers
- Child Advocates not employed by the state or a political subdivision of the state
- A member of the public

The statute authorizes the State Team to study the adequacy of existing statutes, ordinances, rules, training and services in order to determine the need for changes. The statute also charges the State Team to educate the public regarding the incidence and causes of child fatalities as well as the public's role in preventing these deaths. Adoption of the recommendations has often occurred as a result of the experience and expertise of the team. Reviewing 100 percent of the deaths allows for multi-year outcome comparisons and trend identification.

In Arizona, the cause of death refers to the injury or medical condition that resulted in death (e.g. firearm-related injury, pneumonia, cancer). Manner of death is not the same as cause of death, but specifically refers to the intentionality of the cause. For example, if the cause of death was a firearm related injury, then the manner of death may have been intentional or unintentional. If it was intentional, then the manner of death was suicide or homicide. If it was unintentional, then the manner of death was an accident. In some cases, there was insufficient information to determine the manner of death, even though the cause was known. It may not have been clear that a firearm death was due to an accident, suicide, or homicide, and in these cases, the manner of death was listed as undetermined.

After a person dies, the county medical examiner or other appointed medical authority will determine both a cause and manner of death and write it on the deceased's death certificate. **However, it is important to note since CFR teams review all records related to a fatality, because of this comprehensive, multidisciplinary approach, the teams' determinations of cause and manner of death may differ from those recorded on the death certificate. Their determination of cause and manner are what is used in this report.**

In the report, deaths are counted once in each applicable section based upon team consensus of the cause and manner of death. For example, a homicide involving a firearm injury perpetrated by an intoxicated caregiver would be counted in the sections addressing firearm injuries,

homicides and maltreatment fatalities. Frequencies and cross-tabulations are used, but due to the small sample size, tests for statistical significance are not always done. In several instances the subset of cases discussed in the report are too small to make accurate statements about statistical significance.

All cases reviewed by the Child Death Review Team are kept completely confidential. Information shared in the meetings is protected under ARS 36-3502 and cannot be shared with anyone outside the meeting. Every effort is made in this report to keep information private, and is intended only to provide summary statistics and trends of all child deaths taking place in Arizona.

Appendix of Summary Tables

The following section of this report provides additional data tables for both individual and agency use. These tables can be used as reference to guide prevention efforts within their respective organizations. The CFR program completed reviews for 100 percent of Arizona's child fatalities from 2011 through 2016 and included the data for comparative analysis. [13]

Table 21. Number and Percentage of Deaths Among Children by Age Group, AZ, 2011- 2016

	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	334	40%	325	38%	298	37%	341	41%	287	38%	299	38
28-365 Days	175	21%	171	20%	156	19%	183	22%	178	23%	144	18
1-4 Years	106	13%	120	14%	130	16%	95	11%	101	13%	117	15
5-9 Years	54	6%	63	7%	47	6%	56	7%	51	7%	45	6
10-14 Years	72	9%	75	9%	77	9%	70	8%	46	6%	71	9
15-17 Years	96	11%	100	12%	103	13%	89	11%	104	13%	107	14
Total	837		854		811		834		768		783	

Table 22. Mortality Rates per 100,000 Population Among Children by Age Group, AZ, 2011- 2016

Age Group	2011	2012	2013	2014	2015	2016
<1 Year*	5.9	5.8	5.3	6.0	5.5	5.2
1-4 Years	28.6	33.6	37.0	27.1	29.1	34.1
5-9 Years	11.8	13.7	10.1	12.1	11.0	9.8
10-14 Years	15.9	16.5	16.9	15.3	10.0	15.5
15-17 Years	35.2	37.0	37.7	32.5	38.1	38.8
Total	51.0	52.4	49.5	51.3	47.3	48.2
*Neonatal/post-natal periods deaths are combined and represent infant mortality rate per 1,000 births						

Table 23. Number and Percentage of Deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016

	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	65	8	73	9	78	10	75	9	68	9	75	10
American Indian	80	10	91	11	76	9	66	8	68	9	70	9
Asian	19	2	30	4	16	2	14	2	17	2	25	3
Hispanic	374	45	376	44	343	42	366	44	332	43	350	45
White, non-Hispanic	293	35	268	31	280	35	285	34	253	33	235	30
2 or more Races	6	1	16	2	18	2	28	3	30	4	28	4
Total	837		854		811		834		768		783	

[13] For all tables in this Appendix, data with a count less than six are denoted as <6 and are suppressed due to concern with individual identification.

Table 24. Mortality Rates per 100,000 Children by Race/Ethnicity Group, AZ, 2011- 2016						
Race/Ethnicity Group*	2011	2012	2013	2014	2015	2016
African American	77.3	96.9	103.3	67.3	74.4	79.9
American Indian	64.7	92.5	76.7	53.4	78.6	80.8
Asian	39.6	69.0	35.7	22.3	32.0	46.4
Hispanic	55.5	55.0	49.6	57.7	46.9	49.5
White, non-Hispanic	41.2	36.8	38.5	41.0	36.7	34.4
*Does not include 126 cases for the category for 2 or more races						

Table 25. Number and Percentage of Deaths Among Children by County of Residence, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
County	#	%	#	%	#	%	#	%	#	%	#	%
Apache	15	2	9	1	17	2	15	2	17	2	24	3
Cochise	15	2	17	2	14	2	12	1	15	2	13	2
Coconino	19	2	20	2	17	2	14	2	20	3	17	2
Gila	9	1	14	2	9	1	12	1	6	<1	7	1
Graham	<6	<6	6	1	7	<1	6	1	<6	<6	<6	<6
Greenlee	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
La Paz	<6	<6	8	1	<6	<6	<6	<6	<6	<6	<6	<6
Maricopa	478	57	500	59	477	59	501	60	445	58	488	62
Mohave	23	3	21	2	15	2	24	3	19	2	13	2
Navajo	26	3	28	3	23	3	20	2	21	3	13	2
Pima	109	13	91	11	102	13	112	13	85	11	91	12
Pinal	51	6	48	6	46	6	46	6	52	7	38	5
Santa Cruz	<6	<1	9	1	<6	<1	<6	<1	<6	<1	6	1
Yavapai	14	2	24	3	20	2	21	3	20	3	20	3
Yuma	33	4	26	3	27	3	26	3	34	4	22	3
Outside AZ	29	3	32	4	25	3	19	2	24	3	26	3
Total	837		854		810		834		768		783	

-Counts <6 have been suppressed

Table 26. Mortality Rates per 100,000 Children by Cause of Death, AZ, 2011- 2016						
Cause	2011	2012	2013	2014	2015	2016
Injury In-or-Around the Home	8.2	7.4	7.3	8.0	8.7	9.0
Maltreatment	4.3	4.3	5.6	4.6	5.3	5.0
MVC/Transport	3.7	3.9	3.5	3.0	2.8	4.4
Homicide	2.6	2.6	3.1	2.2	2.0	2.6
Suicide	2.0	1.7	1.5	2.3	2.9	2.3
Firearms	1.4	2.0	1.8	1.5	1.7	2.2
Drowning	1.9	2.2	1.4	1.9	1.8	1.7
SUID*	1.33	0.95	0.87	0.98	0.91	0.94
*SUID rates are per 1,000 births						

Table 27. Number of Child Deaths by Age Group and Manner, AZ, 2016							
Manner	Birth-27 Days	28-365 Days	1-4 Years	5-9 Years	10-14 Years	15-17 Years	Total
Natural	290	53	53	29	34	25	484
Accident	8	53	47	10	22	38	179
Homicide	0	8	10	<6	<6	15	42
Suicide	0	0	<6	<6	9	28	38
Undetermined	<6	29	7	0	<6	<6	40
Total	299	144	117	45	71	107	783

-Counts <6 have been suppressed

Table 28. Number and Percentage of Deaths Among Children Birth Through 17 Years by Manner, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Manner	#	%	#	%	#	%	#	%	#	%	#	%
Natural	537	64	542	63	513	63	546	66	487	64	484	62
Accident	167	20	190	22	186	23	180	22	160	21	179	23
Undetermined	52	6	45	5	36	5	34	4	42	5	40	5
Homicide	42	5	43	5	51	6	36	4	32	4	42	5
Suicide	38	5	33	4	25	3	38	5	47	6	38	5
Total	836		853		811		834		768		783	

Table 29. Number of Deaths Among Children Birth to 17 Years by Cause and Manner, AZ, 2016						
Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Medical*	320	0	0	0	0	320
Prematurity	162	0	0	0	0	162
MVC/Transport	0	70	<6	0	0	71
Suffocation	0	55	0	0	0	55
Undetermined	<6	0	0	0	39	41
Firearm	0	<6	<12	19	0	36
Drowning	0	26	0	<6	0	27
Strangulation	0	<6	21	<6	0	24
Blunt Force Trauma	0	0	0	20	0	20
Poisoning	0	8	<6	<6	<6	13
Other Non-Medical	0	<6	0	0	0	<6
Fire/Burn	0	<6	0	0	0	<6
Fall/Crush	0	<6	<6	0	0	<6
Other Injury	0	<6	0	<6	0	<6
Total	484	179	38	44	40	783
*Excluding SIDS/prematurity						

-Counts <6 have been suppressed

Table 30. Number and Percentage of Deaths Among Children Birth Through 17 Years by Cause, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Cause	#	%	#	%	#	%	#	%	#	%	#	%
Medical*	342	41	353	41	303	37	326	39	310	40	320	41
Prematurity	199	24	192	22	210	26	222	27	177	23	162	21
MVC/Transport	70	8	88	10	80	10	57	7	50	6	71	9
Suffocation	50	6	53	6	48	6	72	9	65	8	55	7
Firearm	23	3	32	4	29	4	25	3	28	4	36	5
Drowning	32	4	36	4	23	3	31	4	30	4	27	3
Blunt Force Trauma	26	3	19	2	28	3	19	2	11	1	20	3
Strangulation	27	3	20	2	18	2	14	2	17	2	24	3
Undetermined	46	6	40	5	35	4	31	4	43	6	41	5
Other Non-Medical	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Poisoning	10	1	7	1	14	2	9	1	15	2	13	2
Fire/burn	6	1	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Exposure	0	0	<6	<6	<6	<6	<6	<6	6	1	<6	<6
Fall/crush	<6	<6	<6	<6	<6	<6	7	<1	<6	<6	<6	<6
Other Injury	0	0	<6	<6	<6	<6	8	1	12	2	<6	<6
SIDS	<6	<6	0	0	<6	<6	0	0	0	0	0	0
Total	837		853		811		834		768		783	
*Excluding SIDS and prematurity												

-Counts <6 have been suppressed

Table 31. Number and Percentage of Natural Deaths Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	318	59	315	58	289	56	332	61	279	58	290	60
28-365 Days	91	17	84	16	79	15	89	16	94	19	53	11
1-4 Years	40	8	57	11	62	12	40	7	40	8	53	11
5-9 Years	26	5	37	7	25	5	29	5	26	5	29	6
10-14 Years	34	6	36	6	36	7	37	7	20	4	34	7
15-17 Years	27	5	13	2	22	4	19	4	27	6	25	5
Total	536		542		513		546		487		484	

Table 32. Number and Percentage of Natural Deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	43	8	48	9	52	10	48	9	42	9	35	7
American Indian	42	8	45	8	38	7	34	6	40	8	38	8
Asian/Pacific Islander	13	2	20	4	10	2	12	2	14	3	19	4
Hispanic	256	48	266	49	234	46	252	46	235	48	236	49
White, non-Hispanic	179	33	152	28	169	33	178	33	133	27	137	28
2 or more Races	<6	<6	11	2	10	2	22	4	23	5	19	4
Total	536		542		513		546		487		484	

-Counts <6 have been suppressed

Table 33. Number and Percentage of Unintentional (Accident) injury deaths Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	7	4	<6	<6	6	3	6	3	<6	3	8	4
28-365 Days	38	23	48	25	44	23	63	35	53	33	54	30
1-4 Years	47	28	39	21	46	25	36	20	39	24	47	27
5-9 Years	22	13	22	12	20	11	21	12	18	11	10	6
10-14 Years	22	13	27	14	24	13	17	9	12	8	22	12
15-17 Years	31	19	50	26	46	25	37	21	33	21	38	21
Total	167		190		186		180		160		179	

-Counts <6 have been suppressed

Table 34. Number and Percentage of Unintentional (Accident) injury deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	12	7	13	7	15	8	18	10	12	8	26	15
American Indian	20	12	24	13	21	11	25	14	17	11	17	10
Asian	<6	<6	7	4	<6	<6	<6	<6	<6	<6	<6	<6
Hispanic	62	37	69	36	70	38	71	39	62	39	71	40
White, non-Hispanic	69	41	75	39	70	38	62	34	60	38	58	33
2 or more Races	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total	167		190		186		180		160		179	

-Counts <6 have been suppressed

Table 35. Number and Percentage of Injury Deaths In-or-Around the Home Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	11	8	6	5	6	5	8	6	8	6	8	6
28-365 Days	67	49	70	58	67	56	84	65	79	56	77	53
1-4 Years	36	27	7	22	33	28	21	16	30	21	38	26
5-9 Years	7	5	7	6	<6	<6	6	5	6	4	<6	<6
10-14 Years	<6	<6	<6	<6	<6	<6	6	5	<6	<6	7	5
15-17 Years	10	7	8	7	11	9	<6	<6	15	11	12	8
Total	136		121		120		130		142		146	

-Counts <6 have been suppressed

Table 36. Number and Percentage of Injury Deaths In-or-Around the Home Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	10	7	11	9	13	11	14	11	11	8	20	14
American Indian	12	9	11	9	12	10	14	11	14	10	15	10
Asian	<6	<6	<6	<6	<6	<6	0	0	<6	<6	<6	<6
Hispanic	57	42	44	36	40	33	52	40	51	36	48	33
White, non-Hispanic	53	39	50	41	50	42	47	36	58	41	56	39
Total	136		121		120		130		142		146	

-Counts <6 have been suppressed

Table 37. Number of Sudden Unexplained Infant Deaths Among Children by Age Group, AZ, 2011- 2016						
Age Group	2011	2012	2013	2014	2015	2016
< 1 year	114	81	74	85	78	80

Table 38. Number and Percentage of Sudden Unexplained Infant Deaths Among Children by Race/Ethnicity Group, AZ, 2011-2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	13	11	8	10	11	15	8	9	7	9	12	15
American Indian	13	11	7	9	6	8	9	11	<6	<6	8	10
Asian	0	0	<6	<6	0	0	0	0	0	0	<6	<6
Hispanic	50	44	31	38	22	30	36	42	32	42	24	30
White, non-Hispanic	38	35	31	38	34	46	29	34	30	39	31	39
2 or more Races	0	0	<6	<6	<6	<6	<6	<6	<6	6	<6	<6
Total	114		81		74		85		77		79	

-Counts <6 have been suppressed

Table 39. Number and Percentage of Maltreatment Deaths Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	7	10	9	13	13	14	10	13	10	11	13	16
28-365 Days	29	40	23	33	29	32	26	35	29	33	22	27
1-4 Years	22	30	23	33	31	34	23	31	31	36	28	34
5-9 Years	7	10	7	10	<6	<6	9	12	8	9	10	12
10-14 Years	<6	<6	<6	<6	11	12	7	9	<6	<6	<6	<6
15-17 Years	<6	<6	<6	<6	<6	<6	0	0	6	7	<6	<6
Total	73		69		92		75		87		82	

-Counts <6 have been suppressed

Table 40. Number and Percentage of Maltreatment Deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity	#	%	#	%	#	%	#	%	#	%	#	%
African American	6	8	<6	<6	11	12	8	11	11	13	18	22
American Indian	<6	<15	13	19	15	16	8	11	13	15	9	12
Asian	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Hispanic	34	47	29	42	34	37	29	39	31	36	28	33
White, non-Hispanic	21	29	21	30	27	29	29	39	31	36	22	28
2 or more Races	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total	73		69		92		75		87		82	

-Counts <6 have been suppressed

Table 41. Number and Percentage of Motor Vehicle Deaths Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	<6	<6	<6	<6	0	0	0	0	<6	<6	<6	<6
28-365 Days	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
1-4 Years	15	21	11	13	18	23	10	18	13	26	19	27
5-9 Years	13	19	12	14	17	21	12	21	9	18	7	10
10-14 Years	17	24	21	24	20	25	9	16	8	16	17	24
15-17 Years	21	30	38	43	24	30	25	44	18	36	24	34
Total	70		88		80		57		50		71	

-Counts <6 have been suppressed

Table 42. Number and Percentage of Motor Vehicle and Other Transport Deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
American Indian	13	19	18	21	12	15	10	18	12	24	11	24
Hispanic	28	40	32	36	28	35	23	40	20	40	34	40
White, non-Hispanic	24	34	29	33	29	36	17	30	10	20	15	20
Other	<6	7	9	10	11	14	7	12	8	16	11	16
Total	70		88		80		57		50		71	

-Counts <6 have been suppressed

Table 43. Number and Percentage of Suicides Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
<10 Years	<6	<6	0	0	<6	<6	0	0	0	0	<6	3
10-14 Years	13	33	9	27	8	32	11	29	12	26	9	24
15-17 Years	25	64	24	73	17	68	27	71	35	74	28	74
Total	39		33		25		38		47		38	

-Counts <6 have been suppressed

Table 44. Number and Percentage of Suicides Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	<6	<6	<6	<6	<6	<6	0	0	<6	<6	<6	<6
American Indian	7	18	9	27	<6	20	<6	8	<6	11	8	21
Hispanic	10	26	<6	15	8	32	13	34	10	31	13	34
White, non-Hispanic	19	49	17	52	9	36	21	55	30	28	12	32
Other	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total	39		33		25		38		47		38	

-Counts <6 have been suppressed

Table 45. Number and Percentage of Homicides Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	<6	<6	<6	<6	<6	<6	0	0	0	0	0	0
28-365 Days	12	29	10	23	7	14	7	19	<6	9	8	21
1-4 Years	12	29	17	40	16	31	14	39	18	56	10	23
5-9 Years	<6	<10	<6	<7	<6	<6	<6	14	<6	<16	<6	<12
10-14 Years	<6	<6	<6	<6	9	18	<6	11	<6	<6	<6	<12
15-17 Years	11	26	9	21	16	31	6	17	<6	<16	15	35
Total	42		43		51		36		32		42	

-Counts <6 have been suppressed

Table 46. Number and Percentage of Homicides Deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	<6	10	<6	<12	<6	<6	<6	<12	9	28	10	24
American Indian	6	14	<6	<12	9	18	<6	<12	<6	<12	<6	<6
Asian	<6	<6	<6	<6	0	0	0	0	0	0	<6	<6
Hispanic	23	55	19	44	23	45	18	50	10	31	19	45
White, non-Hispanic	8	19	12	28	14	27	10	28	9	28	9	21
2 or more Races	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total	42		43		51		36		32		42	

-Counts <6 have been suppressed

Table 47. Number and Percentage of Drowning Deaths Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
0-27 Days	0	0	0	0	0	0	0	0	0	0	0	0
28-365 Days	<6	<10	<6	<15	0	0	<6	<6	<6	<7	<6	<6
1-4 Years	18	56	18	50	19	83	18	58	20	67	21	78
5-9 Years	7	22	<6	<15	<6	<6	<15	13	6	20	<6	<6
10-14 Years	<6	<6	<6	<15	0	0	<6	13	<6	<6	0	0
15-17 Years	<6	<6	<6	<15	<6	13	<6	10	<6	<6	<6	15
Total	32		36		23		31		30		27	

-Counts <6 have been suppressed

Table 48. Number and Percentage of Drowning Deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	<6	<6	<6	8	<6	<6	6	19	<6	<13	<6	<8
American Indian	<6	<6	<6	11	0	0	<6	<6	0	0	<6	<6
Asian	<6	<9	<6	8	<6	13	0	0	0	0	<6	<6
Hispanic	11	34	9	25	14	61	7	23	10	33	9	33
White, non-Hispanic	15	47	17	47	<6	22	17	55	16	53	14	52
2 or more Races	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total	32		36		23		31		30		27	

-Counts <6 have been suppressed

Table 49. Number and Percentage of Firearm-Related Deaths Among Children by Age Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Age Group	#	%	#	%	#	%	#	%	#	%	#	%
<10 Years	<6	<25	<6	<20	<6	10	<6	<20	<6	11	<6	<12
10-14 Years	<6	<25	<6	<20	<6	17	6	24	6	21	<6	<12
15-17 Years	15	65	22	69	21	72	14	56	19	68	29	81
Total	23		32		29		25		28		36	

-Counts <6 have been suppressed

Table 50. Number and Percentage of Firearm-Related Deaths Among Children by Race/Ethnicity Group, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Race/Ethnicity Group	#	%	#	%	#	%	#	%	#	%	#	%
African American	<6	<6	<6	10	<6	<7	<6	<6	<6	<6	6	17
American Indian	<6	<6	<6	<6	<6	<6	<6	<6	<6	<16	<6	<6
Asian	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Hispanic	14	61	9	28	15	52	10	40	6	21	19	53
White, non-Hispanic	7	30	18	56	9	31	14	56	18	64	8	22
2 or more Races	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total	23		32		29		25		28		36	

-Counts <6 have been suppressed

Appendix of Child Deaths by Age Group

The following section of this report provides data on the cause and manner of child deaths by age group. Individuals and agencies can use the information provided for each age group to guide prevention efforts within each stage of child development. For the past nine years, teams' completed review of 100 percent of Arizona child fatalities and data from 2011 through 2016 are included in the following tables in order to provide comparison data. [14]

Table 51. Number of Deaths Among Children Ages Birth Through 27 Days by Cause and Manner, AZ, 2016

Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Medical*	145	0	0	0	0	145
Prematurity	145	0	0	0	0	145
MVC/Transport	0	<6	0	0	0	<6
Suffocation	0	6	0	0	0	6
Undetermined	0	0	0	0	<6	<6
Other	0	<6	0	0	0	<6
Total	290	8	0	0	<6	299
*Excluding SIDS and prematurity						

-Counts<6 have been suppressed

Table 52. Number and Percentage of Deaths Among Children Ages Birth Through 27 Days by Cause, AZ, 2011- 2016

	2011		2012		2013		2014		2015		2016	
Cause	#	%	#	%	#	%	#	%	#	%	#	%
Prematurity	181	54	172	53	188	63	195	57	152	52	145	48
Medical*	143	43	143	44	102	34	138	40	128	44	145	48
Undetermined	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
SIDS	0	0	0	0	<6	<6	0	0	0	0	0	0
MVC/Transport	0	0	<6	<6	<6	<6	0	0	<6	<6	<6	<6
Other	<6	<6	0	0	<6	<6	<6	<6	<6	<6	<6	<6
Suffocation	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Exposure	0	0	0	0	<6	<6	0	0	0	0	0	0
Drowning	0	0	0	0	<6	<6	0	0	0	0	0	0
Total	334		325		298		341		288		299	
*Excluding SIDS and Prematurity												

-Counts <6 have been suppressed

[14] For all tables in this Appendix, 2016 data with a count less than six are denoted as <6 and are suppressed due to concern with individual identification.

Table 53. Number and Percentage of Deaths Among Children Ages Birth Through 27 Days by Manner, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Manner	#	%	#	%	#	%	#	%	#	%	#	%
Natural	318	95	315	58	289	97	332	97	280	97	290	97
Undetermined	8	2	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Accident	7	2	<6	<6	6	2	6	2	<6	<6	8	3
Homicide	<6	<6	<6	<6	<6	<6	0	0	0	0	0	0
Suicide	0	0	0	0	<6	<6	0	0	0	0	0	0
Total	334		325		298		341		288		299	

-Counts <6 have been suppressed

The Post-Neonatal Period, 28 Days through 365 Days

Table 54. Number of Deaths Among Children Ages 28 Days Through 365 Days by Cause and Manner, AZ, 2016						
Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Suffocation	0	46	0	0	0	46
Medical	37	0	0	0	0	37
Prematurity	16	0	0	0	0	16
Blunt Force Trauma	0	0	0	8	0	8
MVC/Transport	0	<6	0	0	0	<6
Drowning	0	<6	0	0	0	<6
Exposure	0	<6	0	0	0	<6
Underdetermined	0	0	0	0	29	29
Other	0	<6	0	0	0	<6
Total	53	54	0	8	29	144

-Counts <6 have been suppressed

Table 55. Number and Percentage of Deaths Among Children Ages 28 Days Through 365 Days by Cause, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Cause	#	%	#	%	#	%	#	%	#	%	#	%
Suffocation	34	19	44	26	41	26	59	32	51	29	46	32
Medical	75	43	68	40	60	38	64	35	68	38	37	26
Undetermined	29	17	26	15	26	17	23	13	27	15	29	20
Prematurity	17	10	17	10	18	12	25	14	25	14	16	11
Blunt Force Trauma	9	5	6	4	6	4	6	3	<6	<6	8	6
MVC/Transport	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Drowning	<6	<6	<6	2	0	0	<6	<6	<6	<6	<6	<6
Firearm	<6	<6	<6	<6	<6	<6	<6	<6	0	0	0	0
Exposure	0	0	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Strangulation	0	0	<6	<6	<6	<6	0	0	0	0	0	0
Poisoning	0	0	0	0	0	0	0	0	<6	<6	0	0
Fire/Burn	0	0	0	0	0	0	<6	<6	0	0	0	0
SIDS	<6	<6	0	0	0	0	0	0	0	0	0	0
Other Injury	6	<1	0	0	0	0	0	0	0	0	<6	<6
Fall/Crush	0	0	0	0	0	0	0	0	0	0	0	0
Total	175		171		156		183		178		144	

-Counts <6 have been suppressed

Table 56. Number and Percentage of Deaths Among Children Ages 28 Days Through 365 Days by Manner, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Manner	#	%	#	%	#	%	#	%	#	%	#	%
Natural	92	53	84	49	79	51	89	49	94	53	53	37
Accident	38	22	48	28	44	28	63	34	53	30	53	37
Undetermined	32	18	29	17	26	17	24	13	28	16	29	20
Homicide	12	7	10	6	7	4	7	4	<6	<6	9	6
Suicide	0	0	0	0	<6	<6	0	0	0	0	0	0
Unknown	<6	<6	0	0	<6	<6	0	0	0	0	0	0
Total	175		171		156		156		178		144	

-Counts <6 have been suppressed

Children, One through Four Years of Age

Table 57. Number of Deaths Among Children Ages One Through Four Years by Cause and Manner, AZ, 2016						
Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Medical*	50	0	0	0	0	50
Drowning	0	20	0	<6	0	21
MVC/Transport	0	19	0	0	0	19
Undetermined	<6	0	0	0	6	8
Blunt Force Trauma	0	0	0	7	0	7
Prematurity	<6	0	0	0	0	<6
Strangulation	0	<6	0	0	0	<6
Suffocation	0	<6	0	0	0	<6
Poisoning	0	0	0	<6	<6	<6
Other Injury	0	<6	0	0	0	<6
Other Non-Medical	0	0	0	0	0	0
Exposure	0	0	0	0	0	0
Total	53	47	0	10	7	117
*Excluding SIDS and Prematurity						

-Counts <6 have been suppressed

Table 58. Number and Percentage of Deaths Among Children Ages One Through Four Years by Cause, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Cause	#	%	#	%	#	%	#	%	#	%	#	%
Medical*	40	38	57	48	62	48	40	42	40	40	50	43
Drowning	18	17	18	15	19	15	18	19	20	20	21	18
MVC/Transport	15	14	11	9	18	14	10	11	13	13	19	16
Undetermined	<6	5	<6	<6	6	5	26	4	<6	<6	8	7
Blunt Force Trauma	10	9	9	8	14	11	10	11	9	9	6	5
Firearm	<6	<6	<6	<6	<6	<6	<6	1	0	0	<6	<6
Poisoning	<6	<6	<6	<6	<6	<6	0	0	<6	<6	<6	<6
Fire/burn	<6	<6	<6	<6	<6	<6	0	0	0	0	<6	<6
Fall/crush	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Strangulation	<6	<6	<6	<6	<6	<6	0	0	<6	<6	<6	<6
Prematurity	<6	<6	<6	<6	<6	<6	<6	<6	0	0	<6	<6
Suffocation	8	8	<6	<6	<6	<6	<6	<6	6	6	<6	<6
Other Injury	0	0	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Other non-Medical	0	0	<6	<6	<6	<6	<6	<6	<6	<6	0	0
Total	106		120		130		95		101		117	
*Excluding SIDS and Prematurity												

-Counts <6 have been suppressed

Table 59. Number and Percentage of Deaths Among Children Ages One Through Four Years by Manner, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Manner	#	%	#	%	#	%	#	%	#	%	#	%
Natural	40	38	57	48	62	48	40	42	40	40	53	45
Accident	47	44	39	33	46	35	36	38	39	39	47	40
Homicide	12	11	17	14	16	12	14	15	18	18	10	9
Undetermined	7	7	7	6	6	5	<6	5	<6	<6	7	6
Suicide	0	0	0	0	<6	<1	0	0	0	0	0	0
Unknown	0	0	0	0	<6	<1	0	0	0	0	0	0
Total	106		120		130		95		101		117	

-Counts <6 have been suppressed

Children, 5 through 9 Years of Age

Table 60. Number of Deaths Among Children Ages Five Through Nine Years by Cause and Manner, AZ, 2016						
Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Medical*	29	0	0	0	0	29
MVC/Transport	0	7	0	0	0	7
Firearm	0	<6	0	<6	0	<6
Drowning	0	<6	0	0	0	<6
Undetermined	0	0	0	0	0	0
Fire/Burn	0	0	0	0	0	0
Exposure	0	0	0	0	0	0
Strangulation	0	0	<6	0	0	<6
Fall/Crush	0	<6	0	0	0	<6
Other Injury	0	0	0	0	0	0
Total	29	10	<6	<6	0	45
*Excluding SIDS and prematurity						

-Counts <6 have been suppressed

Table 61. Number and Percentage of Deaths Among Children Ages Five Through Nine Years by Cause, AZ, 2011-2016												
	2011		2012		2013		2014		2015		2016	
Cause	#	%	#	%	#	%	#	%	#	%	#	%
Medical	26	48	37	59	24	51	30	54	25	49	29	64
MVC/Transport	13	34	12	19	17	36	12	21	9	18	7	16
Drowning	7	13	<6	<6	<6	<6	<6	<6	9	12	<6	<6
Firearm	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Blunt Force Trauma	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Fire/Burn	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	0	0
Strangulation	<6	<6	0	0	<6	<6	<6	<6	0	0	<6	<6
Other	0	0	0	0	<6	<1	<6	<2	<6	2	0	0
Undetermined	<6	<6	<6	<6	<6	<6	0	0	<6	<6	0	0
Fall/Crush	0	0	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Prematurity	0	0	0	0	<6	<1	0	0	0	0	0	0
Suffocation	<6	<6	0	0	<6	<6	<6	<6	0	0	0	0
Poisoning	0	0	0	0	<6	<6	0	0	0	0	0	0
Total	54		63		47		56		51		45	
*Excluding SIDS and Prematurity												

-Counts <6 have been suppressed

Table 62. Number and Percentage of Deaths Among Children Ages Five Through Nine Years by Manner, AZ, 2011-2016												
	2011		2012		2013		2014		2015		2016	
Manner	#	%	#	%	#	%	#	%	#	%	#	%
Natural	26	48	37	59	25	53	29	52	26	51	29	64
Accident	22	41	22	35	20	43	21	38	18	35	10	22
Undetermined	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	0	0
Homicide	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Suicide	<6	<6	0	0	0	0	0	0	0	0	<6	<6
Total	54		63		47		56		51		45	

-Counts <6 have been suppressed

Children, 10 through 14 Years of Age

Table 63. Number of Deaths Among Children Ages 10 Through 14 Years by Cause and Manner, AZ, 2016						
Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Medical*	34	0	0	0	0	34
MVC/Transport	0	17	0	0	0	17
Strangulation	0	0	8	<6	0	9
Firearm Injury	0	<6	0	<6	0	<6
Poisoning	0	<6	<6	0	0	<6
Other Injury	0	<6	0	<6	0	<6
Undetermined	0	0	0	0	<6	<6
Exposure	0	<6	0	0	0	<6
Drowning	0	0	0	0	0	0
Suffocation	0	0	0	0	0	0
Total	34	22	9	<6	<6	71

-Counts <6 have been suppressed

Table 64. Number and Percentage of Deaths Among Children Ages 10 Through 14 Years by Cause, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Cause	#	%	#	%	#	%	#	%	#	%	#	%
Medical*	34	47	35	47	34	44	36	51	19	41	34	48
MVC/Transport	17	24	21	28	20	26	9	13	8	17	17	24
Strangulation	10	14	7	9	7	9	<6	<6	<6	<6	9	13
Firearm	<6	<6	<6	<6	<6	6	6	9	6	13	<6	<6
Other Injury	0	0	0	0	<6	<6	<6	<6	<6	<6	<6	<6
Fall/Crush	0	0	0	0	<6	<6	<6	<6	<6	<6	<6	<6
Poisoning	0	0	0	0	<6	<6	<6	<6	<6	<6	<6	<6
Blunt Force Trauma	<6	<6	0	0	<6	<6	<6	<6	0	0	<6	<6
Exposure	0	0	0	0	<6	<6	0	0	<6	<6	0	0
Suffocation	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	0	0
Drowning	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	0	0
Undetermined	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Fire/burn	<6	<6	<6	<6	<6	<6	<6	<6	0	0	0	0
Total	72		75		77		70		46		71	
*Excluding SIDS and Prematurity												

-Counts <6 have been suppressed

Table 65. Number and Percentage of Deaths Among Children Ages 10 Through 14 Years by Manner, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Manner	#	%	#	%	#	%	#	%	#	%	#	%
Natural	34	47	36	48	36	47	37	53	20	44	34	48
Accident	22	31	27	36	24	31	17	24	12	26	22	31
Suicide	13	18	9	12	8	20	11	16	12	26	9	13
Homicide	<6	<6	<6	3	9	23	<6	<6	<6	<6	<6	6
Undetermined	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total	72		75		77		70		46		71	

-Counts <6 have been suppressed

Children, 15 through 17 Years of Age

Table 66. Number of Deaths Among Children Ages 15 Through 17 Years by Cause and Manner, AZ, 2016					
Cause	Natural	Accident	Suicide	Homicide	Total
Firearm			Majority	Majority	29
Medical*	Majority				25
MVC/Transport		Majority			24
Strangulation			Majority		13
Poisoning		Majority			8
Total	25	38	28	15	107
*Excluding SIDS and prematurity					

-Counts by manner were too low to release for each Cause of Death. For each Cause of Death, the manner that had the most death for that cause has been provided

Table 67. Number and Percentage of Deaths Among Children Ages 15 Through 17 Years by Cause, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Cause	#	%	#	%	#	%	#	%	#	%	#	%
Firearm	15	16	22	22	21	20	14	16	19	18	29	27
Medical*	25	26	13	13	21	20	18	20	25	24	25	23
MVC/Transport	21	22	38	38	24	23	25	28	18	17	24	22
Strangulation	13	14	9	9	10	10	9	10	11	11	13	12
Poisoning	9	9	6	6	12	12	7	8	11	11	8	7
Other	0	0	<6	<6	<6	<6	<6	<6	8	8	<6	<6
Exposure	0	0	0	0	<6	<6	<6	<6	<6	<6	0	0
Drowning	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Undetermined	<6	<6	<6	<6	<6	<6	0	0	<6	<6	<6	<6
Fall/Crush	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Blunt Force Trauma	<6	<6	<6	<6	<6	<6	0	0	0	0	<6	<6
Fire/Burn	<6	<6	0	0	<6	<6	<6	<6	<6	<6	<6	<6
Suffocation	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	0	0
Total	96		100		103		89	93	104		107	
*Excluding SIDS and Prematurity												

-Counts <6 have been suppressed

Table 68. Number and Percentage of Deaths Among Children Ages 15 Through 17 Years by Manner, AZ, 2011- 2016												
	2011		2012		2013		2014		2015		2016	
Manner	#	%	#	%	#	%	#	%	#	%	#	%
Accident	31	32	50	50	46	45	37	42	33	32	38	36
Suicide	25	26	24	24	17	17	27	30	35	34	28	26
Natural	27	28	13	13	22	21	19	21	28	26	25	23
Homicide	11	11	9	9	16	16	6	7	<6	<6	15	14
Undetermined	<6	<6	<6	<6	<6	<6	0	0	<6	<6	<6	<6
Unknown	0	0	<6	<6	<6	<6	0	0	0	0	0	0
Total	96		100		103		89		105		107	0

-Counts < 6 have been suppressed

Appendix of Population Denominators for Arizona Children

The population denominators shown below were used in computing the rates presented in this report. Denominators for 2011 through 2016 were provided by the Arizona Department of Health Services Bureau of Public Health Statistics.

Population estimates for 2014 and forward were modified from previous years by applying county level demographic proportions in the census estimates for 2013 to the 2014 county population totals published by ADOA Department of Demography. This was done in order to determine the county-level proportions by race/ethnicity, gender, and age.

Table 69. Population of Children Ages Birth Through 17 Years by County of Residence, AZ, 2011- 2016

County	2011	2012	2013	2014	2015	2016
Apache	22,808	21,843	21,493	21,271	21,132	20,848
Cochise	30,099	30,434	30,621	29,190	28,906	28,463
Coconino	31,716	31,310	31,463	31,097	30,902	30,498
Gila	11,451	11,317	11,351	11,062	11,091	11,085
Graham	10,718	10,623	10,818	10,871	10,874	10,693
Greenlee	2,463	2,408	3,016	2,952	2,967	2,950
La Paz	3,682	3,685	3,708	3,682	3,693	3,639
Maricopa	1,014,790	1,008,347	1,015,472	1,016,044	1,021,299	1,023,035
Mohave	41,301	40,338	39,786	39,076	38,404	37,694
Navajo	31,901	31,551	31,463	30,868	30,682	30,463
Pima	226,652	223,677	223,639	222,413	2,208,66	219,206
Pinal	101,929	102,591	103,403	99,111	99,049	98,531
Santa Cruz	14,752	14,396	14,369	14,304	14,243	14,065
Yavapai	40,305	39,602	39,417	38,243	37,841	37,671
Yuma	56,547	56,415	57,367	56,542	56,255	55,887
Total	1,641,114	1,628,539	1,637,386	1,626,726	1,628,204	1,624,728

Table 70. Population of Children Ages 0 through 17 by Race/Ethnicity, AZ, 2011- 2016

Race/Ethnicity	2011	2012	2013	2014	2015	2016
African American	84,112	75,371	75,491	111,448	91,399	93,897
American Indian	123,712	98,426	99,014	123,657	86,548	86,600
Asian	47,936	43,453	44,838	62,673	53,073	53,827
Hispanic	673,462	683,843	691,459	634,110	707,456	706,954
White, non-Hispanic	711,892	727,446	726,558	694,838	689,731	683,450
Total	1,641,114	1,628,539	1,637,386	1,626,726	1,628,204	1,624,728

Table 71. Population of Children Ages 0 Through 17 Years by Age Group, AZ, 2011- 2016						
Age Group	2011	2012	2013	2014	2015	2016
<1 Year	88,211	87,184	89,196	84,342	86,222	86,540
1-4 Years	370,926	356,828	351,077	350,065	346,443	343,263
5-9 Years	457,080	459,232	464,622	462,931	463,564	460,863
10-14 Years	451,989	454,826	459,528	458,488	458,966	457,960
15-17 Years	272,914	270,469	272,963	270,900	273,009	276,102
Total	1,641,108	1,628,539	1,637,386	1,626,726	1,628,204	1,624,728

Table 72. Number of Resident Births, AZ, 2011- 2016					
2011	2012	2013	2014	2015	2016
85,142	85,675	84,963	86,648	85,024	84,404

Table 73. Number of Births by Race/Ethnicity, AZ, 2011- 2016						
Race/Ethnicity	2011	2012	2013	2014	2015	2016
African American	4,290	4,674	4,726	4,522	4,361	4,388
American Indian	5,787	5,547	5,476	5,145	4,984	5,030
Asian	3,493	4,674	3,466	3,169	3,235	3,350
Hispanic	32,217	33,030	33,075	33,715	34,264	33,874
White, non-Hispanic	39,355	38,800	38,220	40,097	38,180	37,762
Total	85,142	85,675	84,963	86,648	85,024	84,404

Appendix of State and Local CFR Teams

Arizona Department Health Service, State CFR Team

Chairperson:
Mary Ellen Rimsza, MD, FAAP
American Academy of Pediatrics

Members:

David K. Byers
Nancy Molever (proxy)
Administrative Office of the Courts

Cdr. Stacey Dawson
Phoenix Indian Medical

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Marguerite Sagna (Proxy)
Arizona Department of Health Services

David Foley
Navajo Tribe Representative

Diana Gomez, MPH
Stacey Gagnon, BSN, RN (Proxy)
Yuma County Department of Public Health Services

Jeff Hood
Robert D. Jones (Proxy)
Arizona Department of Juvenile Corrections

Joanna K. Kowalik
Pamela Tom (Proxy)
Arizona Department of Economic Security
Division of Developmental Disabilities

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Gaylene Morgan
Rachel Metelits (Proxy)
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Maricopa County CFR Team

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ITCA Tribal Epidemiology Center

Mark K. Perkovich
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John Raeder
Myriah Mhoon (Proxy)
Governor's Office for Children,
Youth and Families

Beth Rosenberg
Karen McLaughlin (Proxy)
Director of Child Welfare & Juvenile Justice Children's Action Alliance

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Arizona Department of Child Safety

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Tomi St. Mars, MSN, RN (proxy)
Arizona Department of Health Services Bureau of Women's and Children's Health

Hilary Weinberg
Arizona Prosecuting Attorney's Advisory Council

Nicola Winkel, MPA
Kelly Ann Beck (proxy)
Arizona Coalition for Military Families

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Forensic Pathologist
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Apache County, CFR Team

Chairperson/Coordinator:
Matrese Avila
Apache County Youth Council, Apache County Drug Free Alliance

Members:

Daniel Brown
St. John's Police Department

Scott Poche
Little Colorado Behavior Health Center

Mike Sweetser
Interim Chief,
Eagar Police Department

Chief Mike Nuttall
Springerville Police Department

Kelli Sine-Shields
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Abbey Walker
DCS Case Manager

Christie Orona
DCS Supervisor

Jim Staffnik, PhD
St. Johns Middle School

Verlyn D. Walker
Apache County Medical Investigator

Debbie Padilla
Apache County Public Health Department

Coconino County, CFR Team

Chairperson:
Heather Williams
Injury Prevention Program Manager
Coconino County Public Health Services

Co-Chair:
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Medical Examiner

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Health Educator
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Victoria Tewa

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Shannon Johnson
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Gila County, CFR Team

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Gila Community College

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Chris Hagenian
DCS Investigator

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Chairperson/Coordinator:
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Mt. Graham Safe House

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Bullhead City Police Department

Natalie Eggers
Mohave County Probation Department

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Lake Havasu City Police Department

Karen Foster
Mohave County Parent & Community

Detective Todd Foster
Kingman Police Department

Joshua Frisby
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Mohave County Probation Department

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Sgt. Mike Godfrey
Kingman Police Department

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Charles Solano
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Chris Williams
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US Public Health Services
Indian Health Services

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Sara Curiel
DCS- Casa Grande

Matt Duran
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Paul Dudish
Pinal County Sheriff's Office

Christopher Fox
Casa Grande Police Department

Jabette Franco
Pinal County Health Department

Cori Gagen
Pinal County Health Department

Dr. Shauna McIsaac
Pinal County Public Health

Jimmy Orozco
Gila River Police Dept.

Sonia Ortega
Pinal County Sheriff's

Rob Pisano
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Valorie Stading
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Mark Tercero
Coolidge Police Dept.

Brian Walsh
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Rachel Zenuk
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Yavapai County, CFR Team

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Kathy McLaughlin
Community at large – Family advocacy

Coordinator:
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Yavapai County Community Health Services

Administrative Specialist:
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Members:

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Henry Kaldenbaugh, MD
Pediatrician Consultant

Officer M. J. Williams
Prescott Valley Police Department

Jerry Bruen
Yavapai County Attorney's Office

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Missy Sikora
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Sue Carlson
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Joseph Lopez
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Joan Drydyk
Community Member

Dennis McGrane
Yavapai County Attorney

Yuma County, CFR Team

Chairperson:

Patti Perry, MD
Yuma Regional Medical Center/Cactus Kids

Coordinator:

Ryan Butcher
Yuma County Health District

Members:

Jay Carlson
Yuma County Sheriff's Office

Chip Schneider
Amberly's Place

Robert Vigil
Medical Examiner's Office
Yuma County Sheriff's Office

Karla Garcia
Intern
Amberly's Place

Jennifer Stanton, RN
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Nathan Williams
Police Officer
Yuma Police Department