Arizona Child Fatality Review Program

EIGHTEENTH ANNUAL REPORT
NOVEMBER 2011

November 15, 2011

Dear Friends of Arizona's Children:

The death of a child is a tragedy not only for their family, but also for our communities. The child fatality review process provides a critical opportunity to learn about the causes and circumstances of children's deaths in order to prevent future deaths as well as disabilities and injuries. A multidisciplinary team from the child's community reviews each death to determine not only the cause of death but also its preventability. In 2010, a total of 862 children younger than 18 years of age died in Arizona and the teams determined that 33 percent of these deaths could have been prevented.

The number of deaths in 2010 was less than in 2009, when 947 children died. Despite this decrease, the number of maltreatment deaths increased from 2009 to 2010. The Child Fatality Review Program determined that 70 children died as a result of maltreatment in 2010. By comparison, there were 64 children who died as a result of maltreatment in 2009. Over half of these children were less than one year old. Drugs and/or alcohol contributed to 69 percent of the deaths (n=48).

Deaths due to prematurity have steadily declined from 321 in 2007 to 197 in 2010. The rate of motor vehicle fatalities in 2010 was 3.6 deaths per 100,000 children, a decline of 57 percent over six years. Eighty-nine percent of all motor vehicle and other transport fatalities during 2010 were determined to have been preventable (n=54). Lack of or improper use of vehicle restraints was identified as a preventable factor for 20 of the motor vehicle crash deaths and drugs and/or alcohol was a factor in 18 of the deaths.

In 2010, 155 of the child deaths occurred in or around the home. Twenty-eight of these deaths were due to drowning. Nearly half of the children who died in and around the home were less than one year old. Eighty-eight percent of these deaths were deemed to have been preventable and the most common preventable factor was lack of supervision (65 percent of the deaths in and around the home). Seventy-seven infants died in unsafe sleep environments in 2010, including 38 infants who were placed to sleep in adult beds and seven who were placed to sleep on couches.

The State Child Fatality Review Team includes in this report many recommendations to prevent future child deaths. We hope that families, communities and policy makers will adopt these recommendations in order to prevent future child deaths.

Sincerely,

Mary Rimsza M.D.

Mary Ellen Rimsza, MD
Chair, Arizona Child Fatality Review Program
Arizona Chapter, American Academy of Pediatrics
University of Arizona College of Medicine

ARIZONA CHILD FATALITY REVIEW TEAM

EIGHTEENTH ANNUAL REPORT

NOVEMBER 2011

MISSION:

To reduce preventable child fatalities through systematic, multidisciplinary, multi-agency and multi-modality review of child fatalities in Arizona, through interdisciplinary training and community-based prevention education, and through data-driven recommendations for legislation and public policy.

Submitted to:

The Honorable Janice K. Brewer, Governor, State of Arizona
The Honorable Russell Pearce, President, Arizona State Senate
The Honorable Andy Tobin, Speaker, Arizona State House of Representatives

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

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This publication can be made available in alternative formats. Please contact the Child Fatality Review Program at (602) 364-1400 (voice) or call 1-800-367-8939 (TDD).

Permission to quote from or reproduce materials from this publication is granted when acknowledgment is made. Resources for the development of this report were provided in part through funding to the Arizona Department of Health Services from the Centers for Disease and Control and Prevention, Cooperative Agreement 1U17CE002023-01, Core Violence and Injury Prevention Program.

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ACKNOWLEDGMENTS

We wish to acknowledge the following individuals, businesses, and/or organizations for their efforts to reduce child deaths in our communities and their dedication to improving safety for all Arizona residents.

- The 300 volunteers who contributed more than 5,700 hours of their time to review child deaths during 2010. It is through their hard work that we were able to learn about the causes of child fatalities and what we, as individuals and as a society, can do to reduce the number of preventable deaths of children in Arizona.

- Dr. Bruce Parks, MD, who retired in May of 2011 as the Chief Medical Examiner for Pima County, for his unwavering support of the local child fatality teams. During his tenure, Dr. Parks served as the forensic pathologist on both the local and state child fatality teams.

- Dr. Dan Wynkoop, who volunteered his time as the chairman and co-chair of the Mohave (and later La Paz) teams since the inception of the Mohave County team. Dr. Wynkoop is a retired local psychologist who graciously volunteered his time for the local child fatality team, as well as serving on the Board of Directors of a local hospital, and a mental health board at the State level. At 83, he retired from his volunteer work on these teams and has always been generous with his time and extensive knowledge in his efforts to help Arizona's children.

- Leslie DeSantis, for her contributions to Arizona's Child Fatality Review Program since the program's inception in Mohave County in 1995. Not only did she coordinate the Mohave County Child Fatality Review Team for well over a decade from her supervisory position at the Mohave County Sheriff's Office, but she also coordinated the review teams in La Paz County and in Yuma County for many of those same years. During her tenure, she coordinated the investigation and reported pertinent data from hundreds of child deaths—a daunting task involving patience, supreme organizational skills and an unwavering focus on the goal of improving and extending the lives our children. While expressing their gratitude, her team members have cited Leslie's diligence, expertise, and insight into making the meetings and review process run as smoothly and efficiently as possible. Her presence and knowledge were central to establishing the many positive actions that have arisen from the Arizona's child fatality review process.

- Diana Ryan, for her contributions to Arizona's Child Fatality Review Program as the Apache County team coordinator since 1998. During her tenure as team coordinator, Diana brought representatives from Apache County's Office of Vital Records, a local domestic violence agency, a Medical Examiner, a pediatrician, a school psychologist, and members of the Navajo Nation to the Apache County CFR Team. She assisted the Apache County Public Health District with two

trainings for the Navajo Nation Criminal Investigators, medical personnel, and law enforcement in the child fatality review process, including instruction on the Sudden Unexplained Infant Death checklist. She has helped the Apache County develop a strong team with great commitment to the child fatality review mission and process.

- All individuals and entities who have responded promptly and efficiently to records requests. Adequate reviews are only able to be accomplished if the teams have accurate and current information to review. This includes entities such as medical examiner's offices, local hospitals, law enforcement and private practice facilities.

EXECUTIVE SUMMARY

The Arizona Child Fatality Review Program was created in 1993 (A.R.S. § 36-342, 36-3501-4) and data collection began in 1994. Reviews of child deaths are completed by 12 local child fatality teams located throughout Arizona. The state team provides oversight to the local teams, produces an annual report summarizing review findings, and makes recommendations regarding the prevention of child deaths. These recommendations have been used to educate communities, initiate legislative action, and develop prevention programs. The Arizona Department of Health Services provides professional and administrative support to the state and local teams and analyzes review data.

In 2010, 862 children younger than 18 years of age died in Arizona. This was a nine percent decline from 2009 when 947 children died. It is important to consider that the population of children also decreased from 2009 to 2010 and the statewide birth rate declined from 14.0 births per 1,000 population in 2009 to 13.6 births per 1,000 population in 2010.

Arizona Child Fatality Review Teams reviewed 100 percent of child deaths and determined that 33 percent of these deaths could have been prevented.

- 97 percent of drownings were preventable.
- 89 percent of motor vehicle crash deaths were preventable.
- 93 percent of maltreatment deaths were preventable.
- 92 percent of accidental deaths were preventable.
- 91 percent of firearm-related deaths were preventable.
- 89 percent of homicides were preventable.
- 88 percent of home and safety-related deaths were preventable.
- 75 percent of suicides were preventable.

In 2010, the number of deaths among all age groups either declined or remained the same from 2009 with the exception of children ages 28 through 365 days. The number of child deaths in this age group increased from 183 in 2009 to 192 in 2010.

Deaths continued to be disproportionately high among minority children in Arizona during 2010. African American children comprised five percent of the population in Arizona, but eight percent of the fatalities. American Indian children comprised six percent of the population and eight percent of deaths. Asian children comprised three percent of the population and four percent of the deaths. Hispanic children accounted for 43 percent of the population and 46 percent of fatalities.

The percentage of deaths involving substance use (illegal drugs, prescription drugs, and/or alcohol) continued to increase in 2010. Twenty percent of all child

deaths involved substance use (n=175), an increase from 2009 when substance use was involved in 19 percent of all child deaths (n=182).

The rate of motor vehicle fatalities declined 23 percent from 4.7 deaths per 100,000 children in 2009 to 3.6 deaths per 100,000 children in 2010. Motor vehicle crashes claimed the lives of 58 children in 2010, a decline from 2009 when 82 children died in motor vehicle crashes. Ninety-three percent of motor vehicle-related deaths were determined to have been preventable (n=54). Lack of vehicle restraints was identified as a preventable factor for 34 percent of motor vehicle crash fatalities (n=20). This does not include the 3 children who died during air transport. There were a total of 61 children in 2010 whose deaths were attributed to motor vehicle and other transportation incidents.

The rate of drowning fatalities remained the same in 2010 as it was in 2009 (2.0 deaths per 100,000 children). Thirty-three children died due to drowning during 2010, and 97 percent of these deaths were determined to have been preventable. The highest numbers of both pool drownings and open-water drownings were among children ages one through four years.

The child suicide rate decreased from 1.6 deaths per 100,000 children in 2009 to 1.5 deaths per 100,000 children in 2010. Twenty-four children took their own lives during 2010, and 75 percent of these deaths were determined to have been preventable (n=18). For 13 percent of suicides, local review teams were not able to determine preventability (n=3). The majority of suicides were among children ages 15 through 17 years (63 percent, n=15), and 37 percent were among children 14 years of age and younger (n=9).

The percentage and number of deaths due to maltreatment increased from seven percent of all child deaths in 2009 (n=64) to eight percent of child deaths in 2010 (n=70). Substance use was involved in 48 child maltreatment deaths during 2010 (69 percent). Ninety-three percent of maltreatment deaths were determined to have been preventable (n=65). For six percent of maltreatment deaths, teams were unable to determine preventability (n=4). Among the maltreatment deaths, 18 had prior involvement with Child Protective Services and five had an open case at the time of death.

Seventy-seven infants died in unsafe sleep environments in 2010, including 38 infants who were placed to sleep in adult beds and seven who were placed to sleep on couches. Thirty-seven infants were placed to sleep on their sides or stomachs. Thirty-nine infants were bed sharing with adults and/or other children, and nine of the adults who bed shared were impaired by drugs and/or alcohol.

Outcomes Related to Previous Recommendations

Deaths due to substance abuse
The Division of Behavioral Health Services (DBHS) conducted a statewide needs assessment and key informant interviews to create an online training for Emergency Department medical staff. The training incorporates both screening and assessment for suicide and substance abuse. Additionally, DBHS created a decision tree regarding accessing and paying for behavioral health services, including the utilization of the Substance Abuse Prevention and Treatment block grant. DBHS has initiated statewide outreach to hospitals to incorporate these into their current practices.

Unexplained infant deaths, including unsafe sleep environments
Two of Arizona's Safe Kids Coalitions (Coconino County and Maricopa County) have included safe sleep information as part of their child passenger safety education materials distributed to families at all car seat safety check-up events.

Safe sleep information was incorporated in the rule-making process for Child Care Facility and Group Home licensing. These rules now apply to all licensed child care facilities and group homes in Arizona and require that infants be placed to sleep in a safe sleep environment.

The Arizona Injury Prevention Program has become a Cribs for Kids site, allowing injury prevention partners throughout Arizona the opportunity to provide Cribs for Kids educational materials to the families they serve.

The Arizona Perinatal Trust continues to monitor certified hospitals for safe sleep education during certification site visits.

Deaths due to prematurity
The Arizona Department of Health Services Preconception Health Task Force issued the Arizona Preconception Health Strategic Plan in Spring, 2011 and continues to meet quarterly to monitor progress in achieving selected strategies and activities. The intent for the plan is to foster awareness and implementation of CDC's "Recommendations to Improve Preconception Health and Health Care" by serving as a guide for stakeholders in both public and private sectors who are interested in and willing to play an active role.

The Arizona Department of Health Services is participating on the CDC's Preconception Health Consumer Workgroup, which is charged with developing a national social marketing campaign to increase awareness about preconception health and assist with the development of a clearinghouse for preconception health screening tools and educational materials.

Deaths due to motor vehicle crashes

The Arizona Game and Fish Department (AZGFD) deployed 14 law enforcement officers dedicated to off-highway vehicle (OHV) enforcement throughout Arizona since 2009. The agency has also published an informational brochure on safe and responsible OHV operation that has been distributed throughout Arizona. The brochure has been made available for use and distribution by health and safety partners throughout Arizona. Finally, AZGFD offers a free ATV safety course on their website, with a safety certificate available upon course completion for a nominal fee.

Deaths due to poisoning

Over 100 law enforcement agencies throughout the state have participated in the Drug Enforcement Agency's semiannual medication disposal events. These events promote the safe disposal of unused, unneeded, or expired prescription medications by individuals as a way to reduce substance abuse and unintentional poisonings. Several Arizona cities and counties, including Pima, Navajo, Yavapai, and Yuma Counties, host their own drug-drop events throughout the year, or offer ongoing drug collection at local police departments.

Deaths due to injuries

The Arizona Injury Prevention Program provided local child death and injury data to First Things First Regional Councils so they could utilize this information to develop regional grants targeting injury prevention.

Deaths due to suicide

The Arizona Department of Health Services Division of Behavioral Health developed a taskforce to explore the development and implementation of a Suicide Investigation Checklist for use by law enforcement when investigating suicides.

Deaths due to drowning

The Drowning Prevention Coalition of Arizona and its members have included "touch supervision" in water safety presentations throughout the year. This important safety concept was mentioned in media interviews and press releases, and plans are in place to add "touch supervision" to water safety brochures during the upcoming year.

RECOMMENDATIONS

Based on its review of child deaths that occurred in 2010 and in previous years, the State Child Fatality Review Team recommends specific actions to prevent future child deaths in Arizona:

To Prevent Deaths due to Substance Use

Substance use (including illegal drugs, prescription drugs, and/or alcohol) was involved in 175 child deaths during 2010, accounting for 20 percent of all child deaths. According to the local child fatality review teams, the use of drugs and/or alcohol contributed to 69 percent of maltreatment deaths (n=48), 58 percent of homicides (n=21), and 42 percent of suicides (n=10).

Findings from the Center for Substance Abuse Treatment demonstrated that the implementation of a Screening Brief Intervention and Referral to Treatment (SBIRT) model in Washington State Emergency Departments resulted in Medicare savings of $185 per member, per month, primarily due to decreased costs associated with inpatient hospital admissions. Utilization of SBIRT model has been shown in both adults and adolescents to reduce substance abuse in various health care settings, including primary care, emergency department and trauma centers.

Recommendation to the Arizona Department of Health Services: Work with the Arizona Home Visiting Taskforce to integrate standards for screening of substance abuse for families participating in home visiting programs.

Recommendation to the Arizona Department of Health Services: Continue outreach to hospitals and emergency departments across the state in an effort to incorporate the SBIRT model into policy and protocol and educate about the availability of the Substance Abuse Prevention and Treatment (SAPT) Block Grant funds, under which women and children are priority populations for substance abuse treatment. Additionally, expand education and outreach regarding the availability of the SAPT Block Grant Funds to federally qualified community health centers, educators, health care providers, Indian Health Service, and the Veteran's Administration.

To Prevent Deaths due to Infectious Diseases

Outbreaks of vaccine preventable diseases are increasingly common due to decreased immunization rates. In 2010, pneumonia and influenza claimed the lives of 13 children in Arizona.

Recommendation to Parents and Caregivers: Obtain appropriate age-related immunizations for all family members in order to protect children from vaccine preventable diseases and the community from outbreaks of vaccine preventable

diseases. Encourage others who have contact with children such as home care providers, child care center staff, and baby sitters to obtain appropriate immunizations.

Recommendation to Health Care Providers: Adopt and enforce policies and procedures for health care staff to receive proper immunizations.

To Prevent Unexplained Infant Deaths

Sudden infant death syndrome (SIDS) is the sudden death of an infant younger than one year of age that cannot be explained after a thorough investigation has been conducted, including a complete autopsy, an examination of the death scene, and a review of the clinical history. SIDS is a type of sudden unexpected infant death (SUID). Other types of SUID include infant deaths due to suffocation, asphyxia, poisoning, undetected metabolic or cardiac disorders, hypothermia and hyperthermia, as well as some abuse and neglect cases. This is this case definition that local review teams use to determine if an infant's death occurred suddenly and unexpectedly in children younger than one year of age while not in the care of a medical professional. For these deaths, manner and cause of death may not be immediately obvious prior to investigation.

The American Academy of Pediatrics updated recommendations to ensure safe sleep environments for infants. These recommendations include:

1. Encouraging mothers to breastfeed their infant at least until the infant is 6 months old, which may lower the risk of unexpected infant deaths.
2. Ensure that your baby receives all recommended vaccines, which evidence suggests reduces the risk of sudden unexpected infant deaths.
3. Keep soft objects or loose bedding out of the crib, including bumper pads , pillows and toys.
4. Have your baby sleep in the same room as the parents, but not in the same bed.
5. Always place your baby to sleep on his/her back for sleep. Additional information regarding the updated recommendations can be found at http://HealthyChildren.org.

The Arizona Perinatal Trust is a private-public partnership among hospitals, health care professionals, and state agencies throughout Arizona, committed to an effective regionalized perinatal health care system. This organization designates hospitals based on the maternal and neonatal care the facility is capable of delivering. Parents watch how nurses and health care professionals handle their newborn so it is important that health care staff model the right behaviors. This can be ensured by having safe sleep policies in place.

Recommendation to the Arizona Perinatal Trust: Continue to evaluate the safe sleep practices and safe sleep education programs for parents in reviews and site visits of all Arizona birthing hospitals.

Recommendation to Health Care Providers: During health care visits, ask parents about their infant's sleep environment, and provide information on American Academy of Pediatrics' recommendations for safe sleep practices.

Recommendation to Parents and Caregivers: Parents and caregivers of infants need to follow the recommendations on safe sleep from the American Academy of Pediatrics.

To Prevent Deaths due to Motor Vehicle Crashes

Primary seatbelt laws are important not only for raising adult safety belt use, but also for increasing the number of children who are protected by occupant restraints. Research shows that when adults buckle up, 87 percent of children get buckled up too. Arizona's secondary seat belt law does not allow law enforcement officers to stop and cite a driver for non-use of a seat belt unless the driver has committed another offense. Seventy-one percent of the child deaths involved in motor vehicle crashes in 2010 involved a vehicle occupant old enough to have been wearing a seat belt and was known to have been improperly or not restrained.

Recommendation to the Arizona Legislature: 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. This has already been enacted in four Arizona Tribal Nations.

Arizona is one of only three states without a booster seat law. Children aged 4 to 7 years in states with booster seat laws were 39 percent more likely to be reported being appropriately restrained than were children in other states (Children's Hospital of Philadelphia). Booster seats are for older children who have outgrown their forward-facing child safety seats. Children should stay in a booster seat until adult seat belt fits correctly, usually when a child reaches 4'9" in height and is between 8 and 12 years of age.

Recommendation to the Arizona Legislature: Enact legislation that requires the use of booster seats for children who are between five and nine years of age and are less than four feet, nine inches in height.

To Prevent Home Safety-Related Deaths

In 2010, 155 children died in or around the home. Lack of supervision was a preventable factor that was identified in 42 percent of the deaths. Supervision may be direct and constant, intermittent or focused on an area of play space. The type of supervision is dependent upon the activity and location as well as the age and skill of the child. As an example, proper supervision of a young non-swimmer requires the supervising adult to be within an arm's length to provide "touch supervision."

Recommendation to Arizona Drowning Prevention Programs: Drowning prevention programs should emphasize "touch supervision" to prevent child drowning.

Pool fencing is an important prevention strategy for decreasing the risk of drowning in swimming pools when children are not supposed to have access to the water. Compared with no fencing, installation of 4-sided fencing that isolates the pool from the house and yard has been shown to decrease the number of pool-immersion injuries among young children by more than 50 percent.

Recommendation to the Arizona Legislature: Strengthen current legislation regarding pool fencing to require four-sided fencing with self-closing and self-latching gates for all backyard pools where children live or play.

Storing firearms locked and unloaded, with ammunition locked separately, can reduce the risk of injuries and deaths including suicides involving children and teens. There were 22 firearm-related child deaths in 2010 (with a majority of these among children older than 10 years of age). Only one death involved a gun that was in a locked safe, however, the child did have access to the key. Safe storage of firearms is associated with a significant decrease in firearm injuries in homes with children and teenagers, according to a study by researchers from the Harborview Injury Prevention and Research Center at the University of Washington.

Recommendation to Firearm Owners: Families with children should store all firearms unloaded, in a secure locked location. Firearms should be removed from homes where children, adolescents or caregivers have exhibited or are exhibiting signs or symptoms of substance abuse or mental illness, including depression.

Recommendation to Physicians: Continue to educate parents about gun safety by asking whether or not there are firearms in the home, how those guns are stored and the presence or absence of signs or symptoms of substance abuse or mental illness, including depression, among children, adolescents and other family members.

To Prevent Deaths due to Suicide

Improvements in the investigations of child suicides may increase review teams' abilities to identify risk factors which may lead to improved methods for addressing a child's despondency prior to suicide, giving family members, schools, caregivers and the community opportunities for intervention.

Recommendation to the Department of Health Services: Develop a Suicide Investigation Checklist for use by law enforcement when investigating child suicides.

Recommendation to the Arizona Department of Health Services Division of Behavioral Health Services: Incorporate guidance regarding the flow of information between the Regional Behavioral Health Authorities, providers and local child fatality review teams within existing contracts or policies to ensure timely coordination of information.

To Prevent Deaths due to Maltreatment

Reviews have concluded that deaths of children due to abuse or neglect are not consistently reported to Child Protective Services (CPS). Failure to report often occurs when there were no other children in the home at the time of the death. Child Protective Services' investigations of all child deaths in which there are suspicions of abuse or neglect provide critical information in the event of future reports involving the family.

Arizona Revised Statute13-3620 requires a duty to report abuse, physical injury, neglect and denial or deprivation of medical or surgical care or nourishment of minors. This statute outlines responsibilities for mandated reporters. Section A states: Any person who reasonably believes that a minor is or has been the victim of physical injury, abuse, child abuse, a reportable offense or neglect that appears to have been inflicted on the minor by other than accidental means or that is not explained by the available medical history as being accidental in nature or who reasonably believes there has been a denial or deprivation of necessary medical treatment or surgical care or nourishment with the intent to cause or allow the death of an infant who is protected under section 36-2281 shall immediately report or cause reports to be made of this information to a peace officer or to child protective services in the department of economic security, except if the report concerns a person who does not have care, custody or control of the minor, the report shall be made to a peace officer only.

Recommendation to all Arizona Law Enforcement Officers, Physicians and other Mandated Reporters: Promptly report every child death where child abuse or neglect is suspected to the Child Protective Services' Child Abuse Hotline (1-888-SOS-CHILD), even if there are no other children living in the home.

Children with special health care needs are at increased risk for maltreatment. In 2010, 16 percent of maltreated children had special health care needs (n=11).

Recommendation to Those Caring for Vulnerable Children, Especially Those With Special Health Care Needs: Promptly notify Child Protective Services' Child Abuse Hotline (1-888-SOS-CHILD) whenever there is suspicion of neglect of a child with a chronic medical, developmental, physical, emotional or behavioral condition.

Recommendation to the Arizona Legislature: Ensure adequate funding to the Arizona Department of Economic Security Division of Children, Youth and Families to support the needs of Arizona's vulnerable children in order to reduce the number of child deaths due to maltreatment.

Recommendation to the Arizona Legislature: Increase funding to the Arizona Department of Economic Security Division of Children, Youth and Families in order to reinstate child maltreatment prevention programs and reduce the caseload of Child Protective Services Specialists to meet the existing Arizona Caseload Standards.

Recommendation to the Arizona Department of Economic Security, Division of Children, Youth and Families: Improve the efficiency of the Child Protective Services hotline

which should include adequate infrastructure, including technology, to reduce wait time and abandoned calls.

Recommendation to the Arizona Department of Economic Security, Division of Children, Youth and Families: Continue to explore methods of increased communication between ADES and local child fatality review teams and subcommittees.

In October 2011, Governor Jan Brewer created the Arizona Child Safety Task Force. This group is charged with reviewing child-safety policies and recommending comprehensive reforms to improve the way in which the state oversees children under its care and investigates potential cases of abuse and neglect.

Recommendation to the Arizona Child Safety Taskforce established by Governor's executive order: Review the findings and recommendations of the Eighteenth Annual Arizona Child Fatality Review Report.

INTRODUCTION

The Arizona Child Fatality Review Program was created in 1993 (A.R.S. § 36-342, 36-3501-4) and data collection began in 1994. The state team is mandated by statute to produce an annual report summarizing the findings. The state team is also authorized to study the adequacy of existing statutes, ordinances, rules, training, and services to determine what changes are needed to decrease the number of preventable child fatalities. Further, the state team is charged with educating the public regarding the number and causes of child fatalities. By statute, the state team includes representatives from:

- Attorney General's Office
- Bureau of Women's and Children's Health in the Department of Health Services
- Division of Behavioral Health in the Department of Health Services
- Division of Developmental Disabilities in the Department of Economic Security
- Governor's Office for Children
- Administrative Office of the Courts
- Arizona Chapter of the American Academy of Pediatrics
- Medical Examiner's Office
- 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
- Unexplained Infant Death Council
- Prosecuting Attorney's Advisory Council
- Law Enforcement Officer's Advisory Council with experience in child homicide
- Association of County Health Officers
- Child Advocate not employed by the state or a political subdivision of the state
- A member of the public

Reviews of individual child deaths are conducted by 12 local child fatality review teams. These teams are located throughout the state and must include local representatives from Child Protective Services, a county medical examiner's office, a county health department, law enforcement, and a county prosecuting attorney's office. Membership also includes a pediatrician or family physician, a psychiatrist or psychologist, a domestic violence specialist, and a parent.

Child Fatality Review Process

When a child younger than 18 years of age dies in Arizona, a copy of the death certificate is sent to the appropriate Local Child Fatality Review Team. The local team coordinator or chairperson then requests relevant documents which may include the child's autopsy report, hospital records, Child Protective Services' records, law enforcement reports, and any other information that may provide insight into the death. If the child was younger than one year of age at the time of death, the birth certificate is also reviewed. Legislation requires that hospitals and state agencies release this information to the Arizona Child Fatality Review Program's local teams. Team members

are required to maintain confidentiality and are prohibited from contacting the child's family.

According to the National Center for Child Death Review (www.childdeathreview.org), there are six steps to a quality review of a child's death:

1. Share, question, and clarify all case information.
2. Discuss the investigation that occurred.
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.

Next, the local team completes a standardized Child Death Review Case Report (version 2.1) that includes extensive information regarding the circumstances surrounding the death. The case report was created by the National Center for Child Death Review.

Local Child Fatality Review Teams review deaths throughout the year and submit all reviews to the Child Fatality Review Program for inclusion in the annual report published each November. Local team coordinators as well as staff members within the Arizona Department of Health Services Bureau of Women's and Children's Health enter all submitted case reports into a confidential database created by the National Center for Child Death Review. The Arizona Department of Health Services provides professional and administrative support for the teams, and analyses of the data are completed by staff within the Bureau of Women's and Children's Health.

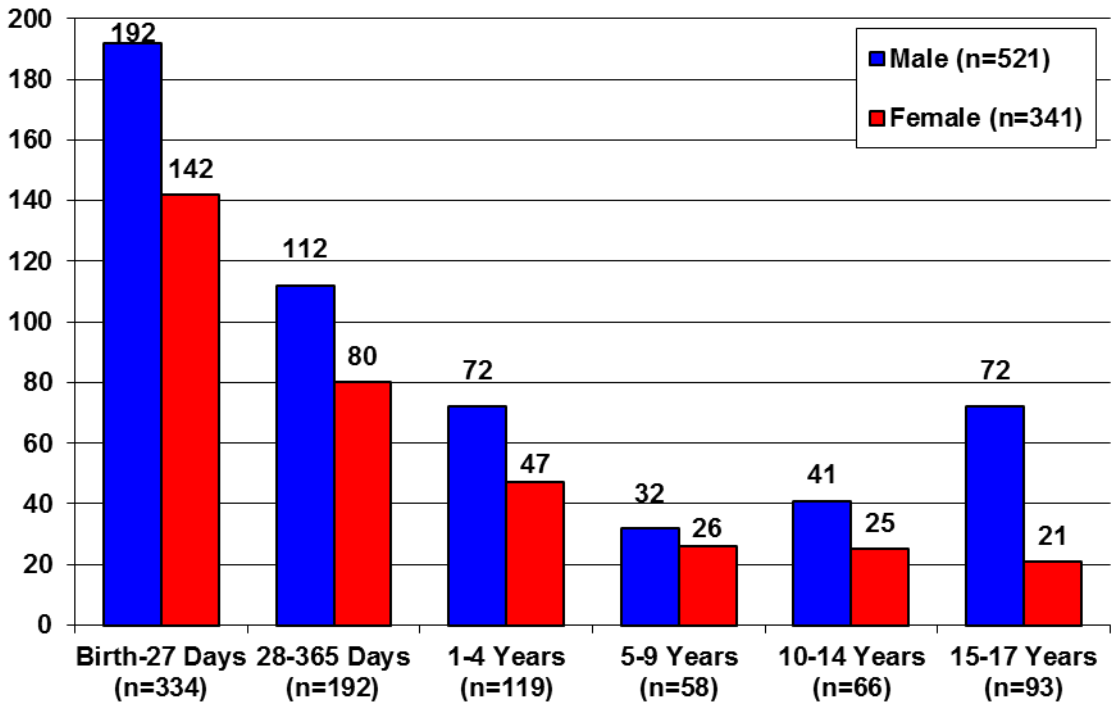
Since 2005, the Arizona Child Fatality Review Program has reviewed the death of every child who died in the state. By completing 100 percent of child death reviews, data can be compared from year to year, and trends can be identified. Where possible throughout this report, multiple years of data are presented. In cases where comparable data were not available for a given year, that year has been omitted from the chart or table.

This is the eighteenth annual report issued by the Arizona Child Fatality Review Program. Each year, the state team makes recommendations regarding the prevention of child deaths. These recommendations have been used to educate communities, initiate legislative action, and develop prevention programs. Because these reviews are completed by a multidisciplinary team of well-respected professionals, the team's recommendations are often adopted.

2010 DEMOGRAPHICS

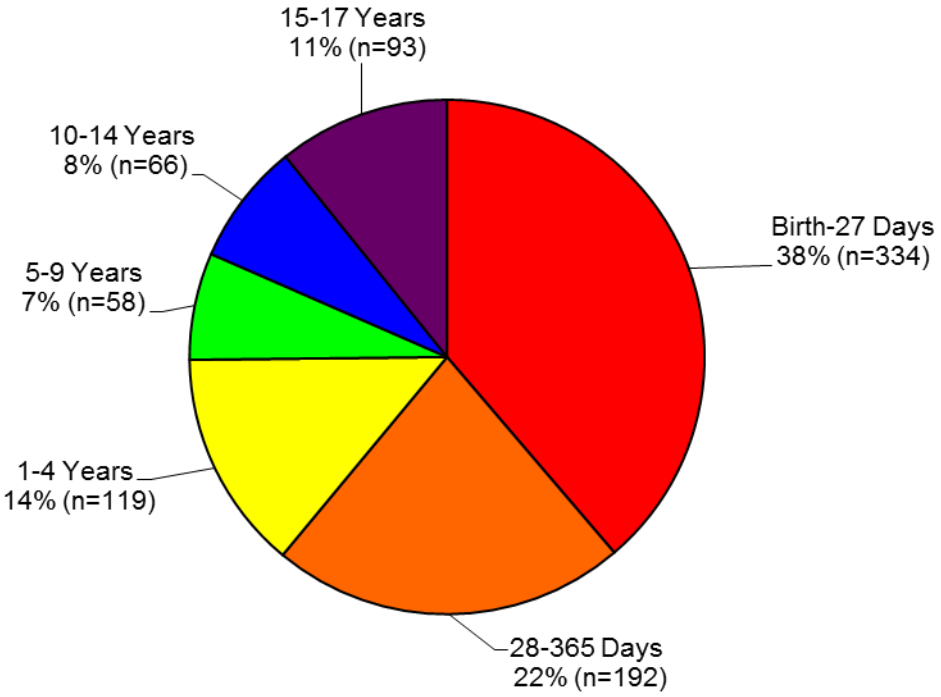
During 2010, there were 862 fatalities among children younger than 18 years of age in Arizona. This was a nine percent decrease from 2009 when 947 children died. Males accounted for 60 percent of deaths (n=521) and females accounted for 40 percent (n=341). More males died in each age group, a trend that has been observed in previous years. Figure 1 shows deaths among children by age group and sex.

Figure 1. Deaths Among Children by Age Group and Sex, Arizona, 2010 (n=862)



The largest percentage of deaths was among infants younger than 28 days (39 percent, n=334). Figure 2 shows deaths among children by age group.

Figure 2. Deaths Among Children by Age Group, Arizona, 2010 (n=862)



Compared to 2009, there was an increase in the percentage of deaths among children ages 28 through 365 days. Each of the other age groups declined or remained at the same percentage of total deaths. Table 1 shows deaths among children by age group for 2005 through 2010.

Table 1. Deaths Among Children by Age Group, Arizona, 2005-2010

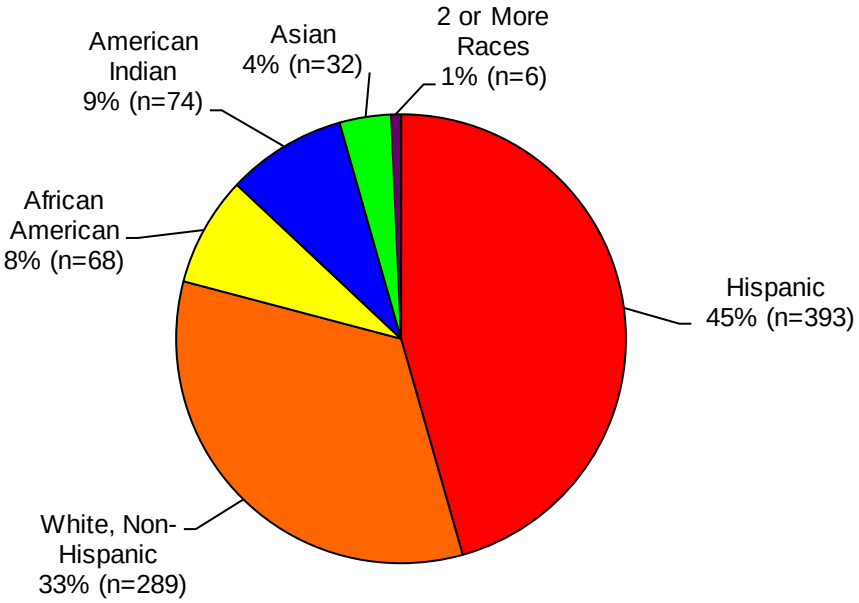
Age Group	2005		2006		2007		2008		2009		2010	
0-27 Days	434	38%	440	37%	485	42%	423	42%	366	39%	334	38%
28-365 Days	233	20%	206	18%	225	20%	211	20%	183	19%	192	22%
1-4 Years	130	11%	153	13%	113	10%	126	12%	130	14%	119	14%
5-9 Years	85	7%	64	6%	67	6%	67	6%	67	7%	58	7%
10-14 Years	86	8%	92	8%	92	8%	74	7%	73	8%	66	8%
15-17 Years	180	16%	206	18%	161	14%	137	13%	128	14%	93	11%
Total	**1,148**		**1,161**		**1,143**		**1,038**		**947**		**862**	

Mortality rates among all children declined 26 percent from 2005 through 2010, but rate decreases varied by age group. The declining mortality rate was largest among children 15-17 years of age (70.8 deaths per 100,000 population in 2005 to 34.3 deaths per 100,000 population in 2010). Table 2 shows the mortality rate among children in Arizona per 100,000 population by age group.

Table 2. Mortality Rates per 100,000 Population Among Children by Age Group, Arizona, 2005-2010						
Age Group	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
<1 Year*	738.7	665.2	692.1	640.0	595.0	600.8
1-4 Years	36.5	39.7	28.5	31.	32.0	32.3
5-9 Years	18.6	14.2	14.6	14.4	14.3	12.8
10-14 Years	19.4	20.1	20.2	16.0	15.6	14.7
15-17 Years	70.8	76.6	58.0	48.6	45.0	34.3
Total	**71.7**	**70.0**	**67.6**	**60.7**	**55.1**	**52.9**
*As population denominators are only available for children younger than one year of age, deaths in the neonatal and post-natal periods have been combined.						

Forty-five percent of child deaths in 2010 were among Hispanics (n=393), 33 percent were among Non-Hispanic Whites (n=289), eight percent were among African Americans (n=68), nine percent were among American Indians (n=74), four percent were among Asians (n=32), and 1 percent were among children with 2 or more races. Figure 3 shows deaths among children by race/ethnicity.

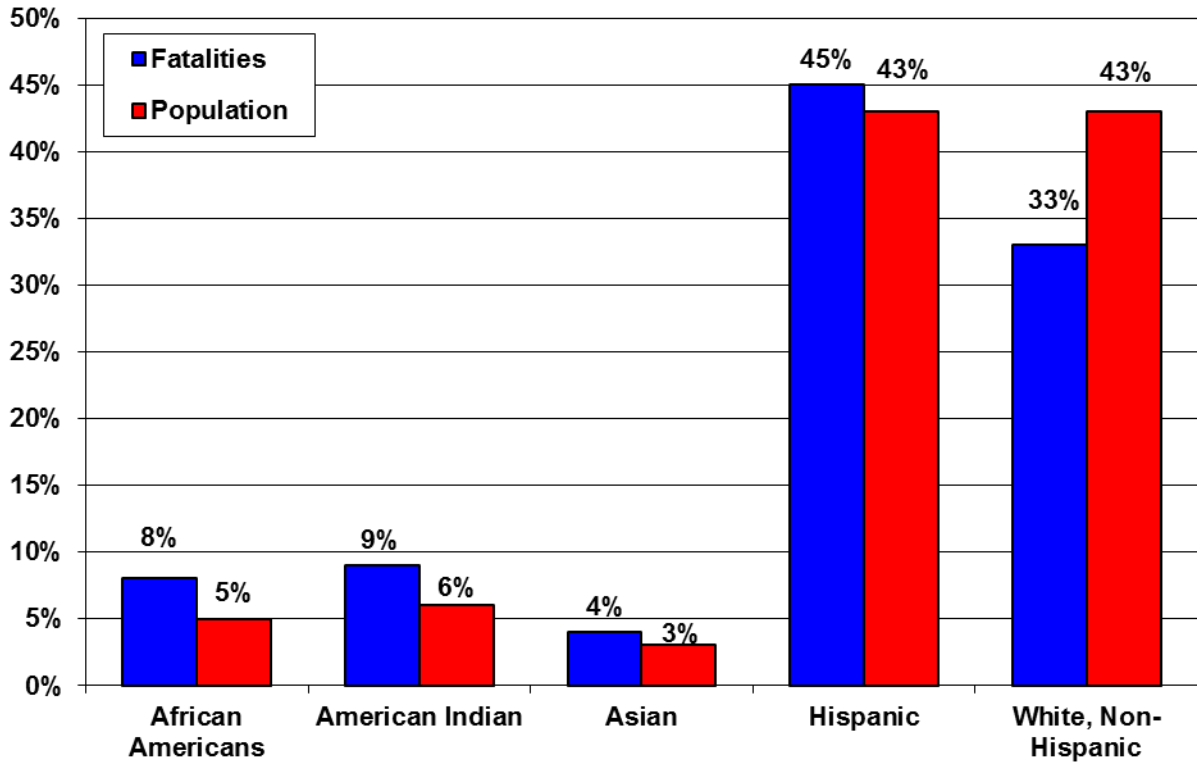
Figure 3. Deaths Among Children by Race/Ethnicity, Arizona, 2010 (n=862)



Deaths were again over-represented among four racial/ethnic groups in 2010 which is a similar distribution as in previous years. African American children comprised five percent of the population in Arizona, but eight percent of fatalities. American Indian children comprised six percent of the population and nine percent of deaths. Asian children comprised three percent of the population and four percent of deaths. Hispanic children accounted for 43 percent of the population and 45 percent of child fatalities in

2010. Figure 4 shows deaths among children by race/ethnicity compared to population percentages.

Figure 4. Deaths Among Children by Race/Ethnicity Compared to Population, Arizona, 2010 (n=862)



Compared to 2009, the percentages of child fatalities among Asian and Hispanic children increased during 2010. For all other races/ethnicities, the percentage of child deaths by race/ethnicity declined compared to 2009. Table 3 shows deaths among children by race/ethnicity for 2006 through 2010.

Table 3. Deaths Among Children by Race/Ethnicity, Arizona, 2006-2010

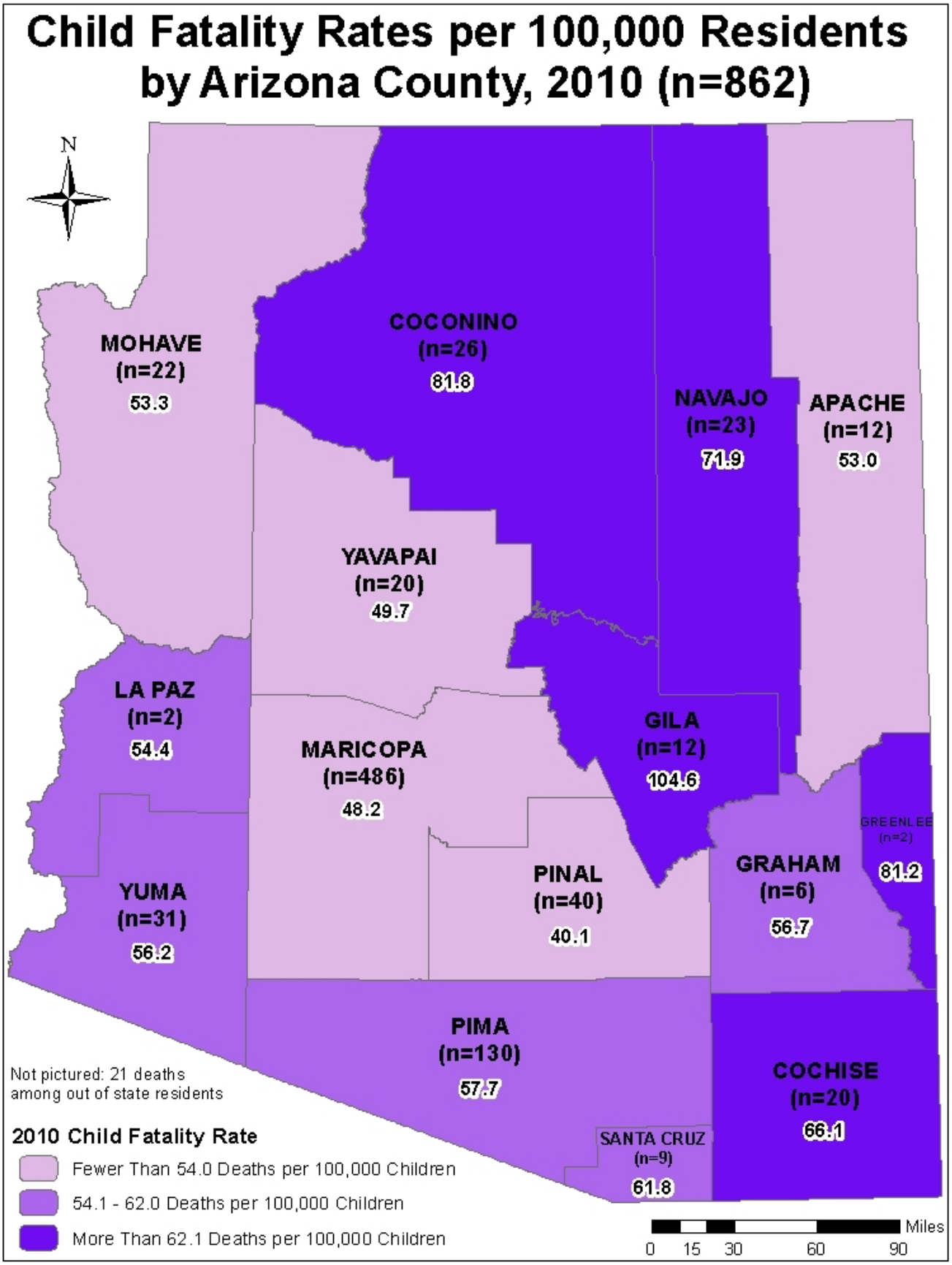
Race/Ethnicity	2006		2007		2008		2009		2010	
African American	102	9%	75	7%	102	10%	93	10%	68	8%
American Indian	111	10%	104	9%	86	8%	85	9%	74	9%
Asian	19	2%	26	2%	41	4%	22	2%	32	4%
Hispanic	505	42%	529	46%	456	44%	420	44%	393	45%
White, Non-Hispanic	424	37%	409	36%	353	34%	327	35%	289	33%
Total	**1,161**		**1,143**		**1,038**		**947**		**856***	

*Does not include category for 2 or more races.

Table 4 shows deaths among children by county of residence. There were increases in the percentages of deaths among children who resided in Coconino, Greenlee, Mohave, Navajo, Pima, and Yuma in 2010. The percentage of children who died in 2010 declined in Maricopa and Pinal Counties.

Table 4. Deaths Among Children by County of Residence, Arizona, 2007-2010								
	2007		2008		2009		2010	
County	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Apache	13	1%	20	2%	26	3%	12	1%
Cochise	27	2%	24	2%	21	2%	20	2%
Coconino	25	2%	21	2%	18	2%	26	3%
Gila	17	1%	15	1%	9	1%	12	1%
Graham	12	1%	11	1%	5	<1%	6	<1%
Greenlee	0	--	1	<1%	0	--	2	<1%
La Paz	1	<1%	5	<1%	5	<1%	2	<1%
Maricopa	648	57%	577	56%	542	57%	486	56%
Mohave	27	2%	11	1%	21	2%	22	3%
Navajo	39	3%	30	3%	22	2%	23	3%
Pima	148	13%	165	16%	130	14%	130	15%
Pinal	64	6%	52	5%	60	6%	40	5%
Santa Cruz	6	<1%	6	<1%	7	1%	9	1%
Yavapai	28	2%	17	2%	20	2%	20	2%
Yuma	35	3%	39	4%	28	3%	31	4%
Outside Arizona	53	5%	44	4%	33	3%	21	2%
Total	**1,143**		**1,038**		**947**		**862**	

Though Arizona's more populous southern counties had the highest numbers of child deaths in 2010, Arizona's northern counties had the highest stable rates of child fatalities. Coconino County had 81.8 deaths per 100,000 residents, and Navajo County had 71.9 deaths per 100,000 residents. Pinal County had the lowest stable rate of child fatalities, with 40.1 deaths per 100,000 residents. Figure 5 shows child fatality rates per 100,000 residents by county; rates are unstable for counties with fewer than 20 deaths.


Child Fatality Rates per 100,000 Residents by Arizona County, 2010 (n=862)
N
MOHAVE (n=22) 53.3
COCONINO (n=26) 81.8
NAVAJO (n=23) 71.9
APACHE (n=12) 53.0
YAVAPAI (n=20) 49.7
LA PAZ (n=2) 54.4
MARICOPA (n=486) 48.2
GILA (n=12) 104.6
GREENLEE (n=2) 81.2
GRAHAM (n=6) 56.7
PINAL (n=40) 40.1
YUMA (n=31) 56.2
PIMA (n=130) 57.7
COCHISE (n=20) 66.1
SANTA CRUZ (n=9) 61.8
Not pictured: 21 deaths among out of state residents
2010 Child Fatality Rate
Fewer Than 54.0 Deaths per 100,000 Children
54.1 - 62.0 Deaths per 100,000 Children
More Than 62.1 Deaths per 100,000 Children
Miles
0 15 30 60 90

CHILD FATALITY REVIEW FINDINGS

Cause and Manner of Child Fatalities

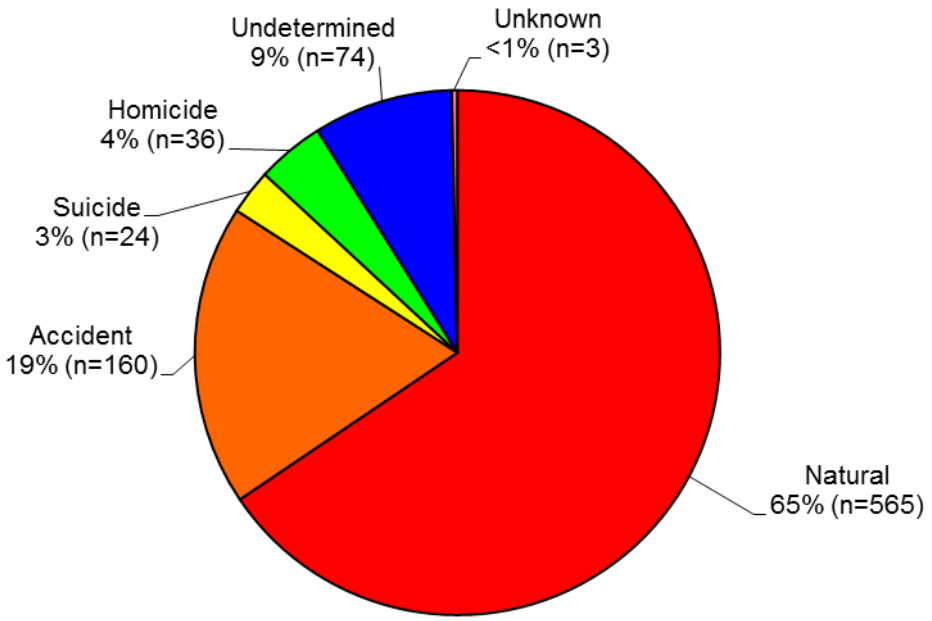
Cause of death refers to the injury or medical condition that resulted in death (e.g. firearm-related injury, pneumonia, cancer). Manner of death is not the same as cause of death, but specifically refers to the intentionality of the cause. For example, if the cause of death was a firearm-related injury, 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. Manners of death include:

- natural (e.g., cancer)
- accident (e.g., unintentional car crash)
- homicide (e.g., assault)
- suicide (e.g., self-inflicted intentional firearm injury)
- undetermined

In addition to reviewing medical examiner reports, Child Fatality Review Teams also review records from hospitals, emergency departments, law enforcement, Child Protective Services, and other sources. As a result of this comprehensive, multidisciplinary approach, the teams' determinations of cause and manner sometimes differ from those recorded on the death certificates. In the sections that follow, deaths are counted once for each applicable section based upon the teams' determination 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, substance use, and maltreatment fatalities.

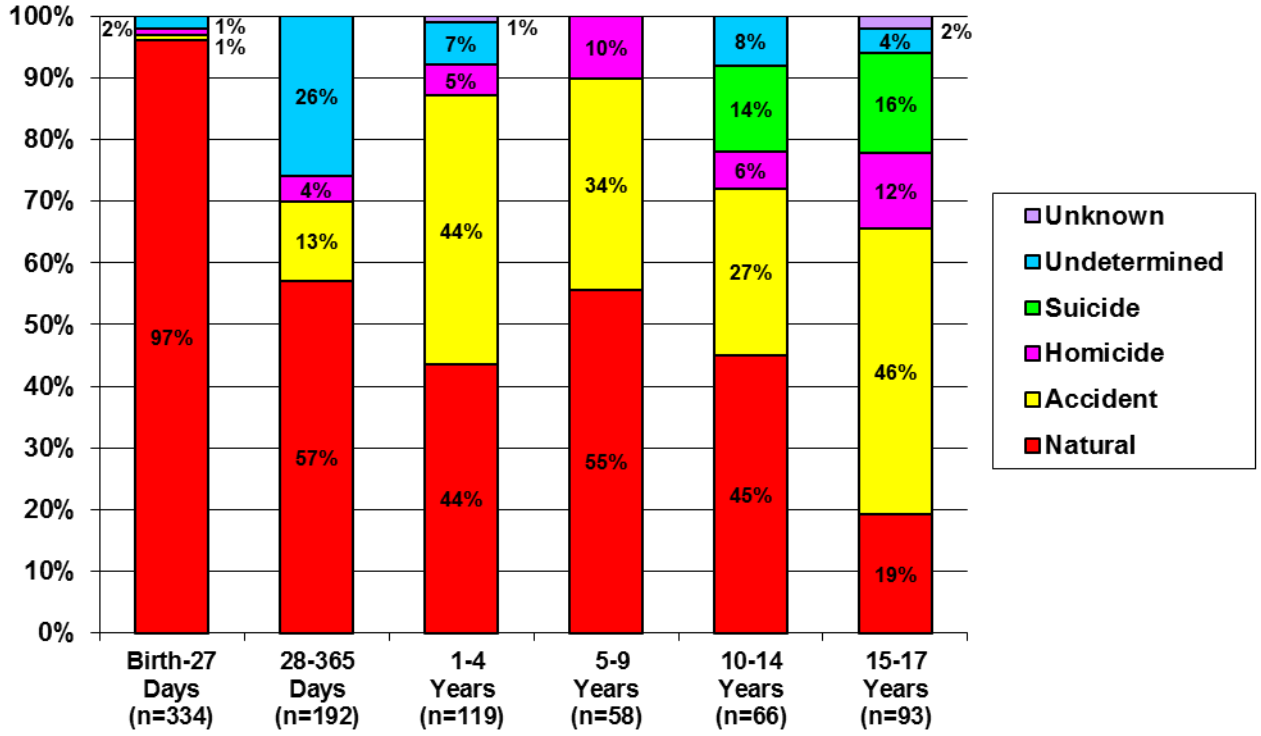
Natural deaths accounted for 65 percent of all child deaths during 2010 (n=565), 19 percent of child deaths were accidents (n=160), four percent were homicides (n=36), three percent were suicides (n=24), and nine percent were of undetermined manner (n=74). There were three deaths of unknown manner in 2010. Deaths are listed as having an undetermined manner or cause of death if a definitive manner or cause cannot be determined by the review team following review of all available information pertaining to the death. Deaths are listed as having an unknown manner if review information was not available to the review team. Figure 6 shows deaths among children by manner.

Figure 6. Deaths Among Children by Manner, Arizona, 2010 (n=862)



The distribution of deaths by manner varied by age group, with the percentage of natural deaths in each age group diminishing over the course of childhood. Deaths among infants were due primarily to natural causes, while accidental deaths were more common among older children. Suicides occurred only among the two older age groups, and homicides occurred in all age groups. Figure 7 shows manner of child deaths by age group and manner.

Figure 7. Percentage of Child Deaths by Age Group and Manner, Arizona, 2010 (n=862)



The most common causes of death varied by age group, though medical causes were the leading cause of death in each age group. Table 5 shows the five most common causes of death for each age group, as well as the percent of all child deaths occurring within each age group.

Table 5. Leading Causes of Death by Age Group, Arizona, 2010							
Rank	**0-27 Days 39%, n=334**	**28-365 Days 22%, n=192**	**1-4 Years 14%, n=119**	**5-9 Years 7%, n=58**	**10-14 Years 8%, n=66**	**15-17 Years 11%, n=93**	**All Deaths 100%, n=862**
1	Prematurity 54%, n=180	Other Medical Condition 30%, n=57	Other Medical Condition 39%, n=46	Other Medical Condition 53%, n=31	Other Medical Condition 44%, n=29	Other Medical Condition 20%, n=19	Other Medical Condition 28%, n=241
2	Congenital Anomaly 24%, n=81	Undetermined 29%, n=56	Drowning 18%, n=22	Transport 17%, n=10	Transport 18%, n=12	Transport 19%, n=18	Prematurity 23%, n=197
3	Other Medical Condition 19%, n=64	Congenital Anomaly 13%, n=25	Transport 16%, n=19	Firearm 9%, n=5	Firearm 12%, n=8	Poisoning 17%, n=16	Congenital Anomaly 14%, n=118
4	Undetermined 2%, n=6	Suffocation 11%, n=22	Undetermined 5%, n=5	Drowning 7%, n=4	Hanging 11%, n=7	Hanging 12%, n=11	Undetermined 9%, n=74
5	Accident 1%, n=2	Prematurity 9%, n=17	Blunt Force Trauma 3%, n=4	Fire/Burn Fall/Crush 3% each, n=2	Undetermined 5%, n=3	Firearm 8%, n=7	Transport 7%, n=61

The percentage of deaths due to accidents increased during 2010, and the percentages of natural deaths and homicides decreased, while the percentage of suicides remained the same. Table 6 shows deaths among children by manner for 2006 through 2010.

Table 6. Deaths Among Children Birth Through 17 Years by Manner, Arizona, 2006-2010										
Manner	**2006**		**2007**		**2008**		**2009**		**2010**	
Natural	743	64%	769	67%	702	68%	641	68%	565	66%
Accident	270	23%	227	20%	168	16%	165	17%	160	19%
Undetermined	37	3%	53	5%	73	7%	63	7%	74	9%
Homicide	63	5%	66	6%	60	6%	51	5%	36	4%
Suicide	48	4%	28	2%	35	3%	27	3%	24	3%
Total	**1,161**		**1,143**		**1,038**		**947**		**859***	
*Does not include deaths of unknown manner (n=3).										

In 2010, there were 359 deaths due to medical conditions, 197 deaths due to prematurity, and 61 deaths due to motor vehicle crashes and other types of transportation. There were 22 firearm-related deaths and 29 deaths due to suffocation. There were 33 drowning deaths in 2010. There were 11 deaths due to exposure, and six of these children died of hyperthermia while crossing the Mexico-United States border. Table 7 shows deaths among children by cause and manner.

Table 7. Deaths among Children Birth Through 17 Years by Cause and Manner, Arizona, 2010 (n=862)							
Cause	**Natural**	**Accident**	**Suicide**	**Homicide**	**Undetermined**	**Unknown**	**Total**
Medical*	354	0	0	0	3	2	**359**
Prematurity	197	0	0	0	0	0	**197**
Transport	0	60	0	1	0	0	**61**
Firearm	0	2	6	13	1	0	**22**
Suffocation	0	23	1	0	1	0	**25**
Drowning	0	32	0	0	1	0	**33**
SIDS	1	0	0	0	0	0	**1**
Blunt Force Trauma	0	0	0	11	0	0	**11**
Hanging	0	2	16	0	1	0	**19**
Undetermined	13	0	0	0	60	1	**74**
Other**	0	2	0	1	1	0	**4**
Poisoning	0	15	0	0	3	0	**18**
Fire/Burn	0	6	0	0	0	0	**6**
Exposure	0	9	0	2	0	0	**11**
Fall/Crush	0	3	0	0	1	0	**4**
Other Injury	0	6	1	8	2	0	**17**
Total	**565**	**160**	**24**	**36**	**74**	**3**	**862**

*Excluding SIDS and prematurity.
** Other includes other medical and other non-medical causes of death.

The percentages of deaths due to medical causes, suffocation, and those of an undetermined cause increased in 2010, and the percentages of child deaths due to prematurity and motor vehicle and other transportation deaths declined. Table 8 shows deaths among children by cause for 2007 through 2010.

Table 8. Deaths Among Children Birth Through 17 Years by Cause, Arizona, 2007-2010								
Cause	**2007**		**2008**		**2009**		**2010**	
Medical*	420	37%	420	40%	372	39%	359	42%
Prematurity	321	28%	271	26%	241	25%	197	23%
Transport	122	11%	82	8%	82	9%	61	7%
Undetermined	34	3%	59	6%	57	6%	74	9%
Firearm	48	4%	49	5%	32	3%	22	3%
Drowning	23	2%	29	3%	35	4%	33	4%
SIDS	37	3%	20	2%	28	3%	1	<1%
Suffocation	27	2%	21	2%	17	2%	25	3%
Hanging	13	1%	21	2%	20	2%	19	2%
Other	33	3%	14	1%	16	2%	21	2%
Poisoning	24	2%	14	1%	17	2%	18	2%
Blunt Force Trauma	18	1%	16	1%	13	1%	11	1%
Fall/crush	9	1%	9	1%	7	1%	4	<1%
Exposure	8	1%	9	1%	7	1%	11	1%
Fire/burn	6	1%	4	1%	3	<1%	6	<1%
Total	**1,143**		**1,038**		**947**		**862**	

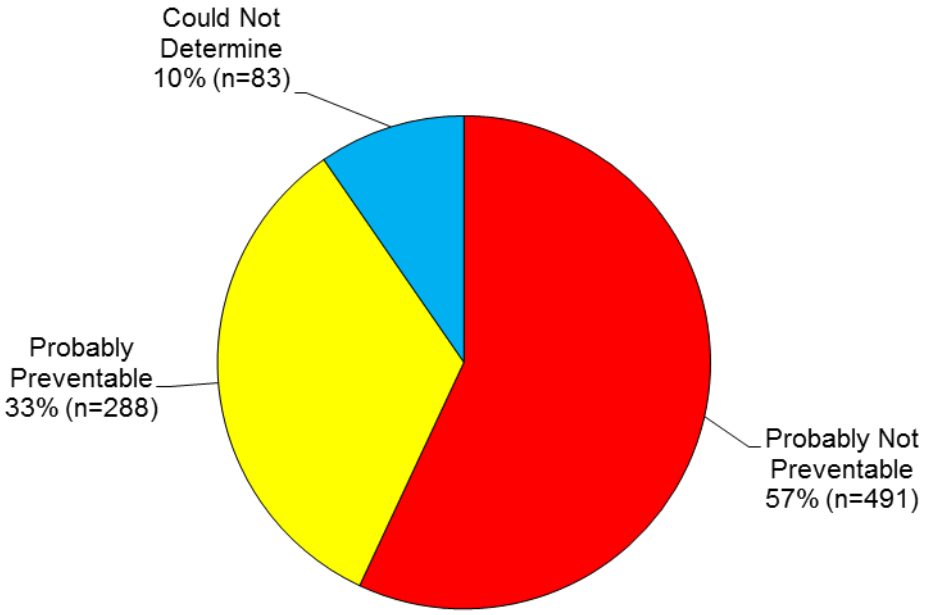
*Excluding SIDS and prematurity.

PREVENTABILITY

The child fatality review process in Arizona is grounded in the principles of public health and is focused on the prevention of all child deaths. Child Fatality Review Teams consider a child's death preventable if something could have been done by an individual, such as the caregiver or supervisor, or by the community as a whole to prevent the death. The determination of preventability for an individual case is a consensus decision by the local team made after discussing and reviewing all available data regarding the circumstances of a child's death. In some cases, there is insufficient information available to determine preventability or the team cannot reach consensus on preventability. In 2010, Child Fatality Review Teams determined that 288 child deaths were probably preventable (33 percent), 491 child deaths (57 percent) were probably not preventable, and in 10 percent of the child deaths, the teams could not determine preventability (n=83).

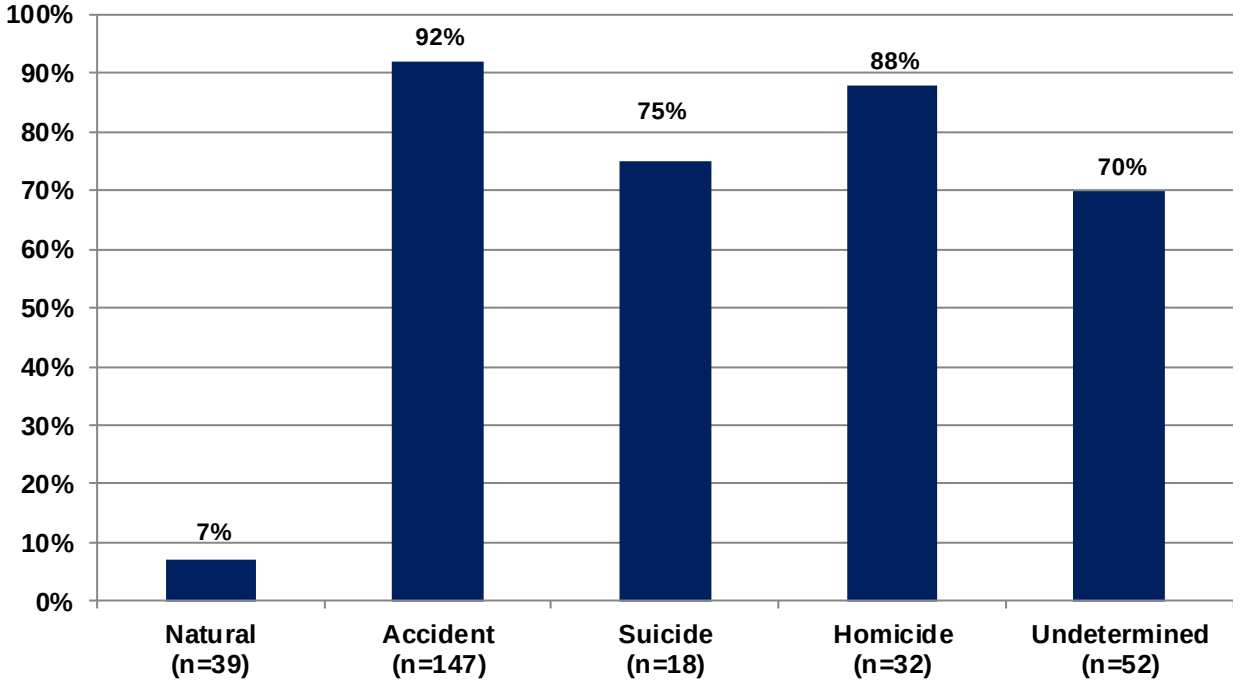
During the review of each child's death, teams identify factors believed to have contributed to the death. Although the presence of a contributing factor typically led to the determination that a death was preventable, this was not always the case. For example, the team may have concluded that an unsafe sleep environment (e.g., infant sleeping on an adult bed) was a contributing factor in an unexpected infant death. However, the team may not have had sufficient information (e.g., the child's autopsy report or an adequate death scene investigation) to determine that the death could have been prevented. Figure 8 shows deaths among children in Arizona by preventability.

Figure 8. Deaths Among Children by Preventability, Arizona, 2010 (n=862)



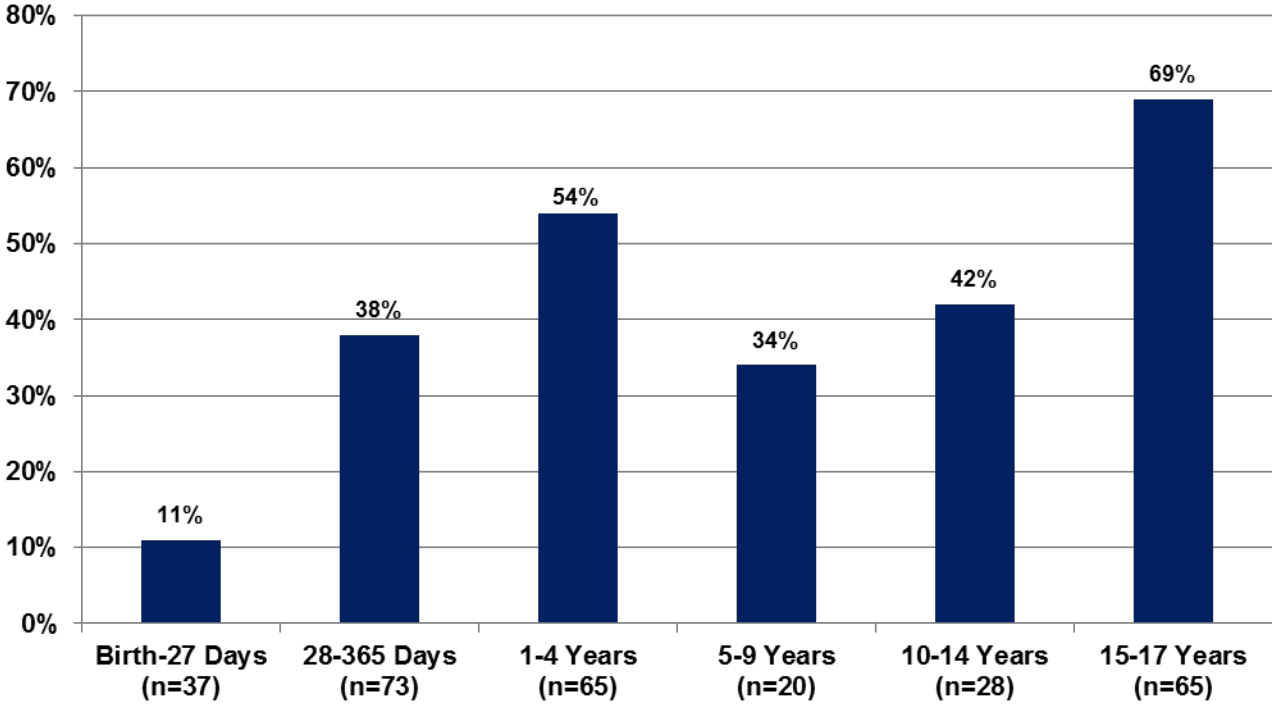
Child Fatality Review Teams deemed that 92 percent of accidents were preventable (n=147), 88 percent of homicides were preventable (n=32), and 75 percent of suicides were preventable (n=18). Seven percent of natural deaths were determined to have been preventable (n=39). Figure 9 shows preventable deaths by manner.

Figure 9. Percentage of Preventable Deaths Among Children by Manner, Arizona, 2010 (n=862)



Preventability also varied by age group. Children younger than one year of age had the lowest percentage of preventable deaths (11 percent, n=37). The highest percentage of preventable deaths was among children ages 15 through 17 years of age (69 percent, n=65). Figure 10 shows preventable deaths among children by age group.

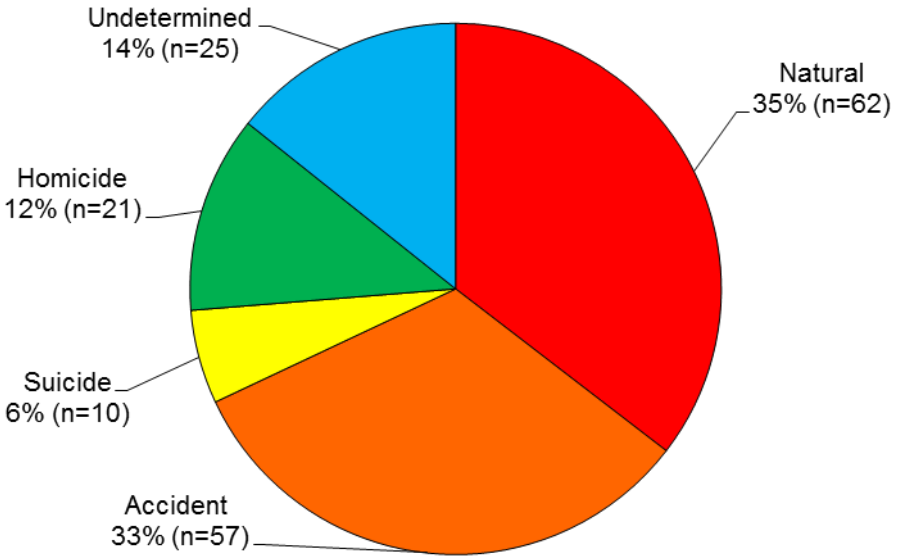
Figure 10. Percentage of Preventable Deaths Among Children by Age Group, Arizona, 2010 (n=862)



SUBSTANCE USE

Substance use (including illegal drugs, prescription drugs, and/or alcohol) was involved in 175 child deaths in Arizona during 2010, which accounted for 20 percent of all child deaths. In 2009, substance use was involved in 19 percent of all child deaths (n=182). Among the 175 child deaths involving drugs and/or alcohol, 35 percent were determined to be natural deaths (n=62) and 33 percent were of an accidental manner (n=57). Figure 13 shows the distribution of child deaths involving drugs and/or alcohol by manner of death.

Figure 13. Deaths Among Children Involving Drugs and/or Alcohol by Manner Arizona, 2010 (n=175)



While 35 percent of deaths involving substance use were determined to be natural deaths, only 11 percent of all natural deaths involved substance use (n=62). Similarly, substance use contributed to 36 percent of total accidents (n=57), 34 percent of deaths of undetermined manner (n=25), 58 percent of homicides (n=21), and 42 percent of suicides (n=10).

Thirteen percent of prematurity deaths involved the use of drugs and/or alcohol (n=26). Among transport deaths, 31 percent involved the use of alcohol and/or drugs (n=37). Of the 18 poisoning deaths, 94 percent involved the use of alcohol and/or drugs. Table 10 shows child deaths involving drugs and/or alcohol by cause and manner in 2010.

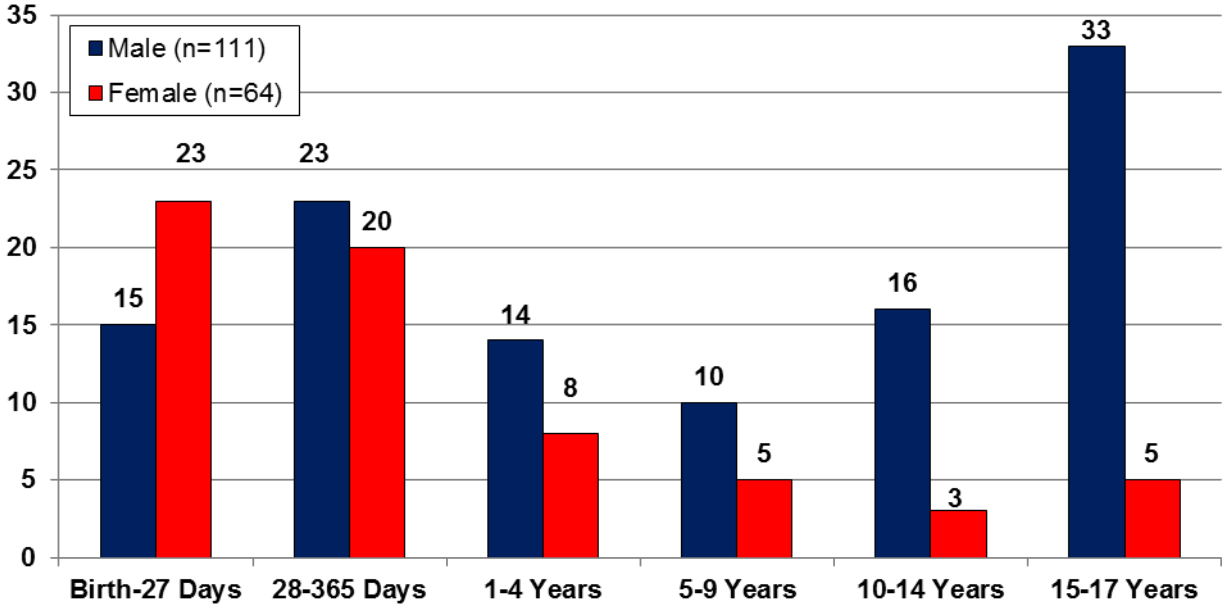
Table 10. Child Deaths Involving Drugs and/or Alcohol by Cause and Manner, Arizona, 2010 (n=175)						
Cause	**Accident**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Medical*	0	0	0	35	2	**37**
Prematurity	0	0	0	26	0	**26**
Transport	17	1	0	0	0	**18**
Firearms	0	8	4	0	0	**12**
Suffocation	10	0	1	0	1	**12**
Drowning	8	0	0	0	1	**9**
Blunt force trauma	0	7	0	0	0	**7**
Hanging	0	0	4	0	0	**4**
Undetermined	0	0	0	1	18	**19**
Poisoning	15	0	0	0	2	**17**
Fire/Burn	5	0	0	0	0	**5**
Exposure	1	0	0	0	0	**1**
Other	1	5	1	0	1	**8**
Total	**57**	**21**	**10**	**62**	**25**	**175**
*Excluding SIDS and prematurity						

Alcohol was involved in 65 child deaths in 2010, which is an increase from 2009 in which alcohol was involved in 51 child deaths. Marijuana was involved in 70 child fatalities in 2010, an increase from 2009 where marijuana was involved in 67 deaths. All fatalities involving marijuana in 2010 are considered illegal drug use, since Arizona's Medical Marijuana Program did not go into effect until April 14, 2011. In 2010, methamphetamine was involved in 33 deaths, 15 fatalities involved cocaine and 22 involved opiates. Table 11 shows substances involved in child deaths for 2007 through 2010.

Table 11. Substances Involved in Deaths Among Children, Arizona, 2007-2010								
Substance*	**2007**		**2008**		**2009**		**2010**	
Alcohol	80	7%	76	7%	51	5%	65	7%
Marijuana	76	7%	57	5%	67	7%	70	8%
Methamphetamine	48	4%	39	4%	53	6%	33	4%
Cocaine	31	3%	21	2%	17	2%	15	2%
Opiates	16	1%	18	2%	24	3%	22	3%
*More than one substance could have been involved in a single death								

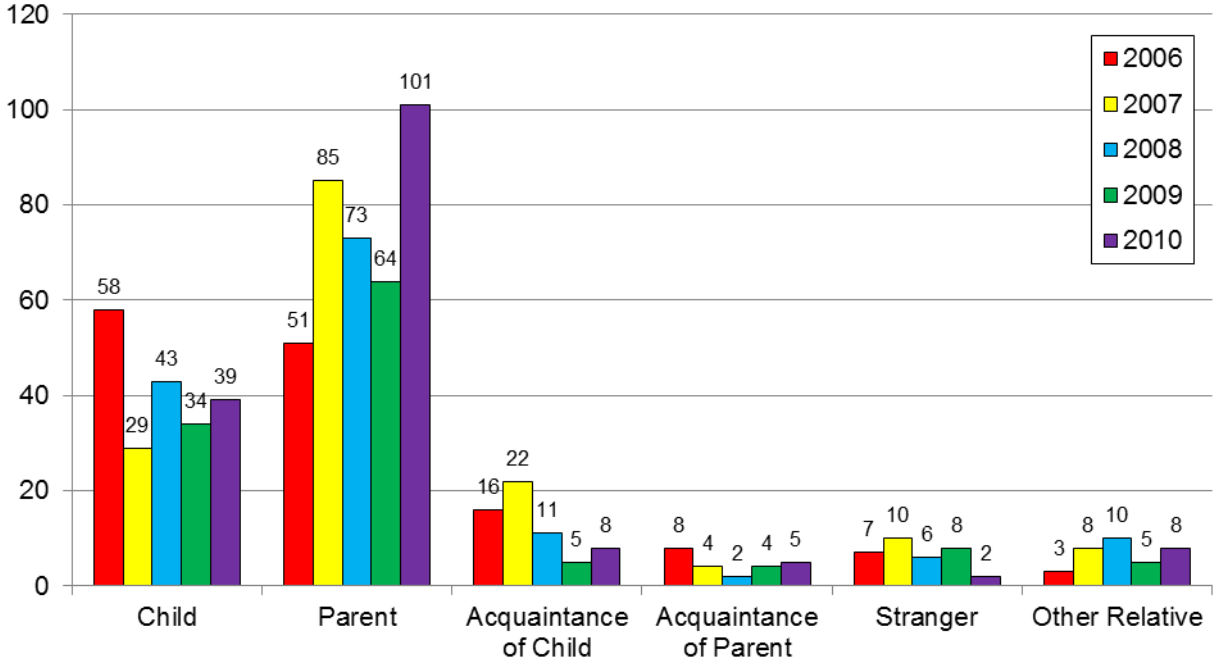
Drugs and/or alcohol were determined to have been involved in child deaths among males and females in all age groups with males being disproportionately high in ages greater than 27 days. Males of all ages accounted for 63 percent of all substance use-related deaths (n=111). Figure 14 shows child deaths involving substance use by sex and age group.

Figure 14. Child Deaths Involving Substance Use by Sex and Age Group, Arizona, 2010 (n=175)



For each child death involving substance use, the individual who used the substance may have been the parent, child, an acquaintance of the child or family, a relative, or a stranger. For example, if the child was a passenger in a car hit by an intoxicated driver of another car, then the individual who used the substance was classified as “stranger.” In some deaths, more than one individual may have been using drugs and/or alcohol. For 101 deaths in 2010, the user was the parent, and for 39 deaths, the user was the child. In some deaths, more than one individual may have been using drugs and/or alcohol. Figure 15 shows child deaths involving drugs and/or alcohol by substance user for 2006 through 2010.

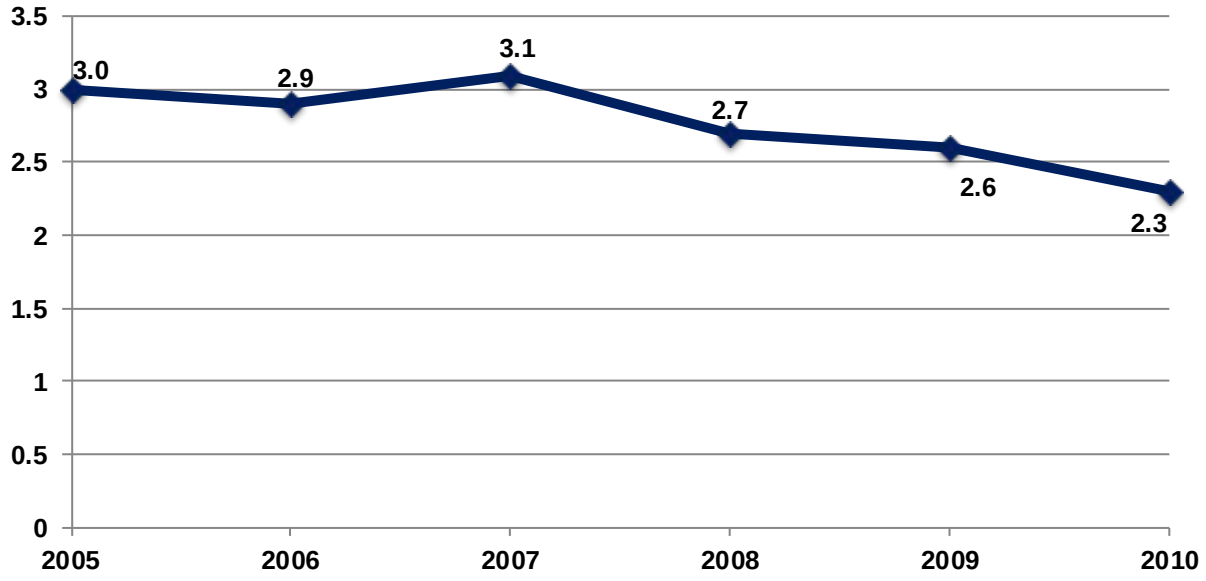
Figure 15. Child Deaths Involving Drugs and/or Alcohol by Substance User, Arizona, 2006-2010



PREMATURITY

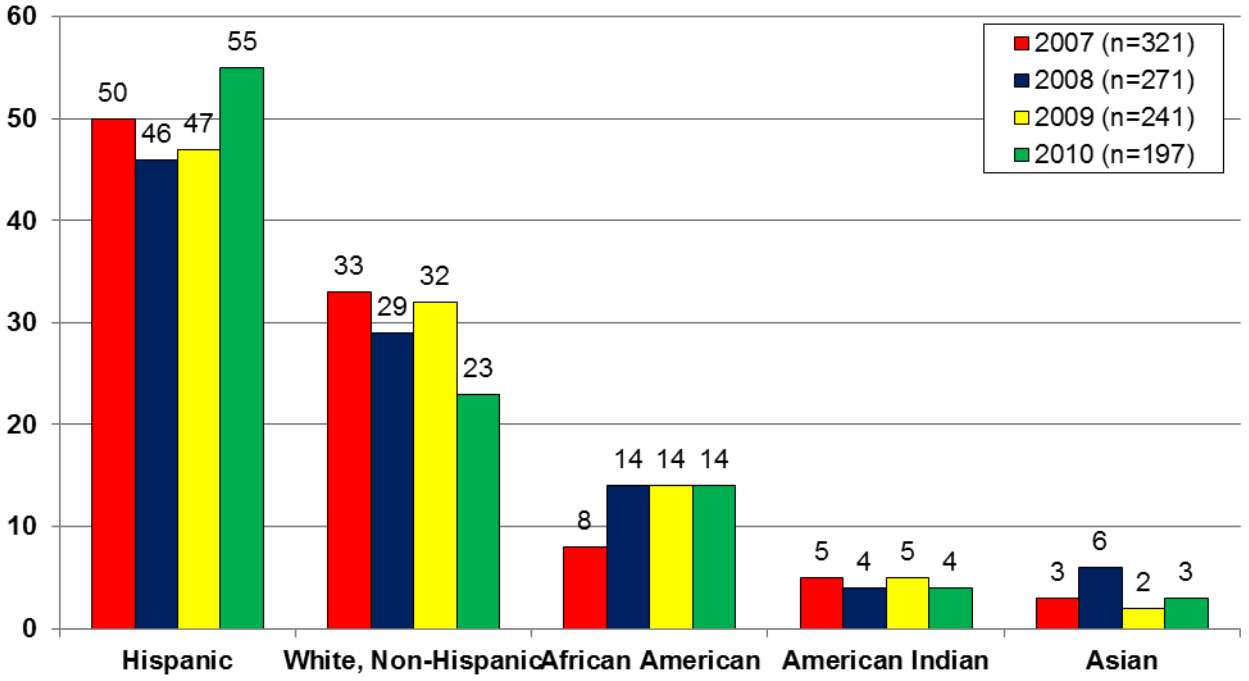
Local teams consider a child's cause of death to be prematurity if the infant was born prior to 37 weeks gestation and had no other underlying cause of death. Infants born prior to 37 weeks gestation whose death was attributed to congenital anomalies or other medical conditions were not included in the prematurity category. In 2010, there were 197 deaths due to prematurity, which accounted for 23 percent of all child deaths. There were 241 deaths due to prematurity in 2009 (25 percent of all child deaths). The rate of deaths due to prematurity in 2010 was 2.3 deaths per 1,000 live births. This was a decline from 2009 when the rate was 2.6 deaths per 1,000 live births. Figure 11 shows the rates of child deaths due to prematurity from 2005 through 2010.

Figure 11. Rate of Child Deaths due to Prematurity (per 1,000 live births), Arizona, 2005-2010



In 2010, 60 percent of the premature infants who died were males (n=119) and 40 percent were females (n=78). Over half of the premature infants who died were Hispanic (55 percent, n=109), 23 percent were White, Non-Hispanic (n=46), 14 percent were African American (n=27), four percent were American Indian (n=8), and three percent were Asian (n=7). In 59 cases, at least one of the parents was known to have been a first generation immigrant, including four families from Asian countries and two from Africa. The majority of infants who died whose parents were known to be first generation immigrants were Hispanic (77 percent, n=46). Figure 12 shows deaths due to prematurity by race/ethnicity for 2007 through 2010.

Figure 12. Percentage of Child Deaths due to Prematurity by Race/Ethnicity, Arizona, 2007-2010



In 2010, the majority of prematurity-related deaths were among infants who were 21 through 24 weeks gestational age (56 percent, n=110), followed by infants who were 25 through 36 weeks gestational age (23 percent, n=46). There were 20 infants who were 20 weeks or less (20 percent). For one infant, gestational age was unknown. There were 43 deaths due to prematurity among infants in multiple births (all were twins).

For one percent of deaths due to prematurity, prenatal care information was unknown to review teams (n=2). For 13 percent of the deaths, the mother reported that she did not receive any prenatal care (n=25). Seventy-one percent of mothers started prenatal care within the first trimester (n=139). For over half of the prematurity deaths, the mother was 20 through 29 years of age at the time of the birth (53 percent, n=104). Eleven percent of the mothers were 19 years of age and younger (n=31), 31 percent were 30 through 39 years of age (n=61), and three percent of mothers were 40 years of age and older (n=9). In 5 cases, the age of the mother at the time of death was unknown (2 percent).

Forty-six percent of mothers whose infants died of prematurity were insured by the Arizona Health Care Cost Containment System (AHCCCS) (n=90). Sixteen percent of mothers had less than a high school education (n=32), 49 percent completed high school (n=97), and 29 percent completed at least some college (n=58). For five percent of mothers, educational status was unknown (n=10).

For 88 percent of deaths due to prematurity, the mothers experienced pregnancy or birth-related complications which may have contributed to the death (n=173), including 115 mothers who experienced preterm labor. Nine mothers were known to have had

non-gestational diabetes. Six percent of mothers reported using illegal drugs during pregnancy (n=12), and two percent reported heavy alcohol use (n=3). Eight percent of mothers reported smoking during pregnancy (n=15). Table 9 shows risk factors for prematurity deaths.

Table 9. Risk Factors for Prematurity Deaths, Arizona, 2010		
Factor*	**Number**	**Percent**
Mother had preterm labor	115	58%
Mother had chorioamnionitis (bacterial infection)	40	20%
Mother had incompetent cervix	25	13%
Mother used drugs and/or alcohol	15	8%
Mother smoked tobacco	15	8%
*More than one factor may have been identified for each death		

SUDDEN UNEXPECTED INFANT DEATHS

Sudden infant death syndrome (SIDS) is the sudden death of an infant under age 1 that cannot be explained after a thorough investigation has been conducted, including a complete autopsy, an examination of the death scene, and a review of the clinical history. SIDS is a type of sudden unexpected infant death (SUID). Other types of SUID include infant deaths due to suffocation, asphyxia, poisoning, undetected metabolic or cardiac disorders, hypothermia and hyperthermia, as well as some abuse and neglect cases. It is this case definition that local review teams use to determine if an infant's death occurred suddenly and unexpectedly in children younger than one year of age while not in the care of a medical professional. For these deaths, manner and cause of death may not be immediately obvious prior to investigation.

Although the number of sudden unexpected infant deaths declined in 2010, these deaths comprised the same percentage of total deaths as in 2009. There were 114 unexpected infant deaths in Arizona in 2010 (13 percent of all deaths that year). Sixty-six percent of unexpected infant deaths in 2010 were among males (n=75) and 34 percent were among females (n=39).

Hispanic infants accounted for 39 percent of sudden unexpected infant deaths (n=45), Non-Hispanic Whites accounted for 32 percent (n=36), American Indians accounted for 14 percent (n=16), African Americans accounted for 11 percent (n=13), and less than one percent of cases were among Asian children (n=1).

Forty-three percent of the deaths were among infants younger than three months of age (n=49). Forty-three deaths were among infants between 3 and 5 months of age deaths (38 percent), and 22 infants who died unexpectedly were older than 6 months of age (19 percent).

For 60 deaths, teams were unable to determine the cause of death (53 percent). Twenty-three deaths were due to suffocation (20 percent). Ten were determined to have been caused by a medical condition (nine percent), ten were due to infection (nine percent). Only one death was due to SIDS (less than 1 percent). Table 31 shows sudden unexpected infant deaths by cause.

Table 31. Sudden Unexpected Infant Deaths by Cause, Arizona, 2010 (n=114)

Cause	Number	Percent
Undetermined	60	53%
Suffocation	23	20%
SIDS	1	<1%
Cardiovascular	4	4%
Pneumonia/influenza	3	3%
Other medical	10	9%
Other injury	10	9%

Total	**114**	

Investigation

Law enforcement conducted scene investigations in 74 percent of sudden unexpected infant deaths (n=84). Eighty-six percent of sudden unexpected infant deaths were referred to medical examiners' offices (n=98). Ninety-six cases received an autopsy. Of the 16 deaths that were not known to have been referred to medical examiners, most were deaths due to a natural manner (n=15).

Eighty-one children were known to have had toxicology tests performed. Seventy-five of those children tested negative for substances. Of the six children with positive toxicology results, two children tested positive for midazolam, two for diphenhydramine, one for doxyalamine, one for lorazepam, and one for acetaminophen. A child may have tested positive for more than one substance. Eighty-one children were known to have had x-rays.

Sixty-one percent of the 114 sudden unexpected infant deaths were determined by the local review teams to have been preventable (n=69). For 21 deaths, local review teams were unable to determine if the death could have been prevented. Twenty-four of the deaths were determined to probably not have been preventable (21 percent). Unsafe sleep environment was a contributing factor in 77 sudden unexpected infant deaths (68 percent), followed by lack of supervision (55 percent, n=63). Table 32 shows preventable factors for sudden unexpected infant deaths.

Table 32. Preventable Factors for Sudden Unexpected Infant Deaths, Arizona, 2010

Factor*	Number	Percent
Unsafe sleep environment	77	68%
Lack of supervision	63	55%
Drugs and/or alcohol	37	32%
Infant exposure to smoking	22	19%
*More than one factor may have been identified for each death		

Unsafe Sleep Environments

Of the 114 sudden unexpected infant deaths, 76 percent occurred in sleep environments (n=87). Seventy-seven of these environments were determined to have been unsafe. Suffocation was the cause of 23 unsafe sleep-related deaths. Only one death met all of the criteria to have been classified as a SIDS death. For 47 deaths that occurred in unsafe sleep environments, cause of death was undetermined.

Thirty-nine infants were bed sharing with adults and/or other children. Nine of the adults who were bed sharing with infants were known to have been impaired by alcohol and/or drugs. Additionally, all nine of those infants were known to have had a crib or bassinet in the home. Thirty-eight infants were sleeping in adult beds, seven were sleeping on

couches, three were sleeping in playpens, one was sleeping in a car seat and one was sleeping on a waterbed. Thirty-seven infants were put to sleep on their sides or stomachs.

Improvements in the investigations of all sudden unexpected infant deaths, including consistent completion of the Infant Death Investigation Checklist, may increase review teams' abilities to identify risk factors (such as the lack of safety approved cribs in homes).

Sudden Infant Death Syndrome (SIDS)

SIDS is the diagnosis given to the sudden death of an infant younger than one year of age that remains unexplained after a complete postmortem investigation, including autopsy, death scene investigation, and review of the child's medical history. There was one death identified as SIDS in 2010, compared to 28 deaths in 2009.

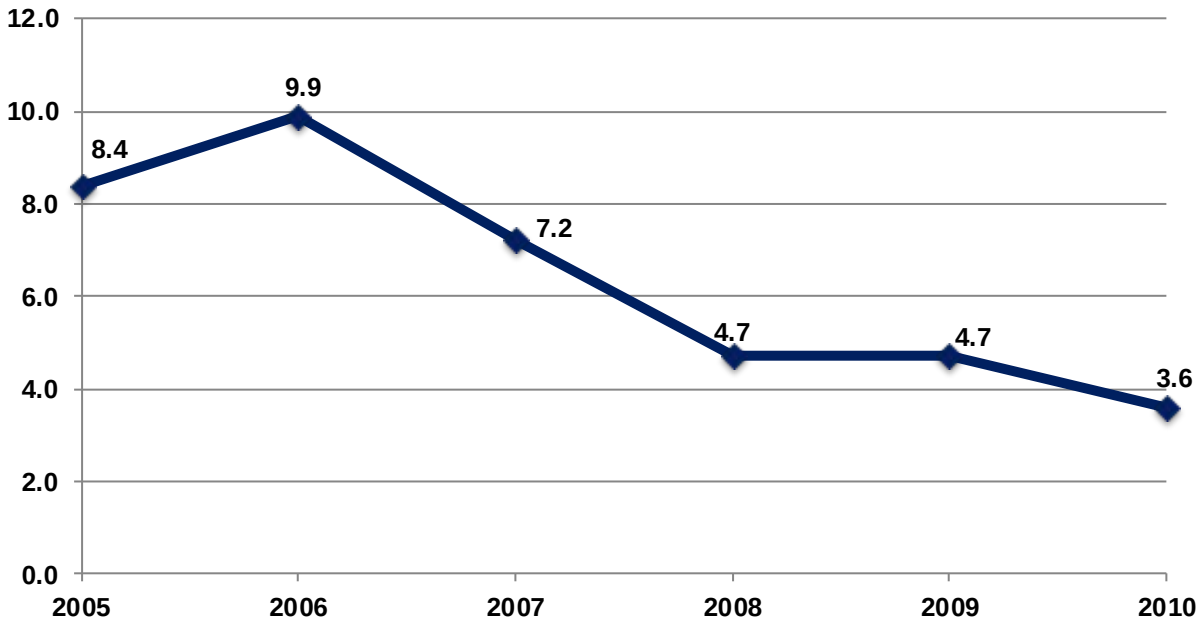
This does not mean there has been a rapid decline in the number of infants who died suddenly or unexpectedly. Among the child deaths reviewed in 2010, local teams were asked to use more stringent guidelines when classifying a death as SIDS. Therefore, there was a decrease in the number of fatalities classified as SIDS, while at the same time; there was a significant increase in the number of deaths classified as having an undetermined cause of death.

MOTOR VEHICLE CRASHES AND OTHER TRANSPORT FATALITIES

In 2010, 61 children died as the result of motor vehicle crashes and other types of transportation in Arizona (seven percent of child fatalities). Fifty-eight deaths resulted from motor vehicle-related crashes and three deaths resulted from air transport incidents.

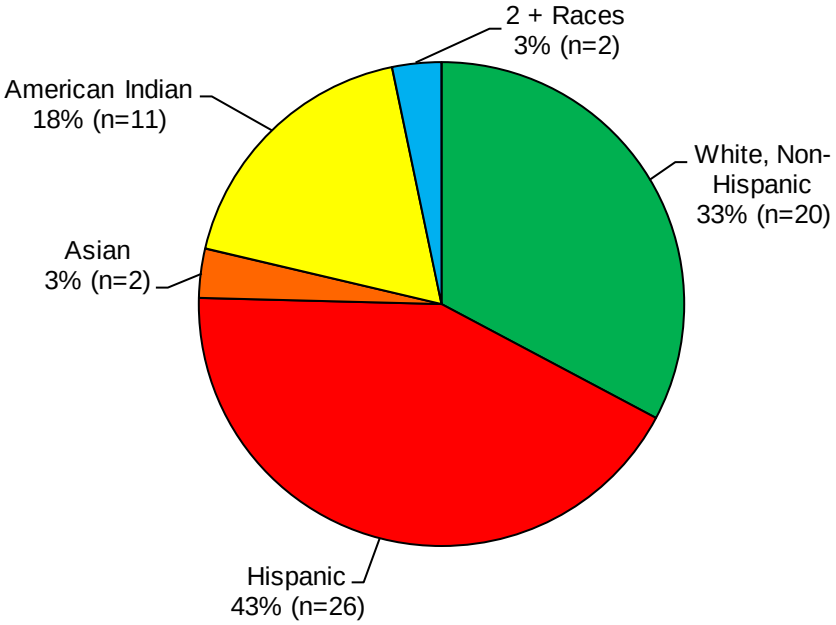
The rate of motor vehicle fatalities in 2010 was 3.6 deaths per 100,000 children, a decline of 57 percent over six years, from 8.4 deaths per 100,000 children in 2005. Figure 16 shows the rates of child deaths due to motor vehicle crashes from 2005 through 2010.

Figure 16. Rate of Child Deaths due to Motor Vehicle Crashes (per 100,000 children), Arizona, 2005-2010



The majority of transportation-related deaths in 2010 were among males (64 percent, n=39) and 36 percent were among females (n=22). Forty-three percent of the children who died were Hispanic (n=26), 33 percent were White, Non-Hispanic (n=20), 18 percent were American Indian (n=11), and six percent were other races/ethnicities (n=4). Figure 17 shows motor vehicle and other transport deaths by race/ethnicity.

Figure 17. Motor Vehicle and Other Transport Deaths by Race/Ethnicity, Arizona, 2010 (n=61)



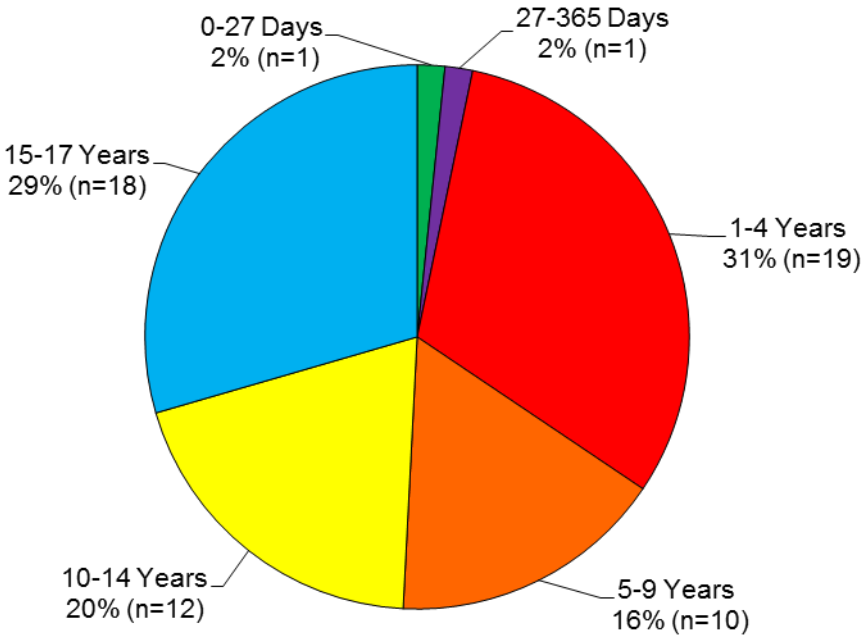
The distribution of motor vehicle and other transport deaths by race/ethnicity was similar to the distribution in 2009. Table 12 shows motor vehicle and other transport deaths among children by race/ethnicity for 2006 through 2010.

Table 12. Motor Vehicle and Other Transport Deaths Among Children by Race/Ethnicity, Arizona, 2006-2010

Race/Ethnicity	2006		2007		2008		2009		2010	
American Indian	14	11%	20	12%	15	18%	10	12%	11	18%
Hispanic	56	46%	69	42%	36	44%	37	45%	26	43%
White, Non-Hispanic	45	37%	66	40%	26	32%	31	38%	20	33%
Other	7	6%	9	5%	5	6%	4	5%	4	6%
Total	**122**		**164**		**82**		**82**		**61**	

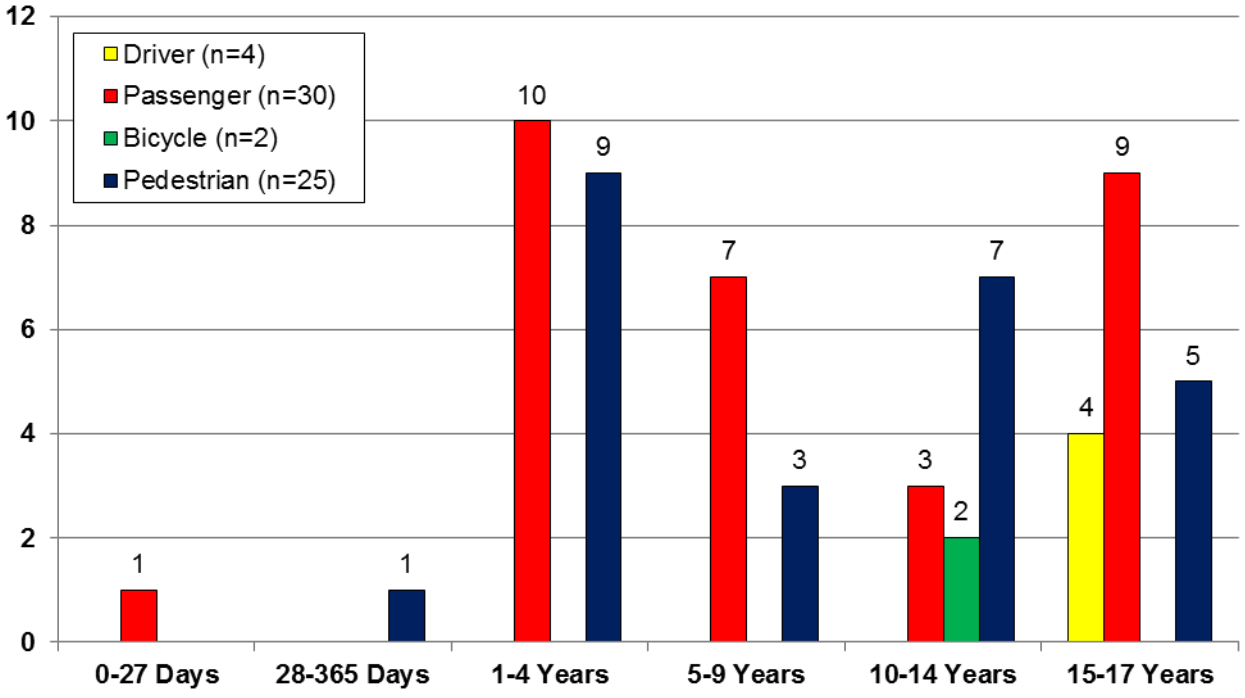
The largest percentage of motor vehicle and other transport deaths were among children ages 1 through 4 years of age (31 percent, n=19), followed by children 15 through 17 years of age (29 percent, n=18). Figure 18 shows motor vehicle and other transport deaths by age group.

Figure 18. Motor Vehicle and Other Transport Deaths by Age Group, Arizona, 2010 (n=61)



Of the 61 children who died in motor vehicles and other types of transportation, 31 were vehicle occupants, 25 were pedestrians, three were air transport passengers, and two children were riding bicycles. Among the 31 motor vehicle occupants, four children were drivers and 27 were passengers. Among the pedestrian deaths, seven children were killed due to vehicle backovers, and four more deaths were due to vehicle frontovers. All eleven children were three years of age or younger. For six children who died in motor vehicle crashes and other types of transportation, their seating position in the vehicle was unknown. Figure 19 shows motor vehicle crashes and other transport deaths by age group and location of the child.

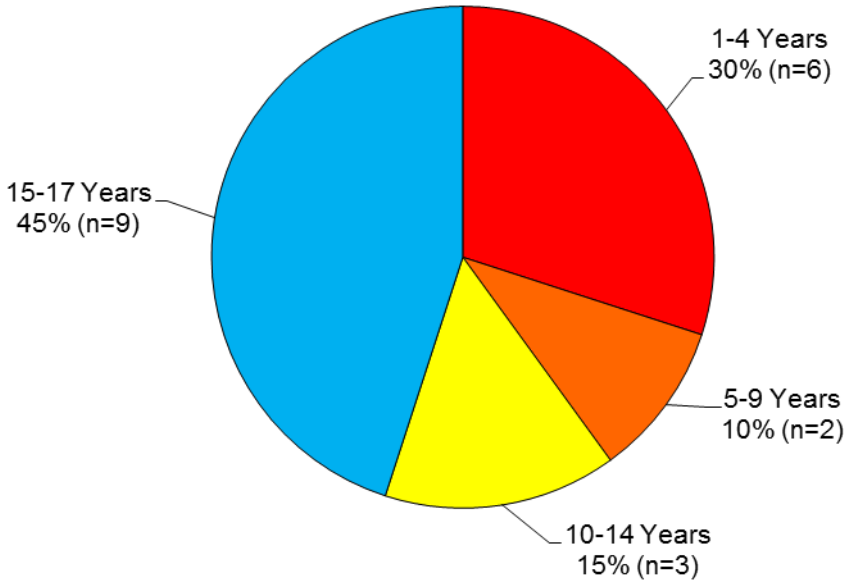
Figure 19. Motor Vehicle and Other Transport Deaths by Age Group, Arizona, 2010 (n=61)



Among the 27 motor vehicle passengers, 15 were located in the back seat, eight were in the front seat, one was riding in a truck bed, and three were in other or unknown locations. There were three additional deaths among child passengers in transit: one child was in a helicopter and two were riding in a private plane. The two children who died while riding bicycles were not wearing helmets.

Thirty-three percent of children were known to not have been properly restrained in vehicles (n=20). Nearly half of all children who were not properly restrained were ages 15 through 17 years (45 percent, n=19). Figure 20 shows improper or unknown restraint by age group.

Figure 20. Motor Vehicle and Other Transport Deaths Improper or Unknown Restraint by Age Group, Arizona, 2010 (n=20)



Among the motor vehicle and other transport deaths in 2010, there were zero deaths resulting from in utero injuries, all-terrain vehicles, or dirt bikes. In 2009, there were two, six, and two such fatalities, respectively.

Eighty-nine percent of all motor vehicle and other transport fatalities during 2010 were determined to have been preventable (n=54). Lack of or improper use of vehicle restraints was identified as a preventable factor for 20 motor vehicle crash fatalities among children (34 percent). Eighteen children died in crashes involving substance-impaired drivers, and for three of these deaths, the impaired driver was the child who died. For 17 deaths, excessive speed was a contributing factor (29 percent). Table 13 shows preventable factors for motor vehicle crash deaths among children. This table does not include factors identified for the three deaths involving air transportation.

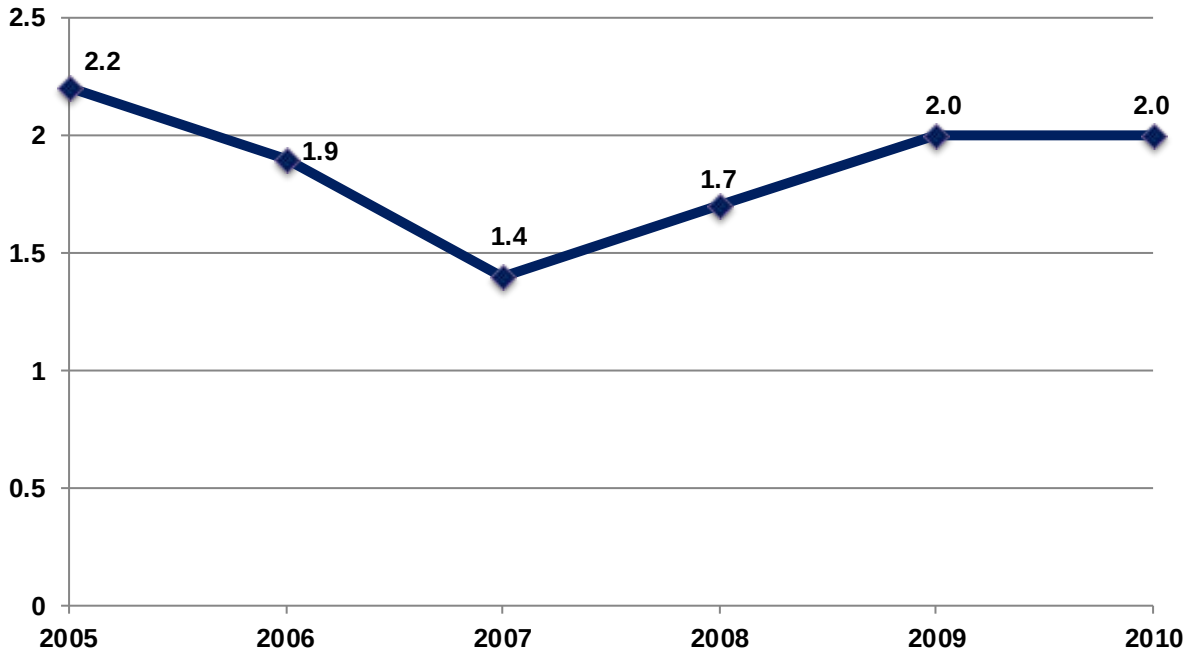
Table 13. Preventable Factors for Motor Vehicle-Related Deaths Among Children, Arizona, 2010

Factor*	Number	Percent
Lack of vehicle restraint	20	34%
Drugs and/or alcohol	18	31%
Excessive driving speed	17	29%
Reckless driving	18	31%
Driver inexperience	15	26%
Driver distraction	8	14%
Lack of helmet	2	3%
Red light running	3	5%
*More than one factor may have been identified for each death		

DROWNINGS

In 2010, there were 33 child deaths due to drowning, which accounted for four percent of all child deaths. In 2009, there were 35 deaths among children due to drowning, accounting for four percent of all child deaths in that year. The rate of drowning fatalities in 2010 was 2.0 deaths per 100,000 children, and there was no change in the rate from 2009 to 2010. Figure 21 shows the rates of child deaths due to drowning from 2005 through 2010.

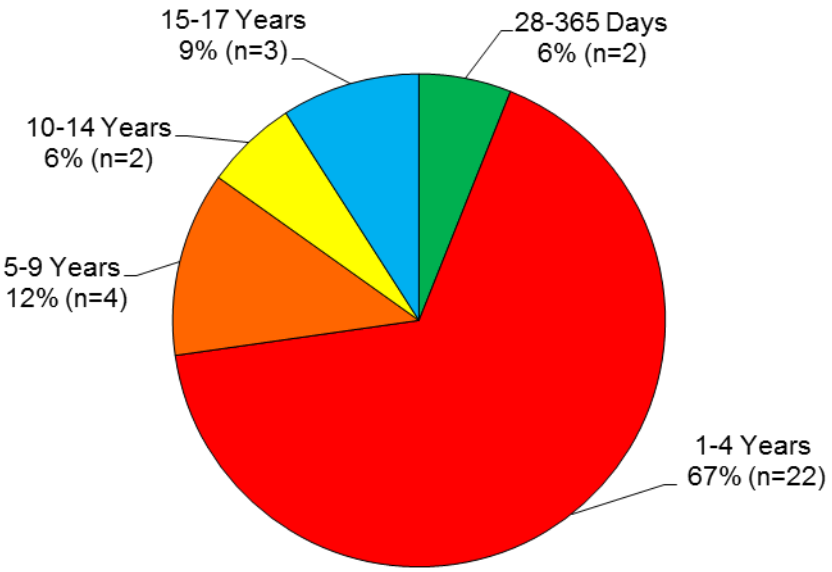
Figure 21. Rate of Drowning Deaths per 100,000 Children, Arizona, 2005-2010



Sixty-one percent of drowning deaths in 2010 were among males (n=20), and 39 percent were among females (n=13). Fifty-six percent of children who drowned were White, Non-Hispanic (n=19), 30 percent were Hispanic (n=10), six percent were Asian (n=2), and six percent were American Indian (n=2). There were no drowning deaths among African American children in 2010.

Sixty-seven percent of the drownings were among children ages one through four years (n=22), 12 percent were among children ages five through nine years (n=4), nine percent were among children ages 15 through 17 years (n=3), six percent were among children ages 10 through 14 years (n=2), and six percent were among infants younger than one year of age (n=2). Figure 22 shows drowning deaths by age group.

Figure 22. Drowning Deaths by Age Group Among Children, Arizona, 2010 (n=33)



Since 2005, the largest percentage of drowning deaths have been among children ages one through four years. The percentage of deaths in this age group decreased from 68 percent in 2009 (n=24) to 66 percent in 2010 (n=22). Table 14 shows drownings among children by age for 2005 through 2010.

Table 14. Drowning Deaths Among Children by Age Group, Arizona, 2005-2010

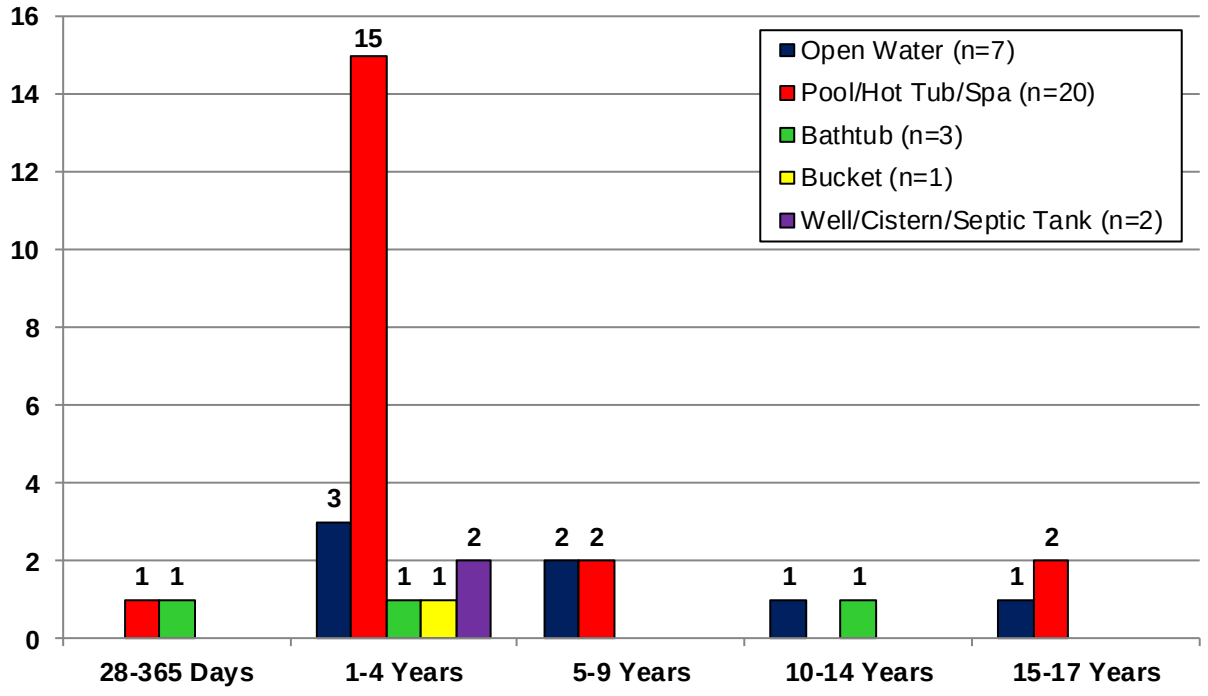
Age Group	2005		2006		2007		2008		2009		2010	
0-27 Days	1	3%	0	0%	1	4%	0	0%	0	0%	0	0%
28-365 Days	1	3%	2	10%	5	22%	1	3%	3	9%	2	6%
1-4 Years	20	57%	16	51%	12	53%	25	87%	24	68%	22	67%
5-9 Years	6	17%	4	13%	4	17%	2	7%	3	9%	4	12%
10-14 Years	1	3%	3	10%	1	4%	0	0%	1	3%	2	6%
15-17 Years	6	17%	6	16%	0	0%	1	3%	4	11%	3	9%
Total	**35**		**31**		**23**		**29**		**35**		**33**	

In 2010, 19 drowning fatalities occurred in pools (all were in ground), seven occurred in open water, three occurred in bathtubs, one occurred in a hot tub or spa, and one occurred in a bucket. Among the seven open water drownings, three were in ponds, two were in canals, one was in a river and one was in a desert wash. Table 15 shows drowning fatalities by location.

Table 15. Location of Child Drowning Fatalities, Arizona, 2010 (n=33)		
Location	**Number**	**Percent**
In ground pool	19	58%
Bathtub	3	9%
Pond	3	9%
Other types of water	2	6%
Canal	2	6%
Wash	1	3%
River	1	3%
Hot tub/spa	1	3%
Bucket	1	3%
Total	**33**	

The highest number of pool drownings were among children ages one through four years (45 percent, n=15), and three of the six open water drownings were also among children ages one through four years (50 percent). Figure 23 shows drowning location by age group.

Figure 23. Drowning Deaths by Age Group and Location Among Children, Arizona, 2010 (n=33)



Ninety-seven percent of child drownings were identified as preventable (n=32). Lack of supervision was the most commonly identified preventable factor in child drowning fatalities (79 percent, n=26), followed by access to water (76 percent, n=25). Table 16 shows preventable factors for child drownings in Arizona during 2010.

Table 16. Preventable Factors for Child Drownings, Arizona, 2010		
Factor*	**Number**	**Percent**
Lack of supervision	26	79%
Access to water	25	76%
Drugs and/or alcohol	2	6%
*More than one factor may have been identified for each death		

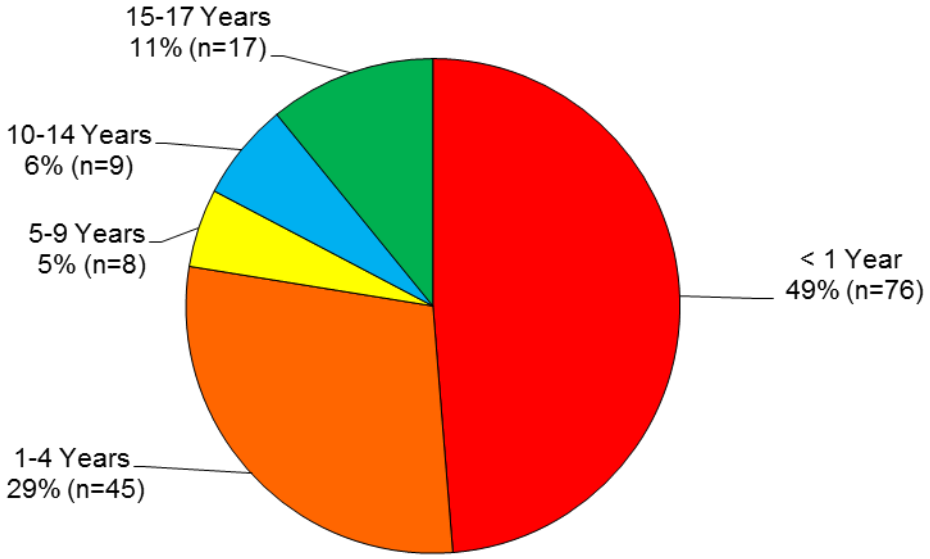
HOME SAFETY-RELATED DEATHS

Deaths included in this section occurred in or around home environments (e.g. bedroom, driveway, or yard) and were due to accidents or were of undetermined manner. Suicides, homicides, and natural deaths were excluded. In 2010, 155 children died in or around the home (18 percent of all deaths that year). The majority of these deaths occurred among males (66 percent, n=102) and 34 percent were among females (n=53).

Forty-eight percent of deaths that occurred in or around the home were among White, Non-Hispanic children (n=75), 35 percent were among Hispanic children (n=54), seven percent were among African Americans (n=11), six percent were among American Indians (n=10), two percent were among Asian children (n=3), and two percent were among children from two or more races (n=2).

Nearly half of the deaths that occurred in or around the home during 2010 were among infants younger than one year of age (49 percent, n=76). Twenty-nine percent were among children ages one through four years (n=45). Figure 36 shows home safety-related deaths by age group.

Figure 36. Home Safety-Related Deaths Among Children by Age Group, Arizona, 2010 (n=155)



For 35 percent of deaths, the cause of death was undetermined (n=54). The second most common cause of death was drowning (18 percent, n=28). Twenty children drowned in family pools or hot tubs, three children drowned in bathtubs, and one child

drowned in a bucket. Seventeen children died as a result of poisonings, and 88 percent of these deaths were among children ages 15 through 17 years (n=15). Seventy-one percent of poisoning-related deaths involved at least one prescription or over-the-counter medication (n=12). Motor vehicle collisions occurring in garages, driveways, or home parking areas were included among the home safety-related deaths; these cases accounted for nine child deaths in 2010. Table 33 shows child deaths that occurred in or around the home by cause.

Table 33. Child Deaths In or Around the Home by Cause, Arizona, 2010 (n=155)

Cause	Number	Percent
Undetermined	54	35%
Drowning	28	18%
Suffocation	24	15%
Poisoning	17	11%
Motor vehicle collisions	9	6%
Fire/burn	6	4%
Other	6	4%
Fall/crush	4	3%
Hanging	3	2%
Firearm-related injury	2	1%
Hyperthermia	2	1%
Total	**155**	

Eighty-eight percent of home safety-related deaths were determined to have been preventable (n=136), and for seven percent, teams were not able to determine preventability (n=12). The most commonly listed contributing factors were lack of supervision (65 percent, n=101) and substance use (37 percent, n=58). Table 34 shows preventable factors for home safety-related deaths.

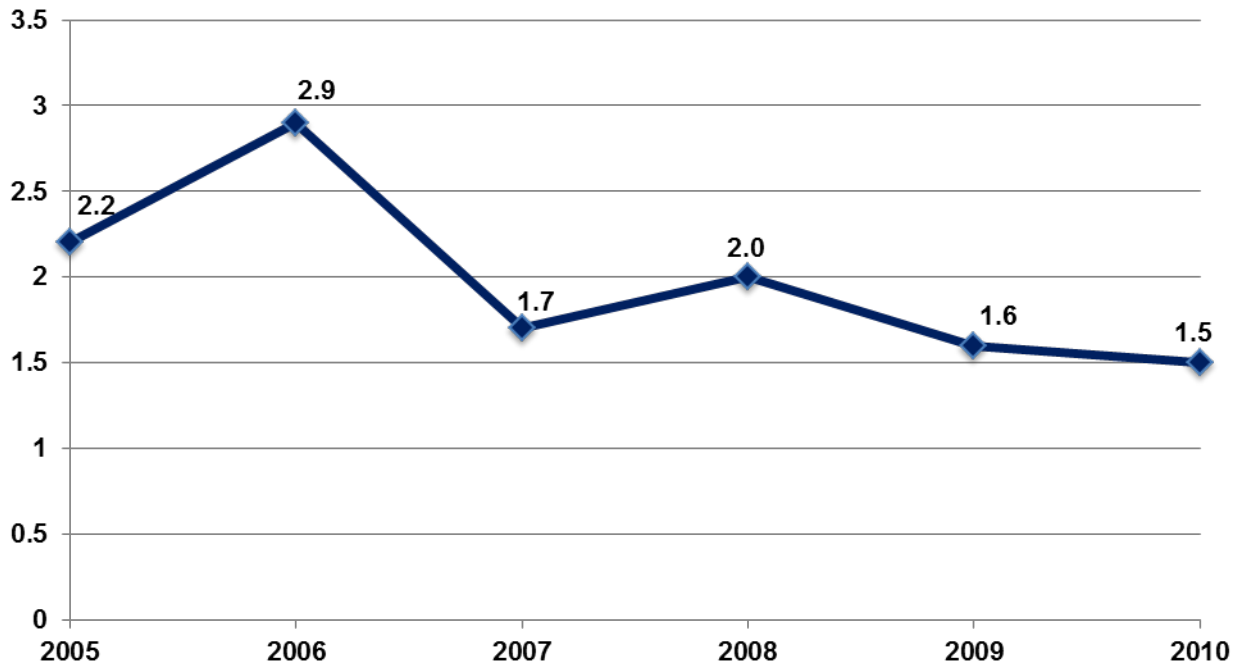
Table 34. Preventable Factors for Child Deaths In or Around the Home, Arizona, 2010

Factor*	Number	Percent
Lack of supervision	101	65%
Substance use	58	37%
Access to water	21	14%
*More than one factor may have been identified for each death		

SUICIDES

In 2010, there were 24 suicides among children in Arizona, which accounted for three percent of all child deaths. In 2009, suicides also accounted for three percent of all child deaths (n=27). The child suicide rate in 2010 was 1.5 deaths per 100,000 children. This was a decrease from 2009 when the suicide rate was 1.6 deaths per 100,000 children. Figure 24 shows the rates of child suicides from 2005 through 2010.

Figure 24. Rate of Suicides (per 100,000 children), Arizona, 2005-2010



Seventy-nine percent of the children who died by suicide during 2010 were males (n=19) and 21 percent were females (n=5). Thirty-eight percent were White, Non-Hispanic (n=9), 33 percent were Hispanic (n=8), 25 percent were American Indian (n=6), and four percent were other races/ethnicities (n=1).

The distribution of suicides by race/ethnicity was different from 2009 when the largest percentage of suicides was among Hispanic children (44 percent, n=12). Table 17 shows suicides among children by race/ethnicity for 2006 through 2010.

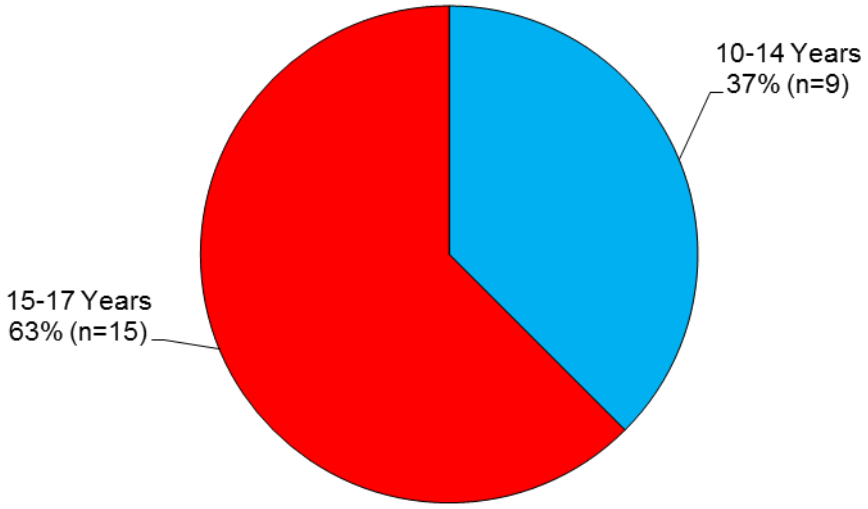
Table 17. Suicides Among Children by Race/Ethnicity, Arizona, 2006-2010

Race/Ethnicity	2006		2007		2008		2009		2010	
American Indian	9	19%	4	14%	6	17%	5	19%	6	25%
Hispanic	13	27%	15	54%	9	26%	12	44%	8	33%

White, Non-Hispanic	24	50%	8	29%	18	51%	9	33%	9	38%
Other	2	4%	1	3%	2	6%	1	4%	1	4%
Total	**48**		**28**		**35**		**27**		**24**	

In 2010, the majority of suicides were among children ages 15 through 17 years (63 percent, n=15), but 37 percent were among children 14 years of age and younger (n=9). The youngest child who committed suicide in 2010 was 10 years old. Figure 25 shows suicides among children by age group.

Figure 25. Suicides Among Children by Age Group, Arizona, 2010 (n=24)



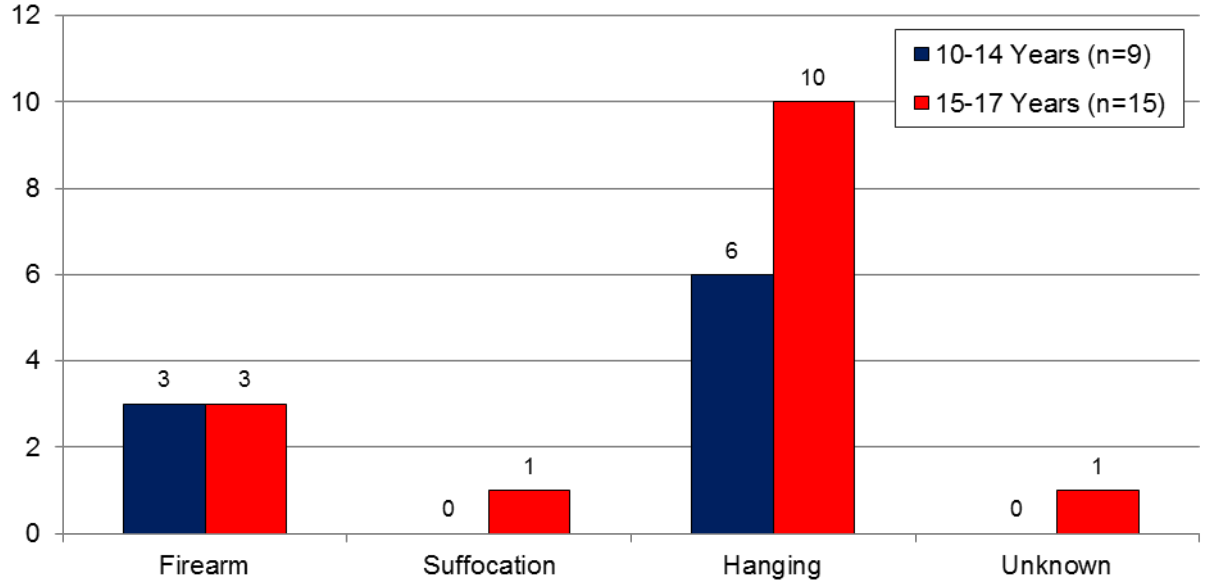
The distribution of suicides by age group has remained consistent since 2005, with a larger proportion of child suicides among children 15 through 17 years of age. Table 18 shows suicides among children by age group for 2005 through 2010.

Table 18. Suicides Among Children by Age Group, Arizona, 2005-2010

Age Group	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
<10 Years	0	0%	1	2%	0	0%	0	0%	0	0%	0	0%
10-14 Years	13	36%	11	23%	7	25%	9	26%	3	11%	9	37%
15-17 Years	23	64%	36	75%	21	75%	26	74%	24	89%	15	63%
Total	**36**		**48**		**28**		**35**		**27**		**24**	

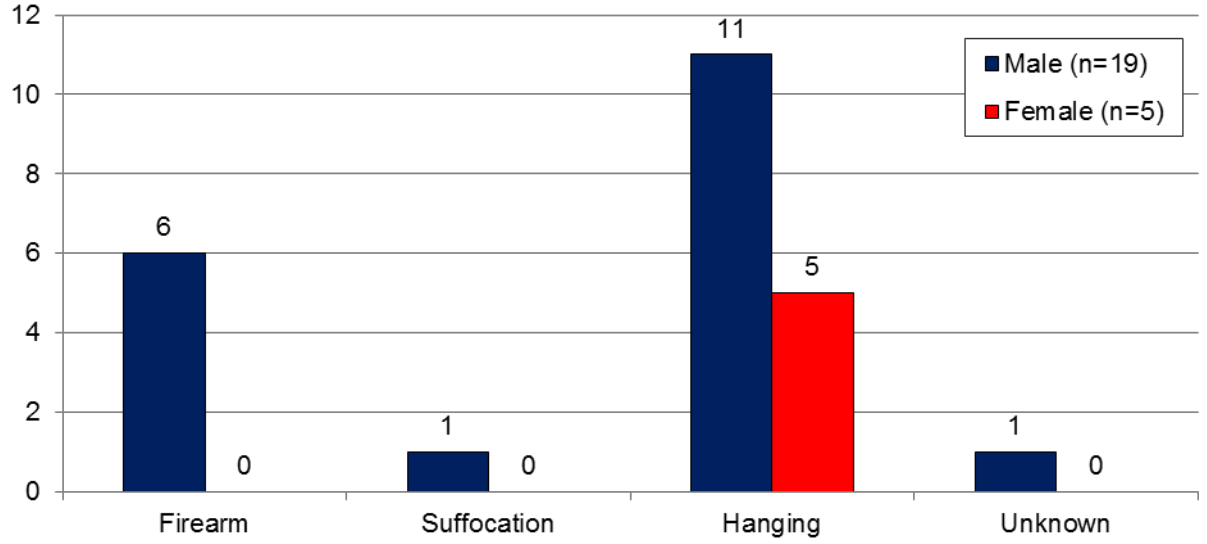
Hangings accounted for 67 percent of child suicides in Arizona during 2010 (n=16) and firearm injuries accounted for 25 percent (n=6). The objects used in hanging suicides were ropes, electrical cords, belts, a bed sheet, a scarf and a hay bale cord. Figure 26 shows suicides among children by cause of death and age group.

Figure 26. Suicides Among Children by Age Group and Cause of Death, Arizona, 2010 (n=24)



In 2010, the distribution of cause of death varied by the sex of the child. As has been observed in previous years, males were more likely to have used firearms to complete suicide. All of the suicides in 2010 that were female were done so by hanging. Figure 27 shows suicides among children by cause of death and sex.

Figure 27. Suicides Among Children by Cause of Death and Sex, Arizona, 2010 (n=24)



Identification of children at risk for suicide can be difficult, and warning signs are not always recognized or taken seriously. Ten children who took their own lives in 2010

were known to have talked about suicide to others (30 percent), 10 children were known to have made prior suicide threats (30 percent), and five children had made prior suicide attempts (15 percent). Only four children were known to have been on medication for mental illness at the time of their deaths (17 percent). Ten children who completed suicide were known to have received prior mental health diagnoses (42 percent), but only eight children were known to have been receiving mental health services at the time of their deaths (33 percent).

Review teams were able to identify several factors that may have contributed to the children's despondency prior to the suicides. The most commonly identified factor was family discord, which was identified in seven suicides (29 percent). Table 19 shows factors that may have contributed to the child's despondency prior to suicide.

Table 19. Factors That May Have Contributed to the Child's Despondency Prior to Suicide, Arizona, 2010

Factor*	Number	Percent
Family discord	7	29%
History of drug and/or alcohol use	6	25%
Recent breakup with boyfriend or girlfriend	5	21%
Failure at school	5	21%
Victim of bullying	3	13%
Recent argument with boyfriend or girlfriend	2	8%
History of problems with the law	2	8%
Sexual orientation	2	8%
*More than one factor may have been identified for each death		

For nearly half of all suicides, important information regarding risk factors was unknown to review teams, even after review of available law enforcement records. For example, in 29 percent of child suicides, prior mental health services provided to the child were unknown to the local review team (n=7). In four cases the review team was able to identify social or economic factors that prevented the child from receiving mental health treatment. In two of those cases, transportation was an identified barrier to proper treatment. Improvements in the investigations of child suicides may increase review teams' abilities to identify risk factors.

Seventy-five percent of child suicides were determined by the local team to have been probably preventable (n=18). Thirteen percent (n=3) of child suicides were determined by the teams to probably not have been preventable. For 13 percent of suicides, local review teams were not able to determine preventability (n=3). The use of drugs and/or alcohol was the most commonly identified preventable factor (42 percent, n=10), followed by access to firearms (21 percent, n=5), then lack of supervision (13 percent n=3). Table 20 shows preventable factors for child suicides.

Table 20. Preventable Factors for Child Suicides, Arizona, 2010

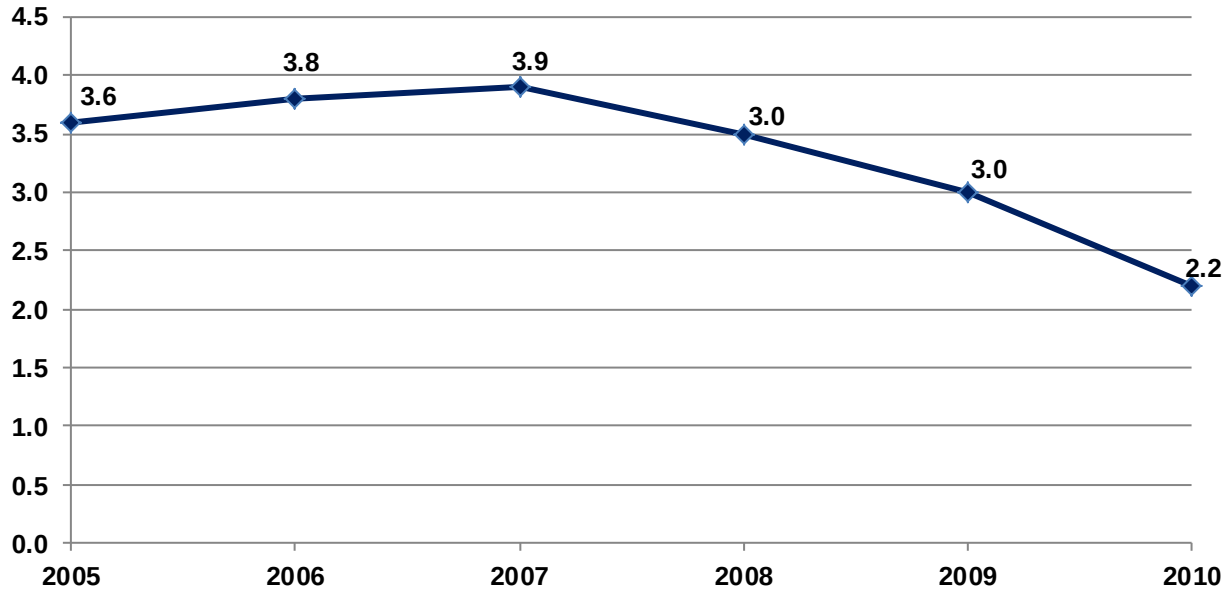
Factor*	Number	Percent
Use of drugs and/or alcohol	10	42%
Access to firearm	5	21%
Lack of supervision	3	13%

*More than one factor may have been identified for each death.

HOMICIDES

Thirty-six children were victims of homicide in Arizona during 2010, compared to 51 in 2009. Homicides accounted for four percent of all child deaths in Arizona during 2010. The child homicide rate in 2010 was 2.2 deaths per 100,000 children. This was a decline from a rate of 3.0 homicides per 100,000 children in 2009. The year-over-year decrease in the rate of child homicides is part of a larger trend, in which the rate of homicide deaths among children in Arizona has decreased 39 percent since 2006. Figure 28 shows the rates of child homicides from 2005 through 2010.

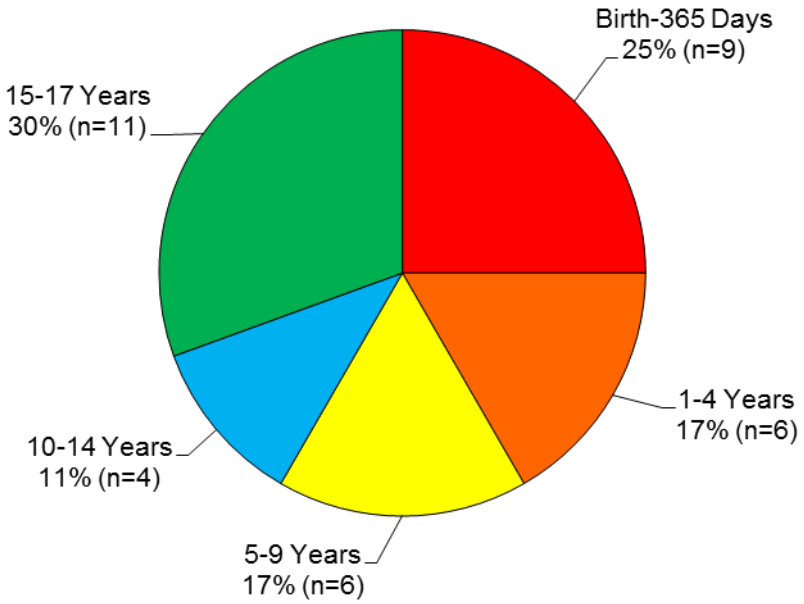
Figure 28. Rate of Homicides (per 100,000 Children), Arizona, 2005-2010



Sixty-nine percent of homicide victims in 2010 were males (n=20) and 31 percent were females (n=11). More than half of child homicides were among Hispanics (59 percent, n=21), 19 percent were among White, Non-Hispanics (n=7), 14 percent were among African Americans (n=5), and nine percent were among children of other races/ethnicities (n=3).

Twenty-five percent of homicides were among children ages birth to one year (n=9). Children ages 15 through 17 years accounted for 30 percent of homicides (n=11). Figure 29 shows homicides among children by age group.

Figure 29. Homicides Among Children by Age Group, Arizona, 2010 (n=36)



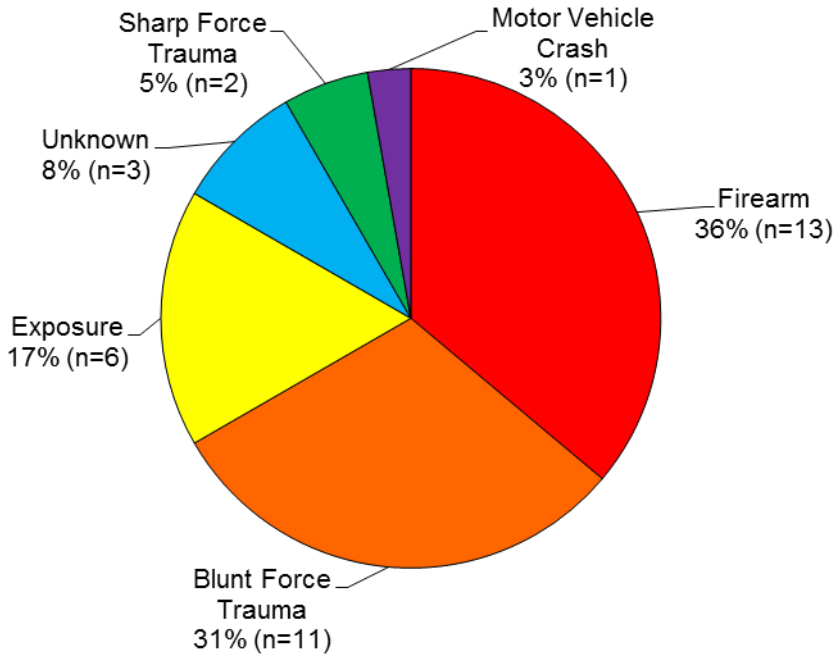
Compared to 2009, the greatest increase in homicides was observed among children ages birth to 365 days (from 14 percent in 2009 to 22 percent in 2010). Table 21 shows homicides among children by age group for 2005 through 2010.

Table 21. Homicides Among Children by Age Group, Arizona, 2005-2010

Age Group	2005		2006		2007		2008		2009		2010	
0-27 Days	3	5%	4	6%	3	4%	1	2%	3	6%	1	3%
28-365 Days	9	15%	12	19%	13	20%	14	23%	7	14%	8	22%
1-4 Years	13	22%	11	17%	12	18%	7	12%	12	24%	6	16%
5-9 Years	3	5%	0	0%	7	11%	2	3%	5	10%	6	16%
10-14 Years	5	9%	7	11%	5	8%	6	10%	4	8%	4	11%
15-17 Years	25	43%	29	47%	26	39%	30	50%	20	39%	11	31%
Total	**58**		**63**		**66**		**60**		**51**		**36**	

In 2010, firearms were the leading cause of death among child homicides (36 percent, n=13), followed by blunt force trauma (31 percent, n=11). Figure 30 shows homicides among children by cause of death.

Figure 30. Homicides Among Children by Cause of Death, Arizona, 2010 (n=36)



For 37 percent of the homicides, the perpetrator was a biological parent or step-parent of the child (n=14). In 13 percent of cases the perpetrator was someone who was a friend or acquaintance of the child (n=5). Other relatives of the child accounted for 11 percent of the homicides (n=4). In 5 cases (13 percent) the local review team was unable to determine the relationship between the perpetrator and the child. Table 22 shows homicides among children by perpetrator.

Table 22. Homicides Among Children by Perpetrator, Arizona, 2010 (n=36)

Perpetrator*	Number	Percent
Biological parent/step-parent	14	37%
Child's friend/acquaintance	5	13%
Unknown	5	13%
Other relative	4	11%
Gang member	3	8%
Mother's partner	2	5%
Stranger	2	5%
Child's boy/girlfriend	2	5%

*Perpetrator may fall into more than one category for each death.

Eighty-nine percent of child homicides were determined to have been preventable (n=32). Drugs and/or alcohol was the most commonly identified preventable factor in child homicides (58 percent, n=21), followed by lack of supervision (25 percent, n=9). Involvement in a gang was a factor in 4 homicides. Table 23 shows preventable factors for child homicides in Arizona during 2010.

Table 23. Preventable Factors for Child Homicides, Arizona, 2010		
Factor*	**Number**	**Percent**
Drugs and/or alcohol	21	58%
Lack of supervision	9	25%
Involvement in gang	4	11%
Access to firearm	3	8%
*More than one factor may have been identified for each death		

FIREARM-RELATED FATALITIES

There were 22 firearm-related fatalities in 2010, compared to 32 in 2009. Firearms accounted for three percent of all child deaths in 2009 and 2010. Eighty-two percent of the firearm-related deaths in 2010 were among males (n=18) and 18 percent were among females (n=4). Sixty percent were among White, Non-Hispanic children (n=13) and 9 percent were among Hispanic children (n=9).

The most significant increase in firearm-related deaths was among children ages 10 through 14 years. In 2009, children ages 10 through 14 years accounted for three percent of firearm-related deaths (n=1). In 2010, children ages 10 through 14 years accounted for 36 percent of firearm-related deaths (n=8). Conversely, there were seven firearm-related deaths among children ages 15 through 17 years (32 percent), compared to 23 deaths among this age group in 2009. Figure 31 shows firearm-related fatalities among children by age group, and Table 24 shows the distribution of firearm-related child fatalities by year from 2005 through 2010.

Figure 31. Firearm-Related Deaths Among Children by Age Group, Arizona, 2010 (n=22)

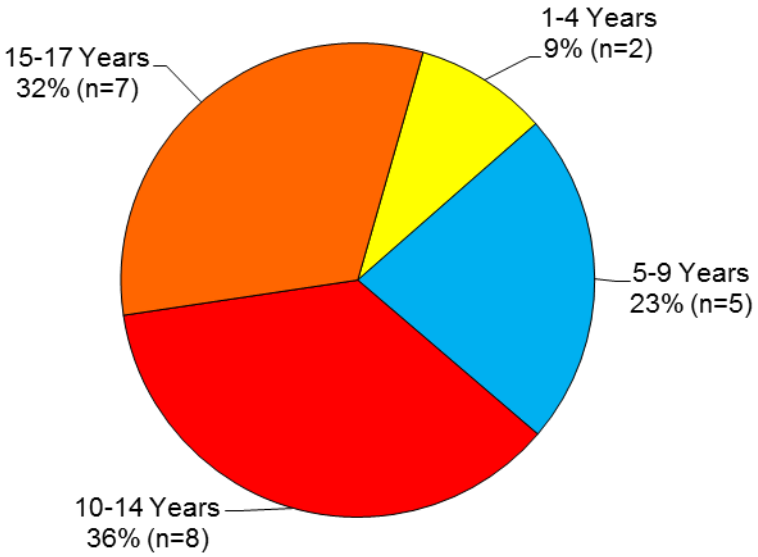
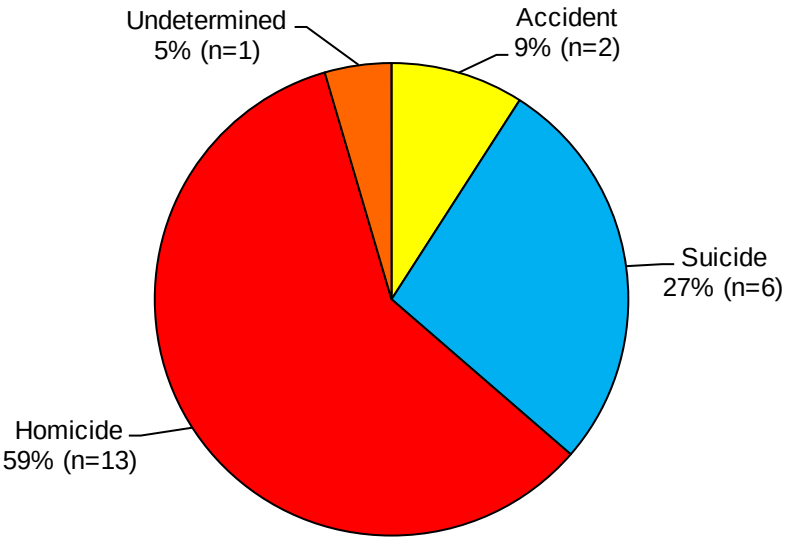


Table 24. Firearm-Related Deaths Among Children by Age Group, Arizona 2005-2010												
Age Group	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
<10 Years	2	5%	1	2%	5	10%	5	10%	8	25%	7	32%
10-14 Years	7	16%	13	22%	7	15%	7	14%	1	3%	8	36%
15-17 Years	34	79%	46	76%	36	75%	37	76%	23	72%	7	32%
Total	**43**		**60**		**48**		**49**		**32**		**22**	

In 2010, 59 percent of firearm-related deaths were homicides (n=13), 27 percent were suicides (n=6), and nine percent were accidents (n=2). Figure 32 shows firearm-related deaths among children by manner.

Figure 32. Firearm-Related Deaths Among Children by Manner, Arizona, 2010 (n=22)



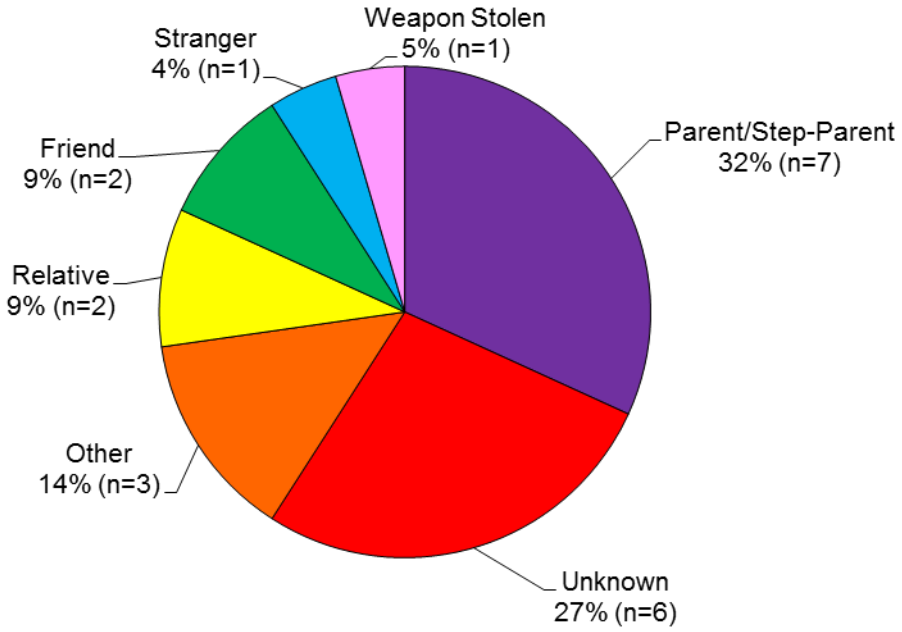
Handguns accounted for the majority of firearm-related fatalities among children in 2010 (79 percent, n=17), followed by shotguns and hunting rifles (nine percent each, n=2). Table 25 shows types of firearms involved in child deaths during 2010.

Table 25. Types of Firearms Involved in Child Deaths, Arizona, 2010 (n=22)

Type	Number	Percent
Handgun	17	79%
Shotgun	2	9%
Hunting rifle	2	9%
Assault rifle	1	3%
Total	**22**	

Among the 22 firearm-related deaths, 73 percent of firearms were stored loaded (n=16). The largest percentage of firearms belonged to parents or step-parents (32 percent, n=7). Figure 33 shows the owners of the firearms used in child fatalities.

Figure 33. Owners of Firearms Involved in Child Deaths, Arizona, 2010 (n=22)



In more than half of firearm-related child deaths, the firearm's storage location was unknown to the review teams (55 percent, n=12). One firearm was stored in a locked safe but the child had access to the key. The remaining firearms were not stored in secured locations. Table 26 summarizes the locations of the firearms involved in child deaths during 2010.

Table 26. Locations of Firearms Involved in Child Deaths, Arizona, 2010 (n=22)

Location	Number	Percent
Unknown	12	55%
Closet	5	23%
Not stored	3	14%
Under a bed	1	4%
Locked in a safe	1	4%
Total	**22**	

Ninety-one percent of the firearm-related deaths in 2010 were determined to have been preventable. Drugs and/or alcohol were known to have been involved in 40 percent of firearm-related deaths (n=12). A child having access to a firearm was a preventable factor in thirty percent of child fatalities (n=9). Lack of supervision was a factor in 27 percent of the deaths (n=8), and involvement in a gang was a factor in 3 percent of child fatalities (n=1). Table 27 shows preventable factors for firearm-related fatalities in Arizona during 2010.

Table 27. Preventable Factors for Firearm-Related Deaths Among Children, Arizona, 2010		
Factor*	**Number**	**Percent**
Drugs and/or alcohol	12	40%
Access to firearm	9	30%
Lack of supervision	8	27%
Involvement in gang	1	3%
*More than one factor may have been identified for each death		

MALTREATMENT FATALITIES

To gain greater understanding of the contribution of abuse and neglect to child mortality, the Arizona Child Fatality Review Teams answered several questions regarding maltreatment. In order for a death to be classified as a result of maltreatment, the following three conditions must be met:

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 Child Protective Services.

Deaths classified as maltreatment are also reported in other categories by manner and cause of death. For example, a death due to abusive head trauma would be classified as a manner of homicide with a cause of blunt force trauma, and a maltreatment death. An accidental or natural death might also be classified as a maltreatment death if, in the opinion of the team, a caretaker's negligence or actions contributed to or caused the death. For example; a child who died in a motor vehicle crash due to the parent driving while intoxicated would be considered a maltreatment death.

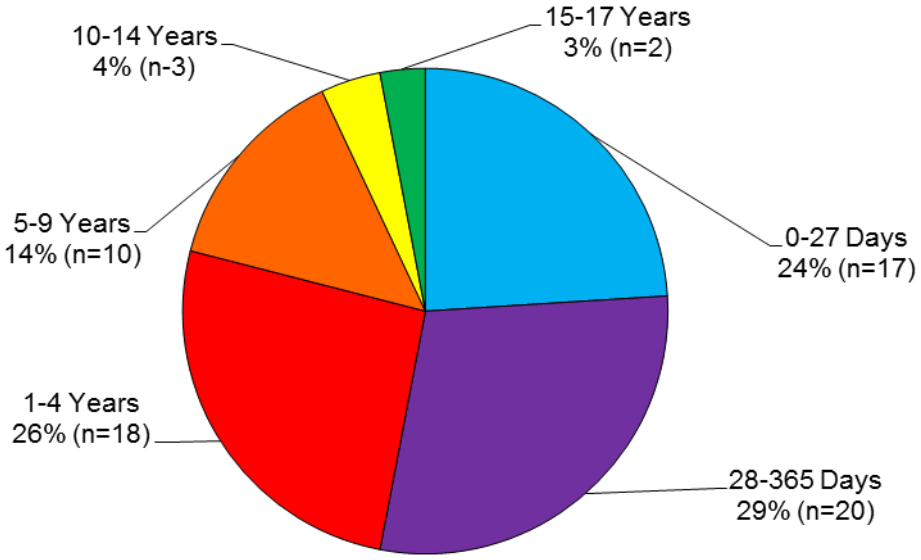
The number of child maltreatment deaths presented in this report is not comparable to child maltreatment deaths reported by the Arizona Department of Economic Security (AZDES) for the National Child Abuse and Neglect Data System (NCANDS). NCANDS includes maltreatment deaths identified through Child Protective Services investigations, and because some maltreatment deaths identified by Local Child Fatality Review Teams may not have been reported to Child Protective Services or were within the jurisdiction of Tribal Nations, these deaths would not be included in AZDES's annual report to NCANDS. However, when a Local Child Fatality Review team identifies a death due to maltreatment that has not been previously reported to Child Protective Services, the Local Child Fatality Review Program notifies Child Protective Services of the team's assessment so that an investigation can be initiated.

In 2010, there were 70 deaths classified as maltreatment, which was eight percent of all child deaths that year. This was an increase from 64 child maltreatment deaths in 2009 (seven percent of all child deaths). In 2010, 51 percent of maltreatment deaths were among males (n=36) and 49 percent were among females (n=34). Thirty-nine percent of the children who died due to maltreatment were Hispanic (n=27), 36 percent were

White, Non-Hispanic (n=25), 11 percent were African American (n=8), 10 percent were American Indian (n=7), and three percent were Asian (n=2).

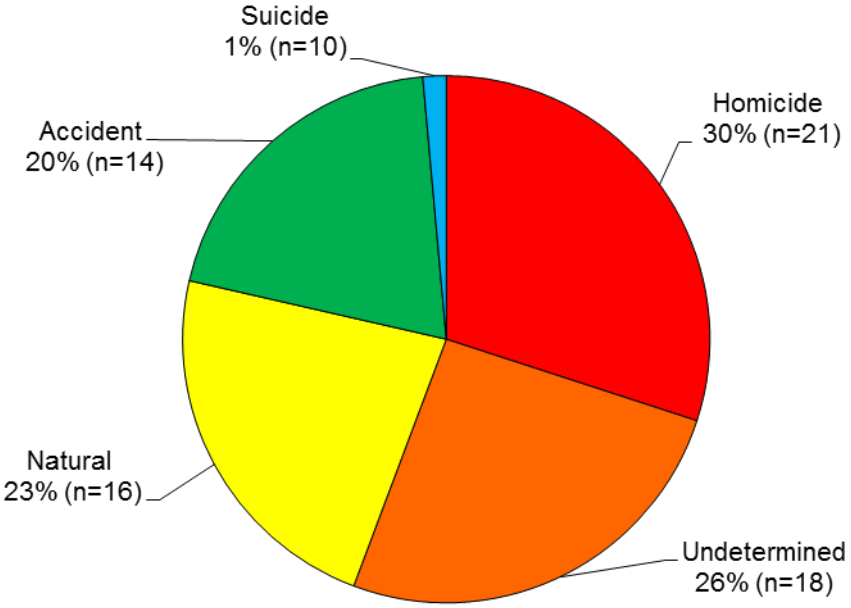
More than half of all maltreatment deaths were among children younger than one year of age (53 percent, n=37). Figure 34 shows maltreatment deaths among children by age group.

Figure 34. Maltreatment Deaths Among Children by Age Group, Arizona, 2010 (n=70)



Homicide was the leading manner of maltreatment deaths for Arizona children in 2010 (30 percent, n=21). For 26 percent of the maltreatment deaths, the manner of death was unable to be determined by the review team after review of all available information (n=18). Twenty-three percent of maltreatment deaths were due to natural manners. Examples of maltreatment deaths due to natural manners of death included prenatal substance use resulting in premature birth, neglect which resulted in an illness, or failure to obtain medical care. Twenty percent of the maltreatment deaths were due to accidents (n=14). Maltreatment-related accidental deaths included unintentional injuries caused by significant negligence or substance abuse by a parent or guardian. Figure 35 shows maltreatment deaths by manner.

Figure 35. Maltreatment Deaths Among Children by Manner, Arizona, 2010 (n=70)



Prematurity, blunt force trauma, and undetermined causes were the leading causes of maltreatment-related deaths among children in Arizona in 2010. Table 28 shows maltreatment deaths among children by cause and manner.

Table 28. Maltreatment Deaths Among Children by Cause and Manner, Arizona, 2010 (n=70)

Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Medical	6	0	0	0	2	**8**
Prematurity	10	0	0	0	0	**10**
Motor vehicle crash	0	5	0	1	0	**6**
Firearm	0	1	0	5	1	**7**
Suffocation	0	1	0	0	0	**1**
Drowning	0	4	0	0	1	**5**
Blunt force trauma	0	0	0	10	0	**10**
Hanging	0	0	1	0	0	**1**
Undetermined	0	0	0	0	11	**11**
Poisoning	0	1	0	0	1	**2**
Fire/Burn	0	2	0	0	0	**2**
Exposure	0	0	0	2	0	**2**
Other	0	0	0	3	2	**5**
Total	**16**	**14**	**1**	**21**	**18**	**70**

*Excluding SIDS and prematurity

Sixteen percent of the maltreated children in Arizona during 2010 were known to have had physical, mental, and/or sensory disabilities (n=11), including three children with autism.

For 49 percent of maltreatment deaths, the perpetrator was the child's biological mother (n=34). In 26 percent, the perpetrator was the child's biological father. In nine percent of the maltreatment deaths, the perpetrator was the mother's partner (n=6), for eight percent of maltreatment fatalities the perpetrator was unknown to the review teams (n=6), and for the remainder of the maltreatment fatalities the perpetrator was a relative or foster parent (eight percent, n=6). Table 29 shows maltreatment deaths among children by perpetrator.

Table 29. Maltreatment Deaths Among Children by Perpetrator, Arizona, 2010 (n=70)		
Perpetrator*	**Number**	**Percent**
Mother	34	49%
Father	18	26%
Mother's partner	6	9%
Unknown	6	8%
Other relative	5	7%
Foster parent	1	1%
Total	**70**	
*May not have been under the jurisdiction of Arizona Child Protective Services		

There were eight fatalities among children two years of age or younger due to abusive head trauma during 2010. Four of these children were known to have been shaken. This was a decrease from 2009, when 11 children two years of age and younger died as a result of abusive head trauma.

Ninety-three percent of the child maltreatment deaths in 2010 were determined to have been preventable (n=65). For one percent of maltreatment deaths, local review teams were not able to determine preventability (n=1). Drugs and/or alcohol contributed to 69 percent of the deaths (n=48). Lack of supervision contributed to 30 percent of maltreatment deaths (n=21). Table 30 shows preventable factors for child maltreatment deaths.

Table 30. Preventable Factors for Maltreatment Deaths Among Children, Arizona, 2010		
Factor*	**Number**	**Percent**
Drugs and/or alcohol	48	69%
Lack of supervision	21	30%
Unsafe sleep environment	11	16%
*More than one factor may have been identified for each death		

Child Protective Services Involvement with Families of Children who Died due to Maltreatment

Local Child Fatality Review Teams attempt to obtain records from child protective services agencies, including Arizona Child Protective Services and child protective agencies in other jurisdictions, such as tribal authorities and other states. If a child protective agency investigated a report of maltreatment for any child in the family prior

to the incident leading to the child's death, then the family was considered to have had previous involvement with a child protective agency. This includes reports in which the maltreatment was not substantiated.

In 2010, 26 percent of children who died from maltreatment were from families with prior child protective services involvement (n=18). Among these 18 families, five were open cases with Arizona Child Protective Services at the time of the child's death.

For 34 maltreatment deaths, mandatory reporters did not notify Arizona Child Protective Services that after complete investigation, the deaths were suspected to have resulted from child maltreatment. The number of maltreatment deaths not reported to Arizona Child Protective Services increased from 34 percent in 2009 (n=22) to 49 percent in 2010 (n=34).

There were 21 child maltreatment deaths in 2010 in which legal charges have been filed against the perpetrator(s) of the abuse or neglect. In an additional four cases, charges were not filed because the perpetrator was deceased. Since additional criminal investigation may be required prior to filing legal charges against those involved in a child maltreatment death, information on legal outcomes may not be available to the local team at the time of the death review. In 2010, there were 45 deaths in which legal outcomes were unknown to the local review team (64 percent).

APPENDIX A: CHILD DEATHS BY AGE GROUP

The following section of the report provides information on the causes and manners of child deaths by age group. The information provided for each age group can be used to guide prevention efforts within each stage of development. For the past six years, 100 percent of child deaths in Arizona have been reviewed, and data from 2005 through 2010 are included in the following tables.

The Neonatal Period, Birth Through 27 Days

Table 35. Deaths Among Children Ages Birth Through 27 Days by Cause and Manner, Arizona, 2010 (n=334)

Cause	Natural	Accident	Suicide	Homicide	Undetermined	Total
Medical*	143	0	0	0	2	**145**
Prematurity	180	0	0	0	0	**180**
Transport	0	1	0	0	0	**1**
Suffocation	0	1	0	0	0	**1**
Undetermined	1	0	0	0	5	**6**
Exposure	0	0	0	1	0	**1**
Total	**324**	**2**	**0**	**1**	**7**	**334**

*Excluding SIDS and prematurity

Table 36. Deaths Among Children Ages Birth Through 27 Days by Cause, Arizona, 2005-2010

Cause	2005		2006		2007		2008		2009		2010	
Prematurity	263	61%	263	60%	281	58%	256	60%	221	60%	180	54%
Medical*	155	36%	168	38%	180	37%	155	37%	128	35%	145	43%
Undetermined	3	1%	2	0%	4	1%	6	1%	5	1%	6	2%
SIDS	3	1%	1	0%	4	1%	3	1%	1	<1%	0	0%
Motor vehicle crash	4	1%	1	0%	5	1%	2	<1%	2	<1%	1	<1%
Other	1	0%	4	1%	5	1%	1	<1%	5	1%	0	0%
Suffocation	3	1%	1	0%	5	1%	0	0%	4	1%	1	<1%
Exposure	1	0%	0	0%			0	0%	0	0%	1	<1%
Drowning	1	0%	0	0%	1	0%	0	0%	0	0%	0	0%
Total	**434**		**440**		**485**		**423**		**366**		**334**	

*Excluding SIDS and prematurity

Table 37. Deaths Among Children Ages Birth Through 27 Days by Manner, Arizona, 2005-2010

Manner	2005		2006		2007		2008		2009		2010	
Natural	421	97%	432	98%	464	96%	414	98%	349	95%	324	97%
Undetermined	3	1%	2	0%	6	1%	6	1%	7	2%	7	2%
Accident	7	2%	2	0%	12	2%	2	<1%	7	2%	2	1%
Homicide	3	1%	4	1%	3	1%	1	<1%	3	1%	1	<1%
Suicide	0	0%	0	0%	0		0	0%	0	0%	0	0%
Total	**434**		**440**		**485**		**423**		**366**		**334**	

The Post-Neonatal Period, 28 Days Through 365 Days

Table 38. Deaths Among Children Ages 28 Days Through 365 Days by Cause and Manner, Arizona, 2010 (n=192)						
Cause	**Natural**	**Accident**	**Suicide**	**Homicide**	**Undetermined**	**Total**
Medical*	82	0	0	0	0	**82**
Prematurity	17	0	0	0	0	**17**
Transport	0	1	0	0	0	**1**
Suffocation	0	21	0	0	1	**22**
Drowning	0	2	0	0	0	**2**
SIDS	1	0	0	0	0	**1**
Blunt Force Trauma	0	0	0	6	0	**6**
Undetermined	0	0	0	0	47	**56**
Poisoning	0	0	0	0	1	**1**
Exposure	0	0	0	1	0	**1**
Other Injury	0	1	0	1	1	**3**
Total	**109**	**25**	**0**	**8**	**50**	**192**
*Excluding SIDS and prematurity						

Table 39. Deaths Among Children Ages 28 Days Through 365 Days by Cause, Arizona, 2005-2010												
Cause	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Medical*	122	52%	89	43%	83	37%	91	43%	77	42%	82	43%
Undetermined	17	7%	14	7%	25	11%	44	21%	35	19%	56	29%
Suffocation	19	8%	24	12%	21	9%	21	10%	13	7%	22	11%
SIDS	34	15%	27	13%	33	15%	17	8%	27	15%	1	<1%
Prematurity	21	9%	29	14%	35	15%	15	7%	18	10%	17	9%
Blunt force trauma	7	3%	8	4%	8	3%	9	4%	3	2%	6	3%
Other non-medical	5	2%	8	4%	5	2%	6	3%	3	2%	3	2%
Motor vehicle crash	1	0%	2	1%	7	3%	6	3%	2	1%	1	<1%
Drowning	1	0%	2	1%	5	2%	1	<1%	3	2%	2	1%
Exposure	1	0%	0	0%	2	1%	1	<1%	0	0%	1	<1%
Fire/burn	3	1%	1	0%	6	3%	0	0%	0	0%	0	0%
Poisoning	1	0%	2	1%	1	0%	0	0%	1	<1%	1	<1%
Hanging	1	0%	0	0%	1	0%	0	0%	0	0%	0	0%
Total	**233**		**206**		**225**		**211**		**183**		**192**	
*Excluding SIDS and prematurity												

Table 40. Deaths Among Children Ages 28 Days Through 365 Days by Manner, Arizona, 2005-2010												
Manner	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Natural	178	76%	140	68%	147	65%	116	55%	116	63%	109	57%
Undetermined	9	4%	12	6%	27	12%	52	25%	42	23%	50	26%
Accident	19	8%	25	12%	38	17%	29	14%	18	10%	25	13%
Homicide	27	12%	29	14%	13	6%	14	7%	7	4%	8	4%
Suicide	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total	**233**		**206**		**225**		**211**		**183**		**192**	

Children, One Through Four Years of Age

Table 41. Deaths Among Children Ages One Through Four Years by Cause and Manner, Arizona, 2010 (n=119)							
Cause	**Natural**	**Accident**	**Suicide**	**Homicide**	**Undetermined**	**Unknown**	**Total**
Medical*	51	0	0	0	1	0	**52**
Motor vehicle crash	0	19	0	0	0	0	**19**
Firearm	0	1	0	1	0	0	**2**
Drowning	0	22	0	0	0	0	**22**
Blunt force trauma	0	0	0	4	0	0	**4**
Hanging	0	1	0	0	0	0	**1**
Undetermined	1	0	0	0	4	1	**6**
Fire/Burn	0	2	0	0	0	0	**2**
Exposure	0	2	0	0	0	0	**2**
Fall/Crush	0	1	0	0	1	0	**2**
Other	0	4	0	1	2	0	**7**
Total	**52**	**52**	**0**	**6**	**8**	**1**	**119**
*Excluding SIDS and prematurity							

Table 42. Deaths Among Children Ages One Through Four Years by Cause, Arizona, 2005-2010												
Cause	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Medical*	56	43%	74	48%	45	40%	67	53%	50	38%	52	44%
Drowning	20	15%	16	10%	12	11%	25	20%	24	18%	22	18%
Transportation	19	15%	34	22%	21	18%	10	8%	20	15%	19	16%
Other non-medical	5	4%	4	3%	11	10%	7	5%	11	8%	7	6%
Undetermined	5	4%	7	4%	8	7%	7	5%	10	8%	6	5%
Blunt force trauma	10	8%	6	4%	7	6%	4	3%	7	5%	4	3%
Firearm	0	0%	1	1%	2	2%	2	2%	4	2%	2	2%
Poisoning	4	3%	1	1%	2	2%	2	2%	0	0%	0	0%
Exposure	3	2%	1	1%	1	1%	2	2%	0	0%	2	2%
Fire/burn	5	4%	4	3%	2	2%	1	1%	3	2%	2	2%
Fall/crush	-	-	-	-	-	-	-	-	-	-	2	2%
Hanging	-	-	-	-	-	-	-	-	-	-	1	<1%
Prematurity	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%
Suffocation/choking	2	2%	5	3%	2	2%	0	0%	0	0%	0	0%
Total	**130**		**153**		**113**		**126**		**130**		**119**	
*Excluding SIDS and prematurity												

Table 43. Deaths Among Children Ages One Through Four Years by Manner, Arizona, 2005-2010												
Manner	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Natural	56	43%	74	48%	49	43%	67	53%	54	42%	52	44%
Accident	54	42%	64	42%	45	40%	43	34%	56	43%	52	44%
Undetermined	7	5%	4	3%	7	6%	9	7%	8	6%	8	7%
Homicide	13	10%	11	7%	12	11%	7	5%	12	9%	6	5%
Suicide	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Unknown	-	-	-	-	-	-	-	-	-	-	1	<1%
Total	**130**		**153**		**113**		**126**		**130**		**119**	

Children, Five Through Nine Years of Age

Table 44. Deaths Among Children Ages Five Through Nine Years by Cause and Manner, Arizona, 2010 (n=58)						
Cause	**Natural**	**Accident**	**Suicide**	**Homicide**	**Undetermined**	**Total**
Medical*	31	0	0	0	0	**31**
Transport	0	9	0	1	0	**10**
Firearm	0	1	0	4	0	**5**
Suffocation	0	1	0	0	0	**1**
Drowning	0	4	0	0	0	**4**
Undetermined	1	0	0	0	0	**1**
Other	0	1	0	1	0	**2**
Fire/burn	0	2	0	0	0	**2**
Fall/crush	0	2	0	0	0	**2**
Total	**32**	**20**	**0**	**6**	**0**	**58**
*Excluding SIDS and prematurity						

Table 45. Deaths Among Children Ages Five Through Nine Years by Cause, Arizona, 2005-2010												
Cause	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Medical	43	51%	30	47%	37	55%	43	64%	42	63%	31	53%
Prematurity	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%
Transport	23	27%	23	36%	13	19%	10	15%	15	22%	10	17%
Other	2	2%	2	3%	7	10%	8	12%	6	9%	2	3%
Drowning	6	7%	4	6%	4	6%	2	3%	3	4%	4	7%
Fire/burn	6	7%	2	3%	1	1%	2	3%	0	0%	2	3%
Hanging	0	0%	1	1%	1	1%	1	1%	0	0%	0	0%
Firearm	-	-	-	-	-	-	-	-	-	-	5	9%
Undetermined	-	-	-	-	-	-	-	-	-	-	1	2%
Fall/crush	-	-	-	-	-	-	-	-	-	-	2	3%
Blunt force trauma	2	2%	1	1%	1	1%	1	1%	0	0%	0	0%
Suffocation	1	1%	0	0%	1	1%	0	0%	0	0%	1	2%
Poisoning	1	1%	1	1%	2	3%	0	0%	0	0%	0	0%
Total	**85**		**64**		**67**		**67**		**67**		**58**	
*Excluding SIDS and prematurity												

Table 46. Deaths Among Children Ages Five Through Nine Years by Manner, Arizona, 2005-2010												
Manner	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Natural	43	51%	30	47%	37	55%	42	63%	43	64%	32	55%
Accident	39	46%	32	50%	23	34%	19	28%	19	28%	20	34%
Undetermined	0	0%	1	1%	0	0%	4	6%	0	0%	0	0%
Homicide	3	4%	0	0%	7	10%	2	3%	5	7%	6	10%
Suicide	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%
Total	**85**		**64**		**67**		**67**		**67**		**58**	

Children, 10 Through 14 Years of Age

Table 47. Deaths Among Children Ages 10 Through 14 Years by Cause and Manner, Arizona, 2010 (n=66)						
Cause	**Natural**	**Accident**	**Suicide**	**Homicide**	**Undetermined**	**Total**
Medical*	29	0	0	0	0	**29**
Transport	0	12	0	0	0	**12**
Firearm	0	0	3	4	1	**8**
Drowning	0	1	0	0	1	**2**
Blunt force trauma	0	0	0	0	0	**0**
Hanging	0	0	6	0	1	**7**
Undetermined	1	0	0	0	2	**3**
Poisoning	0	1	0	0	0	**1**
Fire/Burn	0	2	0	0	0	**2**
Exposure	0	1	0	0	0	**1**
Other	0	1	0	0	0	**1**
Total	**30**	**18**	**9**	**4**	**5**	**66**
*Excluding SIDS and prematurity						

Table 48. Deaths Among Children Ages 10 Through 14 Years by Cause, Arizona, 2005-2010												
Cause	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Medical	32	37%	38	41%	40	43%	34	46%	43	59%	29	44%
Transport	21	24%	21	23%	27	29%	19	26%	13	18%	12	18%
Firearm injury	7	8%	13	14%	7	8%	7	9%	1	1%	8	12%
Hanging	7	8%	3	3%	6	6%	6	8%	3	4%	7	11%
Other	1	1%	0	0%	4	4%	2	3%	8	11%	1	2%
Fall/crush	0	0%	1	3%	3	3%	2	3%	2	3%	0	0%
Poisoning	4	5%	2	2%	2	2%	2	3%	0	0%	1	2%
Blunt force trauma	1	1%	3	3%	1	1%	1	1%	0	0%	0	0%
Exposure	4	5%	4	4%	1	1%	1	1%	2	3%	1	2%
Suffocation	3	3%	4	4%	0	0%	0	0%	0	0%	0	0%
Drowning	1	1%	3	3%	1	1%	0	0%	1	1%	2	2%
Undetermined	-	-	-	-	-	-	-	-	-	-	3	5%
Fire/burn	-	-	-	-	-	-	-	-	-	-	2	2%
Total	**86**		**92**		**92**		**74**		**73**		**66**	
*Excluding SIDS and prematurity												

Table 49. Deaths Among Children Ages 10 Through 14 Years by Manner, Arizona, 2005-2010												
Manner	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Natural	32	37%	38	41%	40	43%	33	45%	47	64%	30	45%
Accident	34	40%	34	37%	35	38%	26	35%	17	23%	18	27%
Suicide	13	15%	11	12%	7	8%	9	12%	3	4%	9	14%
Homicide	5	6%	7	8%	5	5%	6	8%	4	5%	4	6%
Undetermined	2	2%	2	2%	5	5%	0	0%	25	3%	5	8%
Total	**86**		**92**		**92**		**74**		**73**		**66**	

Children, 15 Through 17 Years of Age

Table 50. Deaths Among Children Ages 15 Through 17 Years by Cause and Manner, Arizona, 2010 (n=93)							
Cause	**Natural**	**Accident**	**Suicide**	**Homicide**	**Undetermined**	**Unknown**	**Total**
Medical	18	0	0	0	0	**2**	**20**
Transport	0	18	0	0	0	**0**	**18**
Firearm	0	0	3	4	0	**0**	**7**
Suffocation	0	0	1	0	0	**0**	**1**
Drowning	0	3	0	0	0	**0**	**3**
Blunt force trauma	0	0	0	1	0	**0**	**1**
Hanging	0	1	10	0	0	**0**	**11**
Undetermined	0	0	0	0	2	**0**	**2**
Poisoning	0	14	0	0	2	**0**	**16**
Exposure	0	6	0	0	0	**0**	**6**
Other	0	1	1	6	0	**0**	**8**
Total	**18**	**43**	**15**	**11**	**4**	**2**	**93**
*Excluding SIDS and prematurity							

Table 51. Deaths Among Children Ages 15 Through 17 Years by Cause, Arizona, 2005-2010												
Cause	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Firearm injury	34	19%	46	22%	36	22%	37	27%	23	18%	7	8%
Transport	66	37%	83	40%	49	30%	35	25%	30	23%	18	19%
Medical	34	19%	29	14%	35	22%	30	22%	32	25%	20	22%
Hanging	10	6%	19	9%	6	4%	13	9%	12	9%	11	12%
Poisoning	9	5%	5	2%	17	11%	10	7%	15	12%	16	17%
Other	2	1%	4	2%	7	4%	4	3%	4	3%	8	9%
Exposure	10	6%	4	2%	4	2%	4	3%	5	4%	6	6%
Drowning	6	3%	6	3%	0	0%	1	1%	4	3%	3	3%
Undetermined	2	1%	1	0%	4	2%	1	1%	1	1%	2	2%
Fall/crush	4	2%	1	0%	0	0%	1	1%	0	0%	0	0%
Blunt force trauma	2	1%	6	3%	0	0%	1	1%	2	2%	1	1%
Fire/burn	1	1%	2	1%	3	2%	0	0%	0	0%	0	0%
Suffocation	-	-	-	-	-	-	-	-	-	-	1	1%
Total	**180**		**206**		**161**		**137**		**128**		**93**	
*Excluding SIDS and prematurity												

Table 52. Deaths Among Children Ages 15 Through 17 Years by Manner, Arizona, 2005-2010												
Manner	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**	
Accident	92	51%	109	53%	74	46%	49	36%	48	37%	43	46%
Natural	35	19%	29	14%	34	21%	30	22%	32	25%	18	19%
Homicide	25	14%	29	14%	26	16%	30	22%	20	16%	11	12%
Suicide	23	13%	36	18%	21	13%	26	19%	24	19%	15	16%
Undetermined	5	3%	3	1%	6	4%	2	1%	4	3%	4	4%
Unknown	-	-	-	-	-	-	-	-	-	-	2	2%
Total	**180**		**206**		**161**		**137**		**128**		**93**	

APPENDIX B: POPULATION DENOMINATORS FOR ARIZONA CHILDREN

The population denominators shown below were used in computing the rates presented in this report. Denominators for 2005 through 2009 were provided by the Arizona Department of Health Services Bureau of Public Health Statistics, available online at: http://www.azdhs.gov/plan/menu/info/pd.htm.

Population denominators for 2010 were tabulated from the 2010 Decennial Census, Summary File 1, available online from: www.census.gov.

Table 53. Population of Children Ages Birth Through 17 Years by County of Residence, Arizona, 2005-2010

	2005	2006	2007	2008	2009	2010
Apache	28,451	26,177	25,708	25,713	25,888	22,660
Cochise	34,862	34,132	34,478	34,786	35,356	30,250
Coconino	37,476	25,979	35,867	35,840	36,439	31,788
Gila	13,626	13,436	13,130	13,545	14,002	11,471
Graham	10,574	9,987	9,833	10,536	10,819	10,575
Greenlee	2,585	2,359	2,355	2,551	2,496	2,463
La Paz	4,405	4,222	4,143	4,130	4,074	3,678
Maricopa	980,054	1,032,185	1,051,575	1,059,737	1,064,572	1,007,861
Mohave	43,266	43,954	45,146	45,589	45,296	41,265
Navajo	38,807	36,426	35,821	35,684	35,814	31,973
Pima	234,497	239,165	242,411	243,987	244,390	225,316
Pinal	61,497	67,010	72,802	80,600	81,414	99,700
Santa Cruz	14,764	14,475	14,624	14,880	14,898	14,560
Yavapai	42,936	42,682	43,925	44,725	44,969	40,269
Yuma	54,181	57,034	58,446	59,083	59,089	55,185
Total	**1,601,891**	**1,659,223**	**1,690,264**	**1,711,386**	**1,719,515**	**1,629,014**

Table 54. Population of Children Ages 0 Through 17 Years by Age Group, Arizona, 2005-2010

	2005	2006	2007	2008	2009	2010
<1 Year	90,288	97,113	102,587	98,995	92,263	87,557
1-4 Years	366,874	385,231	396,458	402,486	406,201	368,158
5-9 Years	457,483	450,576	457,956	465,088	469,372	453,680
10-14 Years	443,912	457,207	455,724	462,890	467,149	448,664
15-17 Years	254,334	269,096	277,927	281,927	284,530	270,955
Total	**1,601,891**	**1,659,223**	**1,690,264**	**1,711,386**	**1,719,515**	**1,629,014**

APPENDIX C: DATA ANALYSIS METHODOLOGY

Child fatality review data include a variety of data sources that may not be available to other programs or research endeavors. Arizona statute facilitates data collection among protected data sources, including health and law enforcement records (A.R.S. §36-3503). Confidentiality of records is strictly enforced, and meetings at which individual cases are reviewed are not open to the public. Case review records are destroyed after publication of the annual report.

All reasonable efforts are made to obtain complete records for each death. However, if records are unavailable, case reviews may be conducted without some information. Records may be difficult to obtain for children who died in Arizona but lived in other states or countries and for children whose families only recently moved to Arizona. These cases may have had additional risk factors that were unknown to review teams.

The reliability of child fatality data is dependent upon the accuracy of the records provided for review. Data presented in the Child Fatality Review Annual Report may differ from other published sources.

After review by the local team, review data are entered into an electronic database maintained by the National Center for Child Death Review. Completed data are downloaded from the National Center for Child Death Review database, cleaned, and analyzed using SAS software, Version 9.2 (copyright 2008 SAS Institute Inc., Cary, NC).

APPENDIX D: ARIZONA CHILD FATALITY REVIEW TEAMS AND ARIZONA DEPARTMENT OF HEALTH SERVICES STAFF

State Child Fatality Review Team

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University of Arizona College of Medicine
American Academy of Pediatrics

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Governor's Office for Children

Kathryn Bowen, MD
University of Arizona College of Medicine

David K. Byers
Leticia D'Amore (proxy)
Administrative Office of the Courts

Suzanne Cohen
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Division of Behavioral Health Services

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David Winston, MD, PhD
Forensic Pathologist
Pima County Forensic Science Center

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Apache County Youth Council

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Navajo Nation Division of Social Services

Earl Anderson
New Hope Safe House

Commander Matrese Avila
Apache County Sheriff's Office

Michael Downs
Little Colorado Behavioral Health Center

Lieutenant Fred Frazier
Eagar Police Department

Chief Mike Hogan
Eagar Police Department

Michael Johnson
Apache County Public Health Services

Chief Donny Jones
St. Johns Police Department

Debbie Neckel
St. Johns Police Department

Detective Mike Nuttall
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Apache County Public Health Services

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North Country Community Health Center

Jim Staffnik, PhD
St. Johns Middle School

Cathy Taylor, MD
North Country Community Health Center

Sandra Thompson
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Recording Secretary
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Parent Representative

Vincent Fero
Arizona Department of Public Safety

Guery Flores, MD
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Angela Hillig
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Rebecca Reyes, MD
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Rodney Rothrock
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Mary Scott
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Coconino County Public Health Department

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Glen Austin
Flagstaff Pediatrics

Roberta Coons
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Ann J. Goh
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Amy Jelliffe
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Mike Lesser
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Lizette Melis
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Michael Oxtoby
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William Pribil
Coconino County Sheriff's Office

Cathi Raley
Victim Witness

Casey Rucker
Flagstaff Police Department

Cindy Sanders, RN
Flagstaff Medical Center

Kris Stark
Victim Witness

Jared Wotasik
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Information about the Arizona Child Fatality Review Program may be found on the internet through the Arizona Department of Health Services at:
http://www.azdhs.gov/phs/owch/cfr.htm