SEVENTEENTH ANNUAL REPORT
NOVEMBER 2010

Arizona Department of Health Services
Public Health Prevention Services
Bureau of Women's and Children's Health

Office of the Director

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JANICE K. BREWER, GOVERNOR
WILL HUMBLE, DIRECTOR

November 15, 2010

Dear Friends of Arizona's Children:

Each death of a child is a tragedy not only for the family, but also for the community as a whole. 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 among children. Each death was reviewed by a local, multidisciplinary team. While the number of deaths among children declined in 2009, 33 percent of these deaths could have been prevented.

A total of 947 children younger than 18 years of age died in Arizona. Drowning deaths increased in 2009, and 100 percent of these deaths were considered preventable. In 28 drowning deaths, lack of supervision of a child around water was a contributing factor.

Three-quarters of deaths among children ages 15 through 17 years were from non-medical causes, and 70 percent of deaths in this age group were determined to be preventable. Motor vehicle crashes were the leading non-medical cause of deaths among older teens, accounting for 23 percent of deaths in this age group.

The rate of child suicides decreased in 2009, but improvements in these death investigations are needed, as 41 percent were missing information regarding the child's potential mental health treatment.

Fifty-eight percent of all deaths occurred in the first year of life. Ninety-one sudden unexpected infant deaths occurred in unsafe sleep environments. Although the number of deaths due to prematurity declined in 2009, they still represented 25 percent of all child deaths.

Deaths were disproportionately high among Hispanic, African American, and American Indian children, emphasizing the need to target these populations when implementing prevention strategies.

In order to prevent future child deaths, the State Child Fatality Review Team includes in this report several recommendations addressing child passenger safety, suicide investigation, reporting of suspected maltreatment, and child injury prevention. We hope that the information in this report will not only heighten your awareness of the causes and potential preventability of child death but also spur you into action to help prevent future child deaths.

Sincerely,

Will Humble
Director
Arizona Department of Health Services

Mary Ellen Rimsza, MD, FAAP
American Academy of Pediatrics
University of Arizona

ARIZONA CHILD FATALITY REVIEW TEAM

SEVENTEENTH ANNUAL REPORT

NOVEMBER 2010

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 Robert Burns, President, Arizona State Senate
The Honorable Kirk Adams, Speaker, Arizona State House of Representatives

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

Leadership for a Healthy Arizona

Janice K. Brewer, Governor
State of Arizona

Will Humble, Director
Arizona Department of Health Services

MISSION:

Setting the standard for personal and community health through direct care delivery, science, public policy, and leadership

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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).

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ACKNOWLEDGMENTS

We wish to acknowledge the 210 volunteers who contributed more than 4,000 hours of their time to review child deaths during 2009. 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 preventable deaths of children.

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 data from all death reviews.

In 2009, 947 children younger than 18 years of age died in Arizona. This was a decline from 2008, despite the fact that the population of children increased slightly in Arizona during 2009.

The rate of child fatalities decreased 23 percent in the five years from 2005 through 2009, from 71.7 deaths per 100,000 children in 2005 to 58.1 deaths per 100,000 children in 2009.

Arizona Child Fatality Review Teams reviewed 100 percent of child deaths and determined that 33 percent of these deaths could have been prevented (n=315).

- 94 percent of homicides were preventable (n=48).
- 100 percent of drownings were preventable (n=35).
- 93 percent of deaths from motor vehicle crashes were preventable (n=76).
- 91 percent of maltreatment deaths were preventable (n=58). For three percent of maltreatment deaths, local review teams were not able to determine preventability (n=2).
- 95 percent of deaths from accidents (unintentional injuries) were preventable (n=157).
- 89 percent of suicides were preventable (n=24). For 11 percent of suicides, local review teams were not able to determine preventability (n=3).

The number of deaths among all age groups declined in 2009 except for children ages one through four years. The percentage of children ages one through four years who died increased from 12 percent of all child deaths in 2008 (n=126) to 14 percent of all child deaths in 2009 (n=130).

Deaths were disproportionately high among most minority children in Arizona during 2009. African American children comprised five percent of the population in Arizona, but 10 percent of the fatalities. American Indian children comprised seven percent of the population and nine percent of deaths. Hispanic children accounted for 39 percent of the population and 44 percent of fatalities. Though the numbers of deaths decreased in 2009, these proportions remain nearly identical to previous years.

Deaths due to prematurity remained high among some minority groups during 2009. African American infants accounted for eight percent of deaths due to prematurity in 2007 (n=26), 14 percent of deaths due to prematurity in 2008 (n=39), and 14 percent of deaths due to prematurity in 2009 (n=33). Hispanic infants comprised 46 percent of deaths due to prematurity in 2008 (n=125) and 47 percent of deaths due to prematurity in 2009 (n=113).

Deaths involving substance use (illegal drugs, prescription drugs, and/or alcohol) declined in 2009. Nineteen percent of all child deaths involved substance use (n=182), a decrease from 2008 when substance use was involved in 20 percent of all child deaths (n=209).

The rate of motor vehicle fatalities declined from 9.9 deaths per 100,000 children in 2006 to 4.7 deaths per 100,000 children in 2009, but the rate remained stable between 2008 and 2009. Motor vehicle crashes claimed 82 children's lives in 2009, the same number of deaths as in 2008. Six children died in off-highway vehicle (OHV) crashes in 2009. Ninety-three percent of motor vehicle-related deaths were determined to have been preventable (n=76). Lack of vehicle restraints was identified as a preventable factor for 41 percent of motor vehicle crash fatalities (n=34).

In 2009, motor vehicle crashes were the leading non-medical cause of death for children ages 15 through 17 years (23 percent, n=30). This is a departure from previous years in which firearm injuries were the leading overall cause of death for this age group.

The rate of drowning fatalities increased from 1.7 deaths per 100,000 children in 2008 to 2.0 deaths per 100,000 children in 2009. Thirty-five children died due to drowning during 2009, and 100 percent of these deaths were determined to have been preventable. The highest numbers of pool drownings were among children ages one through four years.

Thirteen percent of all child deaths occurred in or around the home, and 87 percent of these deaths were determined to have been preventable (n=106). In 2009, 122 children died in or around the home, due to causes such as drownings, sleep-related suffocations, poisonings, falls, and fires. Eighty-seven percent of these deaths were among children younger than five years of age (n=106).

Ninety-one infants died in unsafe sleep environments in 2009, including 43 infants who were placed to sleep in adult beds and three who were placed to sleep in car seats or strollers. Thirty-six infants were placed to sleep on their sides or stomachs. Thirty-four infants were bed sharing with adults and/or other children, and 21 of the adults who bed shared were using illegal drugs, prescription drugs, and/or alcohol.

The child suicide rate continued to decrease in 2009, from 2.2 deaths per 100,000 children in 2005 to 1.6 deaths per 100,000 children in 2009. Twenty-seven children took their own lives during 2009, and 89 percent of these deaths were determined to

have been preventable (n=24). For 11 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 (89 percent, n=24), and 11 percent were among children 14 years of age and younger (n=3).

Deaths due to maltreatment increased from five percent of all deaths in 2008 (n=51) to seven percent of deaths in 2009 (n=64). For 22 maltreatment deaths, mandatory reporters did not notify Arizona Child Protective Services that the deaths were suspected to have been due to maltreatment even after investigation. Substance use was involved in more than half of the child maltreatment deaths during 2009 (55 percent, n=35). Ninety-one percent of maltreatment deaths were determined to have been preventable (n=58). For three percent of maltreatment deaths, local review teams were unable to determine preventability (n=2).

Successes Related to Previous Recommendations

Deaths due to prematurity
The Arizona Department of Health Services launched a preconception health awareness campaign that included culturally appropriate messaging to African Americans in Arizona. The LiveItChangeIt campaign included media messaging, community based presentations through faith-based organizations, and education for barbers and beauticians who have a significant African American clientele.

The Arizona Department of Health Services partnered with March of Dimes to hold the first annual Preconception Health Summit: “A Life Course Perspective”. All presentations from the event were recorded and made available on DVD to maternal and child health partners throughout Arizona.

The Arizona Department of Health Services joined with maternal and child health partners and the Florida Department of Health to update preconception health materials for use by healthcare providers and the public. The Every Woman Arizona packet is used by healthcare providers as a reminder to screen for preconception health topics, and individual pages can be used as informational sheets for the public.

Deaths due to motor vehicle crashes
The Arizona Game and Fish Department increased enforcement of existing laws regarding children riding or driving all terrain/off-highway vehicles including helmet use, double riding, and licensing.

The Arizona Injury Prevention Advisory Council in partnership with the Arizona Game and Fish Department convened two statewide stakeholders’ meetings to raise awareness of the various entities promoting safe all terrain/off-highway vehicle use among Arizona residents.

Deaths due to poisoning
The Arizona Parents Commission on Drug Education and Prevention approved $16,012 in funding to support the printing of a brochure in English and Spanish that informs adults of the potential dangers of prescription drugs and provides tips for safeguarding prescription drugs around children, along with information on proper drug disposal. The Commission and the Governor's Office for Child, Youth and Families partnered with Target to include the brochure with prescriptions distributed by Target stores in the state of Arizona.

Deaths due to injuries
The Arizona Injury Prevention Program provided local child death and injury data to Regional First Things First 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.

Unexpected infant deaths
The Arizona Unexplained Infant Death Council sent a letter to all law enforcement agencies in Arizona reminding them of the statutory obligation to complete an Infant Death Investigation Checklist whenever a child younger than one year of age dies unexpectedly (A.R.S. § 36-2293). The letter instructed law enforcement officers to promptly email or fax all completed Infant Death Investigation Checklists to the medical examiner's office where the autopsy will be conducted and the Arizona Department of Health Services Unexplained Infant Death Council.

RECOMMENDATIONS

Based on its review of child deaths that occurred during 2009 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 abuse (including illegal drugs, prescription drugs, and/or alcohol) was involved in 182 child deaths during 2009, accounting for 19 percent of all child deaths. According to the CFR teams, a history of drug and/or alcohol abuse played a role in 30 percent of all youth who died by suicide in this same year. Additionally, drugs and/or alcohol contributed to 55 percent of the deaths listed under maltreatment (n=35).

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 declines in costs associated with inpatient hospital admissions. Utilization of SBIRT has demonstrated a successful reduction of substance abuse in various health care populations, including primary care, emergency department, and trauma centers, in both adults and adolescents.

Recommendation to Arizona Department of Health:
Initiate outreach to hospitals and emergency departments across the state in efforts to incorporate the SBIRT model into policy and protocol and educate about the availability of the Substance Abuse Prevention and Treatment Block Grant funds, under which women and children are priority populations for substance abuse treatment.

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 also shows that when adults buckle up, 87% of children get buckled up too. In 2009, the largest percentage of motor vehicle deaths was among children 15 through 17 years of age; one third of victims were improperly restrained. Arizona's secondary seat belt law does not allow law enforcement officers to stop and ticket a driver for non-use of a seat belt unless the driver has committed another offense.

Recommendation to the Arizona Legislature: Enact a primary seat belt law to allow law enforcement officers to ticket a driver for not wearing a seat belt. This has already been enacted in four Arizona Tribal Nations.

Children aged 4 to 7 years in states with booster seat laws were 39 percent more likely to be reported as 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 car safety seats. Children should stay in a booster seat until adult belts fit correctly, usually when a child reaches 4' 9" in height and is between 8 and 12 years of age. Arizona is one of only three states that do not have a booster seat law.

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 Injury-Related Deaths among Children

In 2009, 122 children died in or around the home. Lack of supervision was a preventable factor that was identified in sixty-six 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.

Recommendation to Arizona Legislature: Strengthen current legislation regarding pool fencing to require four-sided fencing with appropriate 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, deaths, and suicides involving children and teens. There were 32 firearm deaths in 2009, with a majority of these among children 15 through 17. Only one death involved a gun that was in a locked cabinet. The 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 of the University of Washington.

Recommendation to Gun Owners: Families with children should store all firearms unloaded, in a secure locked location. Firearms should be removed from homes in which children or adolescents exhibiting signs or symptoms of mental illness reside or visit.

To Prevent Deaths due to Maltreatment

When Arizona Child Protective Services (CPS) is not notified of a death of a child where abuse or neglect is suspected because there were no other children living in the home, this results in information not being investigated by CPS. CPS would not have a record should the parents have future children and a new report of suspected abuse or neglect be received on the parents. The death of a child is critical information for subsequent CPS investigation.

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

Recommendation to Arizona Department of Economic Security Division of Developmental Disabilities and its providers: Notify Child Protective Services' Child Abuse Hotline (1-888-SOS-CHILD) promptly whenever there is a suspicion of neglect of a child's medical or developmental condition.

Arizona caseload standards are 10 investigations, 19 in-home cases, or 16 children in out of home care per CPS Specialist. As of October 2010, Arizona CPS Specialists are presently working at 64 percent above caseload standards. If all CPS Specialist positions were filled, CPS Specialists would be working at 24 percent above caseload standards.

Recommendation to the Arizona Legislature: Increase funding to the Arizona Department of Economic Security Division of Youth, Children, 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.

To Prevent Deaths due to Pneumonia/Influenza

The Arizona Child Fatality Review Teams identified 52 child deaths resulting from pneumonia/influenza in 2009. This is a sharp increase from 2008 when 21 child deaths were due to pneumonia/influenza.

Recommendation to Arizona parents: Obtain influenza immunization for yourself and all children six months of age and older. Urge other household contacts and out of home care providers of your child to obtain influenza immunization if your child is less than five years of age or has a high-risk medical condition.

To Prevent Sudden Unexpected Infant Deaths

There has been a major decrease in the incidence of sudden infant death syndrome (SIDS) since the American Academy of Pediatrics (AAP) released its recommendation in 1992 that infants be placed on their back to sleep. For more than a decade, SIDS has been defined as the sudden death of an infant younger than 1 year that remains unexplained after thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history. In 2009, CFR teams reviewed 123 sudden unexpected infant deaths and 74 percent occurred in sleep environments (n=91). Seventy-seven of these sleep environments were determined to have been unsafe (63 percent). Suffocation was the cause of 17 unsafe sleep-related deaths, and 20 sudden expected infant deaths were identified as SIDS.

Recommendation to Arizona Safe Kids Coalitions: Include safe sleep information as part of the child passenger safety and education materials distributed to families.

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.

The American Academy of Pediatrics and the National Association of Medical Examiners (NAME) endorse universal performance of autopsies by forensic

pathologists experienced in the diagnosis of SIDS whenever an infant dies suddenly and unexpectedly. In 2009, only eighty-eight percent of the sudden unexpected infant deaths were referred to medical examiner's offices (n=108). One hundred one of these cases were autopsied and ninety-nine had toxicology tests performed.

Recommendation to Arizona Medical Examiners: The determination of the manner and cause of a sudden unexpected infant death should be made after review of the Sudden Unexplained Infant Death Investigation Checklist, medical records, and an autopsy which includes radiographs, appropriate toxicology testing and appropriate metabolic and histologic studies.

The Arizona Teratogen Information Program

The Arizona Pregnancy Riskline provides toll-free, evidence based information to health care providers and consumers throughout the state who have concerns about potentially toxic exposures during pregnancy and breastfeeding. Information necessary to counsel women about these exposures is not readily available to health care providers due to the difficulties in obtaining and interpreting the available medical literature. Inappropriate medical care, even in one pregnancy, can lead to complications in the mother or baby that are likely to have significant costs to Arizona.

Arizona Pregnancy Riskline had been funded by the Arizona Legislature since 1999. Funding was cut by half in January 2009 and eliminated in July 2009. Current funding has been "cobbled together" since that time and is unlikely to be sustainable. The Riskline receives approximately 1,200 calls annually (down from 3,000 in 2008) from providers and patients. Employees of Arizona Teratogen Information Program (ATIP) provide 25-35 educational sessions annually to medical students, residents, attending physicians, other health care providers (such as CPS workers, Catholic Social Services staff, etc.) and consumers throughout Arizona.

Recommendation to the Arizona Legislature: Restore funding to the Riskline at the Arizona Poison Center so that pregnant and nursing women can receive timely information about the risks associated with drug and medication exposures, as well as the risk of influenza during pregnancy.

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

Actual reviews of 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. Additional members representing a wide range of disciplines may also participate.

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.

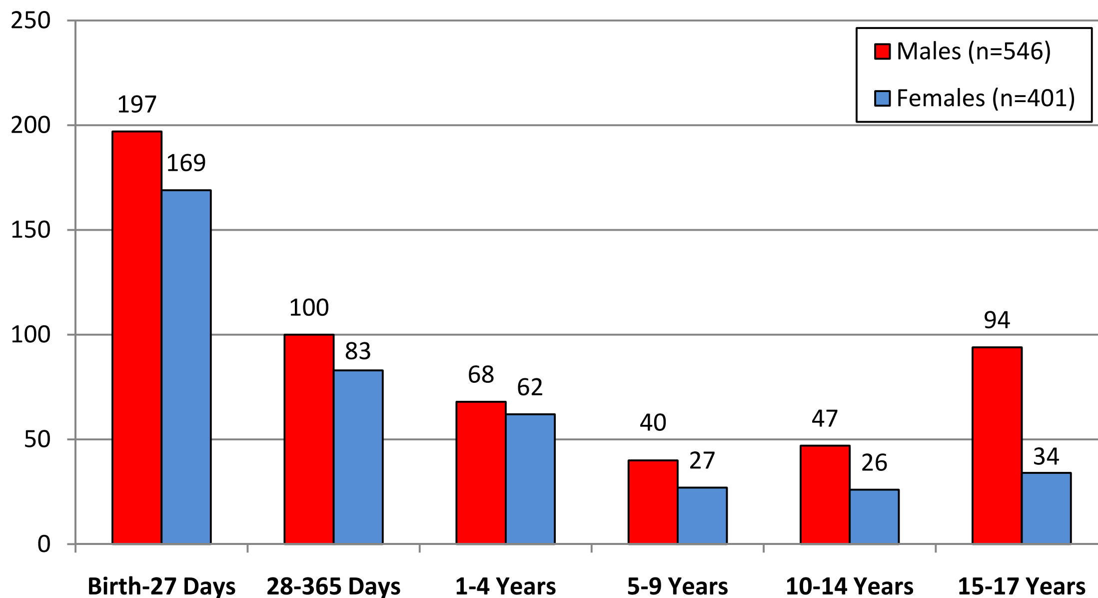
Local Child Fatality Review Teams review deaths throughout the year and submit all reviews to the Child Fatality Review Program by August 15th for inclusion in the annual report published each November. If a team has not completed a review by the August 15th deadline, the death will not be included in the published report. 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.

This is the seventeenth annual report issued by the Arizona Child Fatality Review Program. Each year, the state team has made recommendations regarding the prevention of child deaths. These recommendations are evidence-based and 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.

2009 DEMOGRAPHICS

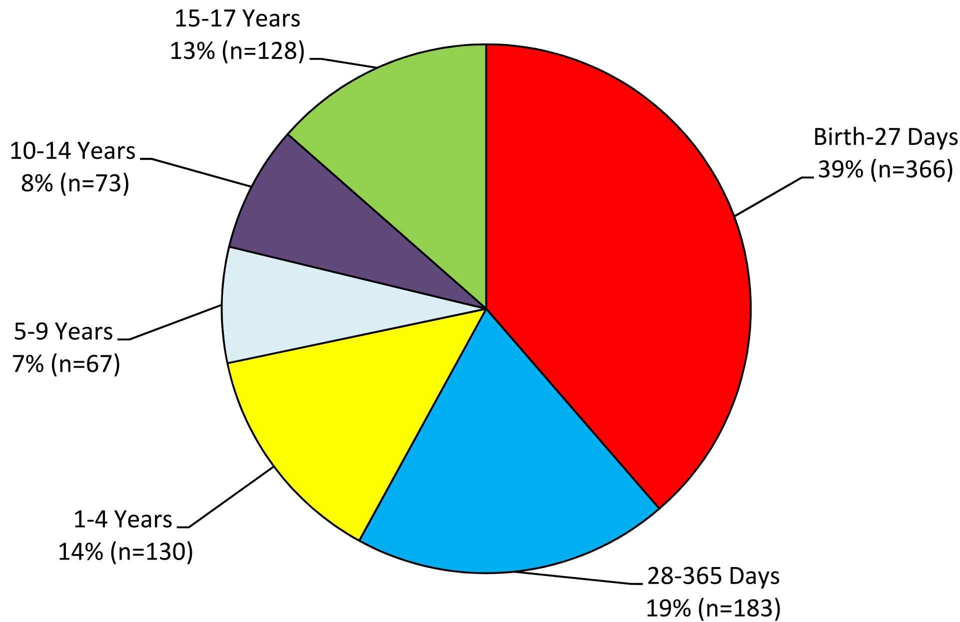
During 2009, there were 947 fatalities among children younger than 18 years in Arizona. This was a decline from 2008 when 1,038 children died, despite the fact that the population of children increased by 0.5 percent in Arizona during 2009. Males accounted for 58 percent of deaths (n=546) and females accounted for 42 percent (n=401). 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 2009 (n=947)



The largest percentage of deaths was among infants younger than 28 days (39 percent, n=366). Figure 2 shows deaths among children by age group.

Figure 2. Deaths Among Children by Age Group, Arizona 2009 (n=947)



Compared to 2008, there was a decrease in the percentage of child deaths among children less than one year of age and an increase in the percentage of deaths among children ages one through seventeen years in 2009. Table 1 shows the number and percentage deaths among children by age group for 2005 through 2009.

Table 1. Deaths Among Children by Age Group, Arizona 2005-2009

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

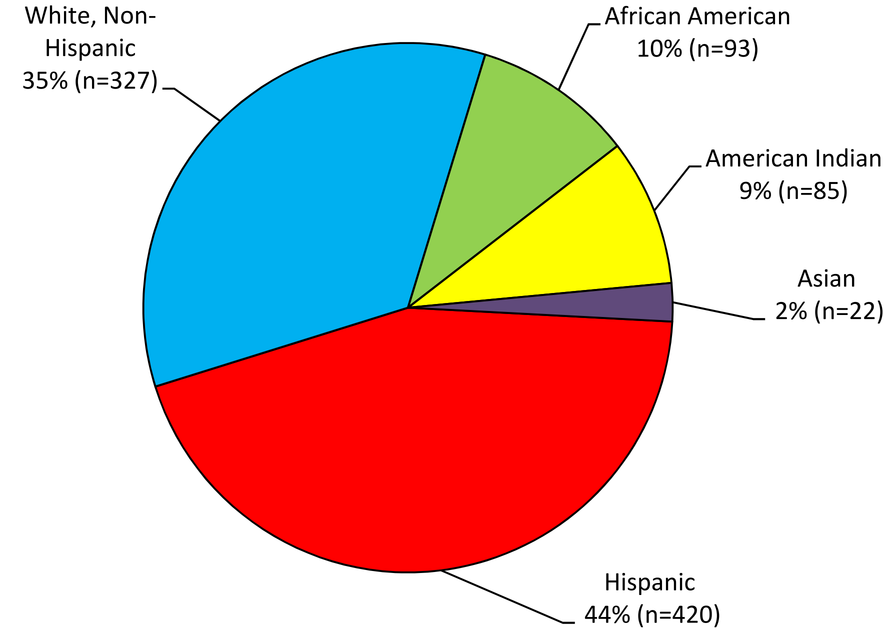
Mortality rates among all children declined 23 percent from 2005 through 2009, but rate decreases varied by age group. The declining mortality rate was largest among children 15 through 17 years (70.8 deaths per 100,000 population in 2005 to 45.0 deaths per 100,000 population in 2009). Table 2 shows 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 2005-2009					
Age Group	**2005**	**2006**	**2007**	**2008**	**2009**
<1 Year*	738.7	665.2	692.1	640.4	595.0
1-4 Years	36.5	39.7	28.5	31.3	32.0
5-9 Years	18.6	14.2	14.6	14.4	14.3
10-14 Years	19.4	20.1	20.2	16.0	15.6
15-17 Years	70.8	76.6	58.0	48.6	45.0
Total	**71.7**	**70.0**	**67.6**	**60.7**	**55.1**

*Because population denominators are only available for children younger than one year of age, deaths in the neonatal and post-neonatal periods have been combined.

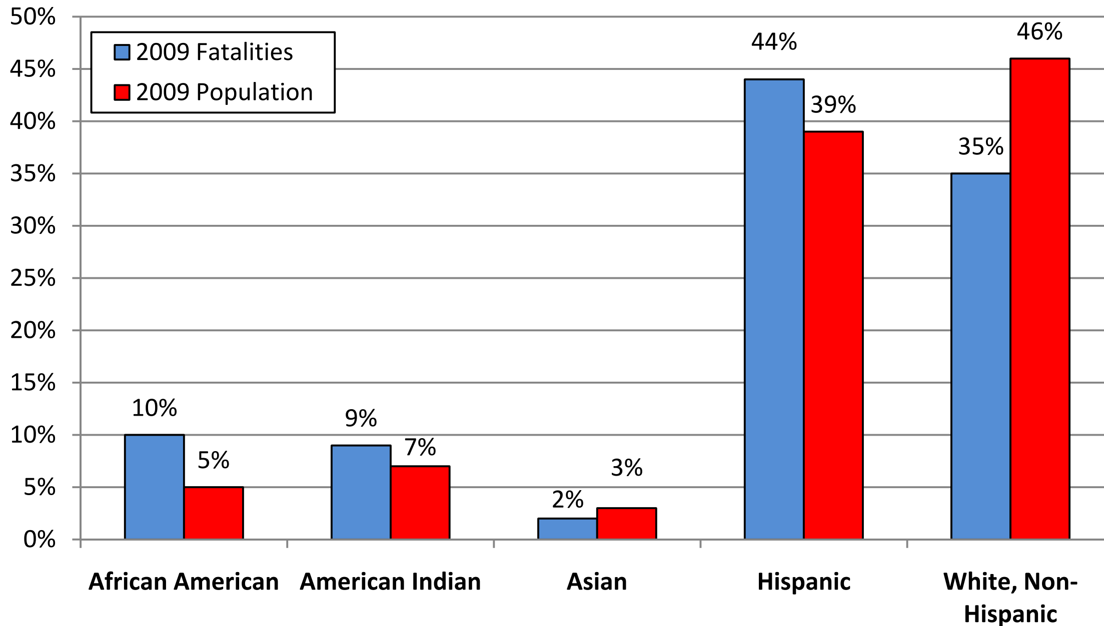
Forty-four percent of child deaths in 2009 were among Hispanics (n=420), 35 percent were among Non-Hispanic Whites (n=327), 10 percent were among African Americans (n=93), nine percent were among American Indians (n=85), and two percent were among Asians (n=22). Figure 3 shows deaths among children by race/ethnicity.

Figure 3. Deaths Among Children by Race/Ethnicity, Arizona 2009 (n=947)



Deaths were over-represented among three racial/ethnic groups in 2009. African American children comprised five percent of the population in Arizona, but 10 percent of fatalities. American Indian children comprised seven percent of the population and nine percent of deaths. Hispanic children accounted for 39 percent of the population and 44 percent of child fatalities in 2009. 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 2009



Compared to 2008, the percentages of deaths among American Indian and White, Non-Hispanic children increased during 2009. For all other races/ethnicities, the percentage of child deaths by race/ethnicity declined or remained the same compared to 2008. Table 3 shows deaths among children by race/ethnicity for 2006 through 2009.

Table 3. Deaths Among Children by Race/Ethnicity, Arizona 2006-2009								
Race/Ethnicity	**2006**		**2007**		**2008**		**2009**	
African American	102	9%	75	7%	102	10%	93	10%
American Indian	111	10%	104	9%	86	8%	85	9%
Asian	19	2%	26	2%	41	4%	22	2%
Hispanic	505	42%	529	46%	456	44%	420	44%
White, Non-Hispanic	424	37%	409	36%	353	34%	327	35%
Total	**1,161**		**1,143**		**1,038**		**947**	

Table 4 shows deaths among children by county of residence. There were increases in the percentages of deaths among children who resided in Apache, Maricopa, Mohave, and Pinal Counties in 2009. The population of children increased slightly in each of these counties from 2008 to 2009 except for Mohave County. The percentage of children who died in 2009 declined in Pima, Navajo, and Yuma Counties, even though the population of children in those counties increased slightly (less than one percent each). For more information on the population of children in Arizona, see Appendix B.

Table 4. Deaths Among Children by County of Residence Arizona 2007-2009						
County	**2007**		**2008**		**2009**	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Apache	13	1%	21	2%	26	3%
Cochise	27	2%	24	2%	21	2%
Coconino	25	2%	25	2%	18	2%
Gila	17	1%	15	1%	9	1%
Graham	12	1%	11	1%	5	<1%
Greenlee	0	--	1	<1%	0	--
La Paz	1	<1%	5	<1%	5	<1%
Maricopa	648	57%	575	55%	542	57%
Mohave	27	2%	12	1%	21	2%
Navajo	39	3%	31	3%	22	2%
Pima	148	13%	165	16%	130	14%
Pinal	64	6%	52	5%	60	6%
Santa Cruz	6	<1%	6	<1%	7	1%
Yavapai	28	2%	17	2%	20	2%
Yuma	35	3%	40	4%	28	3%
Outside Arizona	53	5%	38	4%	33	3%
Total	**1,143**		**1,038**		**947**	

CHILD FATALITY REVIEW FINDINGS

Cause and Manner of Child Fatalities

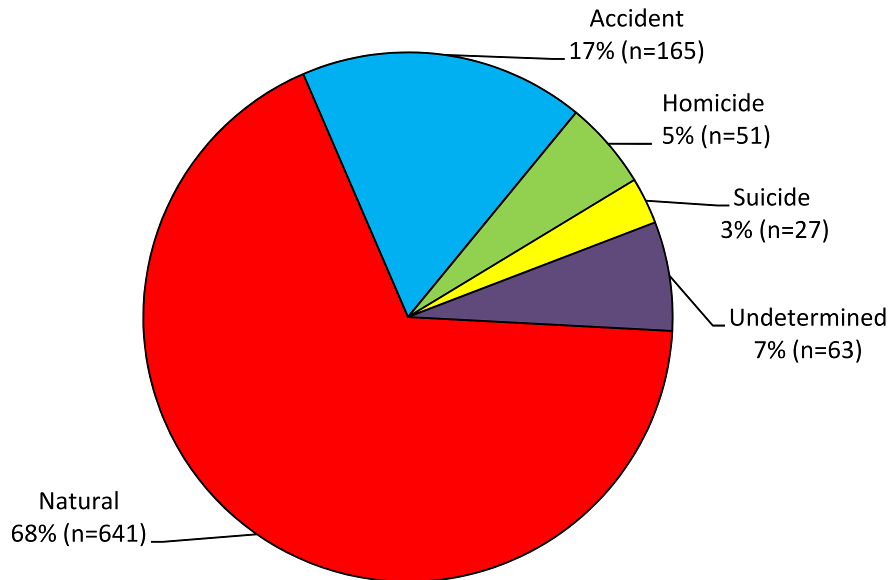
Cause of death refers to the injury or medical condition that resulted in death (e.g. firearm-related injury, pneumonia, cancer). Manner of death is not the same as cause of death, but specifically refers to the intentionality of the cause. For example, if the cause of death was a firearm-related injury,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

- natural (e.g., cancer)
- accident (unintentional injury) (e.g., unintentional car crash)
- homicide (e.g., intentional 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 team's 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.

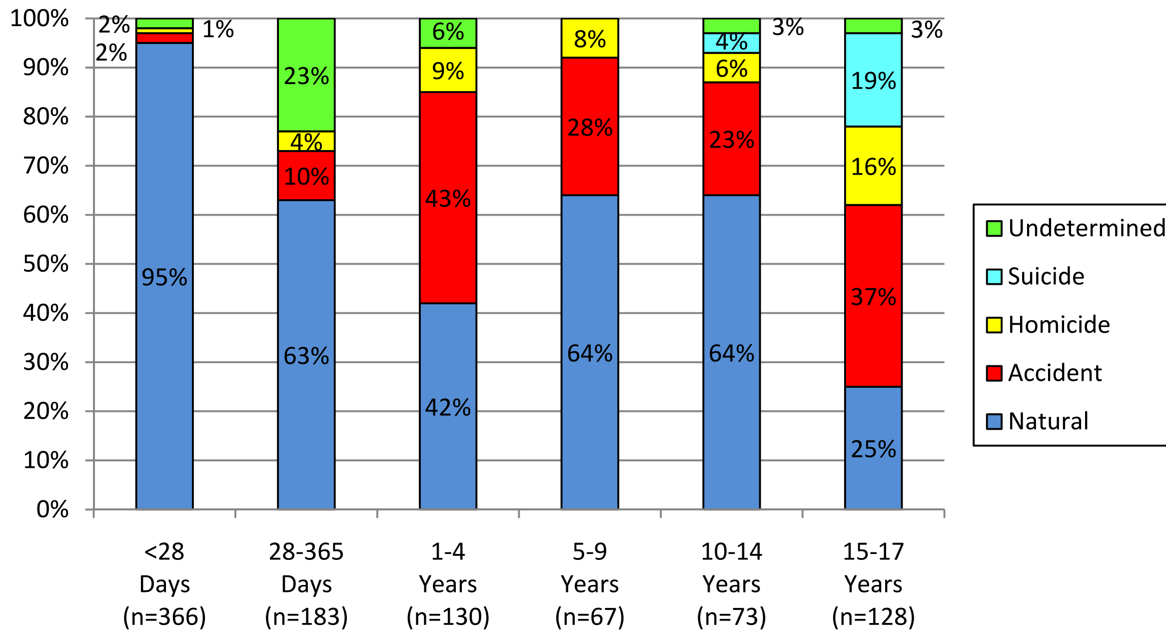
Natural deaths accounted for 68 percent of all child deaths during 2009 (n=641), 17 percent of child deaths were accidents (unintentional injuries) (n=165), five percent were homicides (n=51), three percent were suicides (n=27), and seven percent were of undetermined manner (n=63). Figure 5 shows deaths among children by manner.

Figure 5. Deaths Among Children by Manner, Arizona 2009 (n=947)



The distribution of manner of death varied by age group. Deaths among infants were primarily due to natural causes, while accidental (unintentional injury) deaths were more common among older children. Suicide occurred only among the two oldest age groups, and homicide occurred in all age groups. Figure 6 shows manner of child deaths by age group.

Figure 6. Percentage of Child Deaths by Age Group and Manner, Arizona 2009 (n=947)



The percentage of deaths due to homicides declined slightly from 2008 to 2009, and the percentages of accidental (unintentional injury) deaths increased. Table 4 shows deaths among children by manner for 2006 through 2009.

Table 4. Deaths Among Children Birth Through 17 Years by Manner of Death, Arizona 2006-2009

Manner	2006		2007		2008		2009	
Natural	743	64%	769	67%	702	68%	641	68%
Accident (Unint. Injury)	270	23%	227	20%	168	16%	165	17%
Undetermined	37	3%	53	5%	73	7%	63	7%
Homicide	63	5%	66	6%	60	6%	51	5%
Suicide	48	4%	28	2%	35	3%	27	3%
Total	**1,161**		**1,143**		**1,038**		**947**	

There were 241 deaths due to prematurity, 28 deaths due to Sudden Infant Death Syndrome (SIDS), and 372 deaths due to other medical conditions in 2009. There were 82 motor vehicle-related deaths and 35 drownings. There were seven deaths due to exposure in 2009. Four of these children died of hyperthermia while crossing the Mexico-United States border, and one child died of hyperthermia during a recreational hike. Two children died of hypothermia; alcohol consumption was involved in both cases. Table 5 shows deaths among children by cause and manner.

Table 5. Deaths among Children Birth Through 17 Years by Cause and Manner, Arizona 2009 (n=947)						
Cause	**Accident (Unint. Injury)**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Medical*	0	1	0	371	0	372
Prematurity	0	0	0	241	0	241
Motor vehicle crash	81	1	0	0	0	82
Undetermined	1	1	0	9	46	57
Firearm injury	1	21	9	0	1	32
Drowning	33	0	0	0	2	35
Suffocation	12	2	0	0	3	17
Hanging	5	0	15	0	0	20
SIDS	0	0	0	20	8	28
Blunt force trauma	0	12	0	0	1	13
Other	4	11	0	0	1	16
Poisoning	12	1	3	0	1	17
Fall/crush	6	1	0	0	0	7
Exposure	7	0	0	0	0	7
Fire/burn	3	0	0	0	0	3
Total	**165**	**51**	**27**	**641**	**63**	**947**
*Excluding SIDS and prematurity						

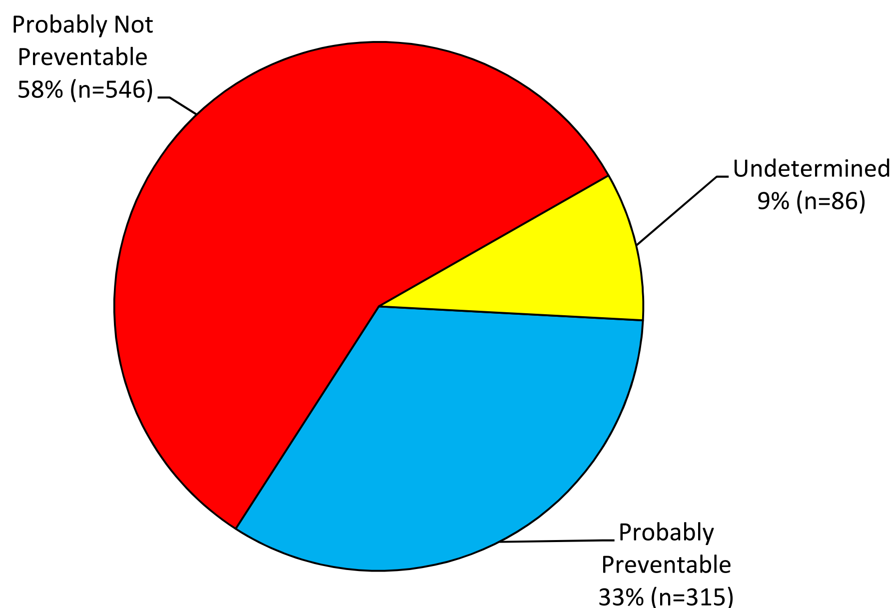
The percentages of deaths due to motor vehicle crashes, drownings, and SIDS increased, and the percentages of child deaths due to medical conditions, firearm injuries, and prematurity declined. Table 6 shows deaths among children by cause for 2007 through 2009.

Table 6. Deaths Among Children Birth Through 17 Years by Cause, Arizona 2007-2009						
Cause	**2007**		**2008**		**2009**	
Medical*	420	37%	420	40%	372	39%
Prematurity	321	28%	271	26%	241	25%
Motor vehicle crash	122	11%	82	8%	82	9%
Undetermined	34	3%	59	6%	57	6%
Firearm injury	48	4%	49	5%	32	3%
Drowning	23	2%	29	3%	35	4%
SIDS	37	3%	20	2%	28	3%
Suffocation	27	2%	21	2%	17	2%
Hanging	13	1%	21	2%	20	2%
Other	33	3%	14	1%	16	2%
Poisoning	24	2%	14	1%	17	2%
Blunt force trauma	18	1%	16	1%	13	1%
Fall/crush	9	1%	9	1%	7	1%
Exposure	8	1%	9	1%	7	1%
Fire/burn	6	1%	4	1%	3	<1%
Total	**1,143**		**1,038**		**947**	
*Excluding SIDS and prematurity						

Preventability of Child Fatalities

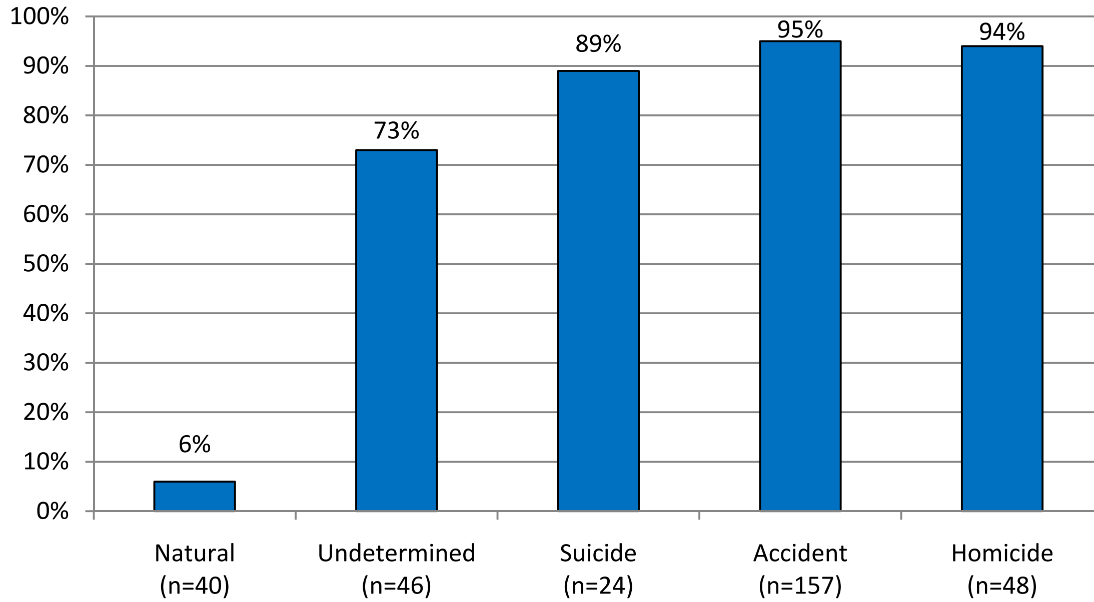
In Arizona, the child fatality review process is grounded in the principles of public health and is focused on the prevention of all child deaths. Child Fatality Review Teams consider a child's death preventable if something could have been done (by an individual such as the caregiver or supervisor, or by the community) that could have prevented the death. Child Fatality Review Teams determined that 315 child deaths in 2009 were preventable (33 percent). This percentage remained the same from 2008, when 33 percent of deaths were determined to have been preventable (n=343). Figure 7 shows deaths among children by preventability.

Figure 7. Deaths Among Children by Preventability, Arizona 2009 (n=947)



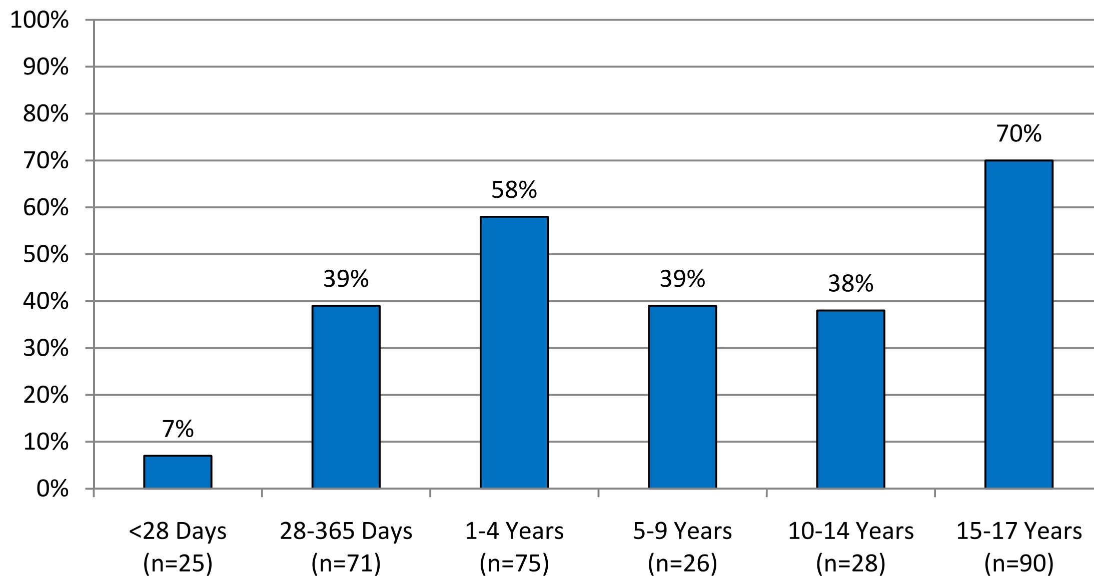
Ninety-five percent of accidental (unintentional injury) deaths were preventable (n=157), 94 percent of homicides were preventable (n=48), and 89 percent of suicides were preventable (n=24). Six percent of natural deaths were determined to have been preventable (n=40). For 11 percent of suicides and 10 percent of natural deaths, local teams did not have enough information to determine preventability (n=3 and n=62 respectively). Seventy-three percent of deaths of undetermined manner were considered preventable. Examples of preventable deaths of undetermined manner include deaths due to poisoning or firearm-related injuries in which the team could not determine whether or not the child was intentionally injured but was able to determine that the death could have been prevented. Figure 8 shows preventable deaths by manner.

Figure 8. Percentage of Preventable Deaths Among Children by Manner of Death, Arizona 2009 (n=315)



Preventability also varied by age group. Neonates had the lowest percentage of preventable deaths (7 percent, n=25). The highest percentage of preventable deaths was among children ages 15 through 17 years (70 percent, n=90). Figure 9 shows preventable deaths among children by age group.

Figure 9. Percentage of Preventable Deaths Among Children by Age Group, Arizona 2009 (n=315)



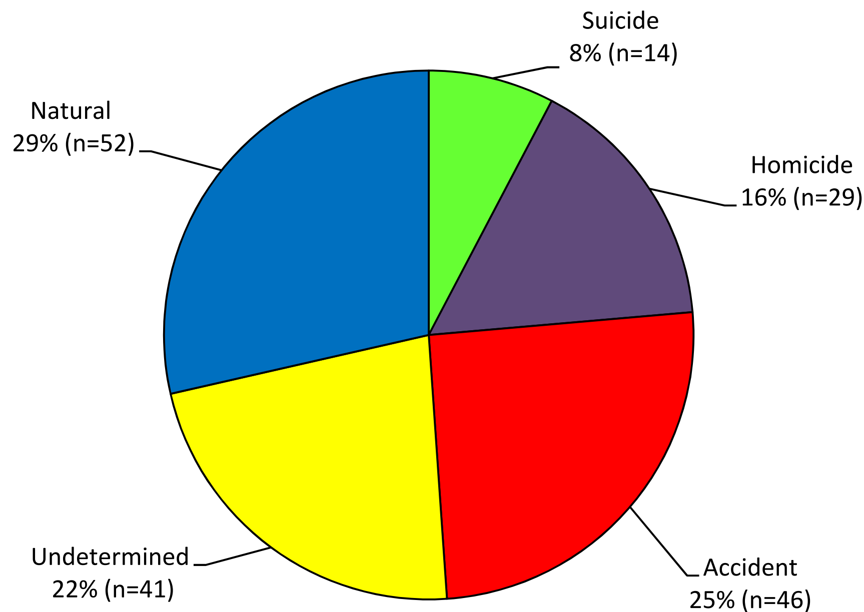
During the review of each child's death, teams identify factors believed to have contributed to the death. Although the presence of a contributing factor typically led to

the determination that a death was preventable, this was not always the case. For example, the team might have concluded that an unsafe sleep environment (e.g. infant left sleeping on a couch) was a contributing factor in an unexpected infant death. However, the team may not have had sufficient information (e.g. autopsy report, adequate scene investigation) to determine that the death could have been prevented.

SUBSTANCE USE

Substance use (including illegal drugs, prescription drugs, and/or alcohol) was involved in 182 child deaths in Arizona during 2009, which accounted for 19 percent of all child deaths. In 2008, substance use was involved in 20 percent of all child deaths (n=209). In 2009, 29 percent of deaths involving substance use were natural (n=52), 25 percent were accidents (unintentional injuries) (n=46), 22 percent were deaths of undetermined manner (n=41), 16 percent were homicides (n=29), and eight percent were suicides (n=14). Figure 10 shows child deaths involving drugs and/or alcohol by manner.

Figure 10. Child Deaths Involving Drugs and/or Alcohol by Manner, Arizona 2009 (n=182)



Among the substance abuse-related deaths, firearms accounted for 9 percent (n=17) of deaths involving drugs and/or alcohol, and motor vehicle crashes accounted for 10 percent of child deaths (n=19), including seven children who died in crashes involving substance-impaired drivers. Sixteen deaths were due to prematurity (typically substance exposed preterm newborns). Table 7 shows child deaths involving drugs and/or alcohol by cause and manner in 2009.

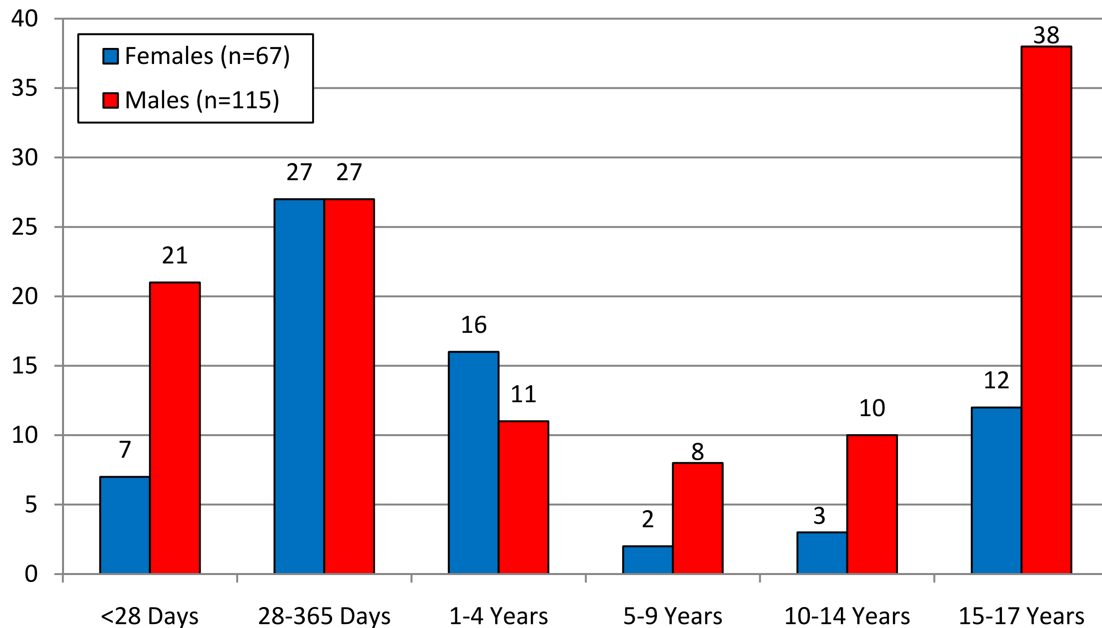
Table 7. Child Deaths Involving Drugs and/or Alcohol by Cause and Manner, Arizona 2009 (n=182)						
Cause	**Accident (Unint. Injury)**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Medical*	0	0	0	29	0	**29**
Prematurity	0	0	0	16	0	**16**
Undetermined	0	1	0	2	30	**33**
Motor vehicle crash	18	1	0	0	0	**19**
Firearm injury	0	11	5	0	1	**17**
Poisoning	12	1	3	0	1	**17**
Suffocation	7	2	0	0	3	**12**
SIDS	0	0	0	5	4	**9**
Other injury	0	7	0	0	1	**8**
Blunt force trauma	0	6	0	0	0	**6**
Hanging	0	0	6	0	0	**6**
Drowning	3	0	0	0	1	**4**
Exposure	2	0	0	0	0	**2**
Fire/burn	2	0	0	0	0	**2**
Fall/crush	2	0	0	0	0	**2**
Total	**46**	**29**	**14**	**52**	**41**	**182**
*Excluding SIDS and prematurity						

Alcohol was involved in 51 child deaths in 2009, 76 child deaths in 2008, and 80 deaths in 2007; marijuana was involved in 67 deaths in 2009; methamphetamine was involved in 53 deaths in 2009; cocaine was involved in 17 deaths in 2009; and opiates were involved in 24 deaths in 2009. More than one substance may have been involved in a single death. Table 8 shows substances involved in child deaths from 2007 through 2009.

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

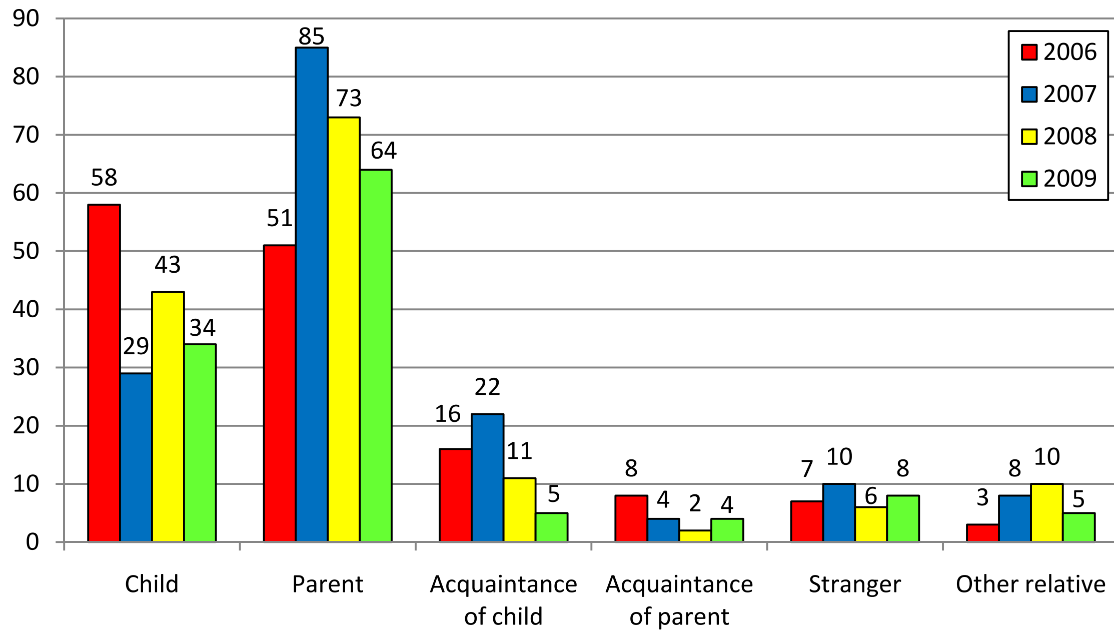
Drugs and/or alcohol were determined to have been involved in child deaths among males and females in all age groups. Males of all age groups accounted for 63 percent of all substance use-related deaths (n=115). Figure 11 shows child deaths involving substance use by sex and age group.

Figure 11. Child Deaths Involving Substance Use by Sex and Age Group, Arizona 2009 (n=182)



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 the 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 64 deaths in 2009, the user was the parent, and for 34 deaths, the user was the child. In some deaths, more than one individual may have been using drugs and/or alcohol. Figure 12 shows child deaths involving drugs and/or alcohol by substance user for 2006 through 2009.

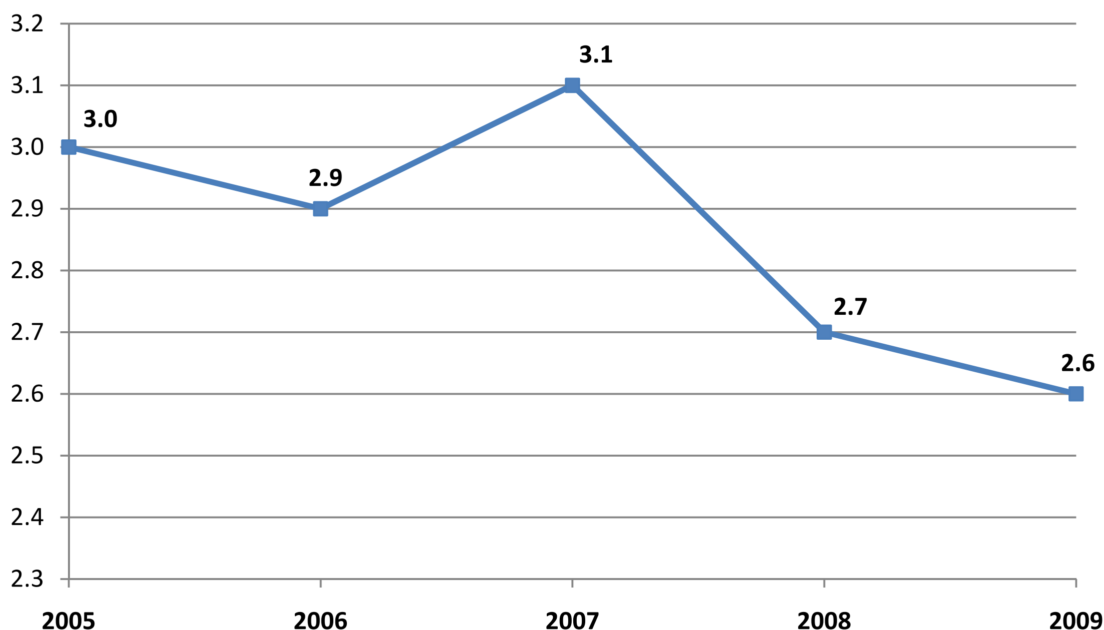
Figure 12. Child Deaths Involving Drugs and/or Alcohol by Substance User, Arizona 2006-2009



PREMATURITY

Local teams consider a child's cause of death to be prematurity if the infant was less than 38 weeks gestation and factors directly related to prematurity caused the death. Infants born prematurely who had congenital anomalies incompatible with survival after birth are not included in the prematurity category. In 2009, there were 241 deaths due to prematurity, which accounted for 25 percent of all child deaths. There were 271 deaths due to prematurity in 2008 (26 percent of all deaths). The rate of deaths due to prematurity in 2009 was 2.6 deaths per 1,000 live births. This was a 13 percent decline from 2005 when the rate was 3.0 deaths per 1,000 live births. Figure 13 shows the rates of child deaths due to prematurity from 2005 through 2009.

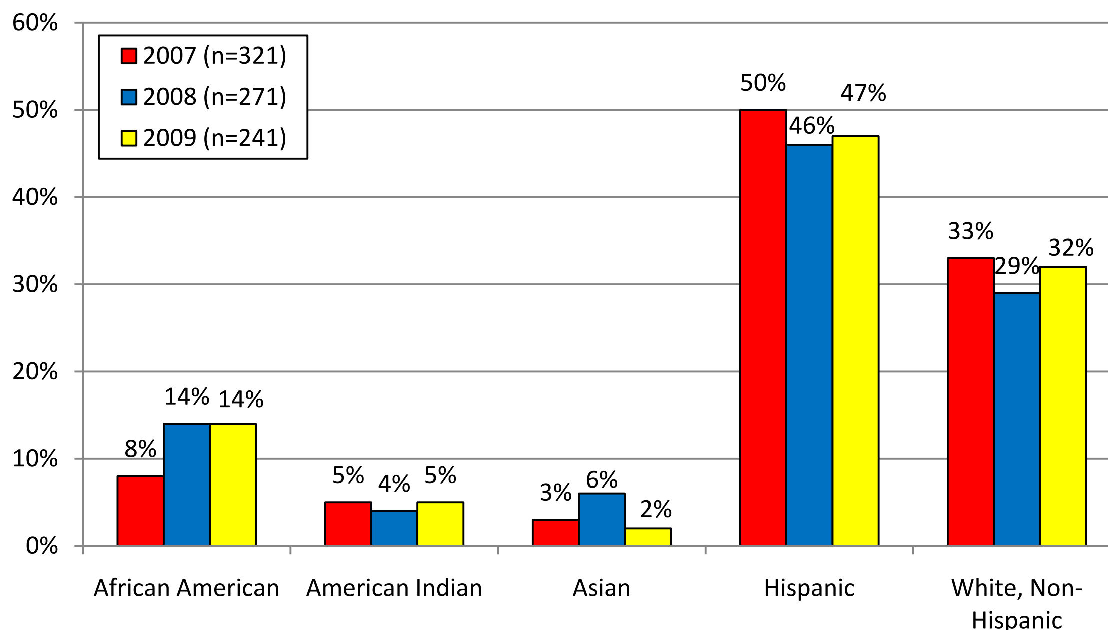
Figure 13. Rate of Child Deaths due to Prematurity (per 1,000 live births), Arizona 2005-2009



In 2009, 55 percent of the premature infants who died were males (n=132) and 45 percent were females (n=109). Nearly half of the premature infants who died were Hispanic (47 percent, n=113), 32 percent were White, Non-Hispanic (n=77), 14 percent were African American (n=33), two percent were Asian (n=6), and five percent were American Indian (n=12). In 80 cases, at least one of the parents was a first generation immigrant, including four families from European countries and five from Asian countries. In a majority of cases in which a parent of a deceased child was a first generation immigrant, the parent was from Mexico (65 percent, n=52).

While the percentage of African American infants who died of prematurity increased from eight percent in 2007 (n=26) to 14 percent in 2008 (n=39), the percentage remained stable in 2009 (14 percent, n=33). Figure 14 shows deaths due to prematurity by race/ethnicity from 2007 through 2009.

Figure 14. Child Deaths due to Prematurity by Race/Ethnicity, Arizona 2007-2009



In 2009, over half of the deaths due to prematurity were among infants who were 21 through 24 weeks gestational age (52 percent, n=126), followed by infants who were 20 weeks gestational age or less (24 percent, n=59). There were 52 infants who were 25 through 37 weeks gestational age (22 percent). For four infants, gestational age was unknown. There were 42 deaths due to prematurity among infants in multiple births (35 were twins, 3 were triplets, and four were quintuplets).

For two percent of deaths due to prematurity, prenatal care information was unknown to review teams (n=6). For 10 percent of the deaths, the mother reported that she did not receive any prenatal care (n=24). Seventy-eight percent of mothers started prenatal care within the first trimester (n=189). For over half of the prematurity deaths, the mother was 20 through 29 years of age at the time of the birth (52 percent, n=125). Twelve percent of the mothers were 19 years of age and younger (n=28), 33 percent were 30 through 39 years of age (n=79), and two percent of mothers were 40 years of age and older (n=4). There were five cases in which the mother's age was unknown.

Forty-nine percent of mothers whose infants died of prematurity were insured by the Arizona Health Care Cost Containment System (AHCCCS) (n=117). Thirteen percent of mothers had less than a high school education (n=31), 46 percent completed high school (n=111), and 37 percent completed at least some college (n=89). For four percent of mothers, educational status was unknown (n=10).

For 85 percent of deaths due to prematurity, the mothers experienced pregnancy- or birth-related complications which may have contributed to the death (n=206). Twenty-six mothers were known to have had a chronic illness, including seven women who had

non-gestational diabetes, and ten mothers were known to be obese. Five percent of mothers reported using illegal drugs or heavy alcohol use during pregnancy (n=11). Seven percent of mothers reported smoking during pregnancy (n=17). Table 9 shows risk factors for prematurity deaths.

Table 9. Risk Factors for Prematurity Deaths, Arizona 2009		
Factor*	**Number**	**Percent**
Mother had pregnancy or birth complications	206	85%
Multiple birth	42	17%
Mother had chronic illness (e.g. diabetes)	26	11%
Smoking during pregnancy	17	7%
Drugs and/or alcohol during pregnancy	11	5%
*More than one factor may have been identified for each death		

INFLUENZA-RELATED FATALITIES

Infections resulting from the influenza virus claim the lives of children each year, and 2009 saw the pandemic spread of the H1N1 influenza virus. While the H1N1 strain of influenza did not cause the rates of morbidity and mortality originally predicted by public health officials, the virus remains particularly deadly to children and pregnant women, especially those with underlying medical conditions.

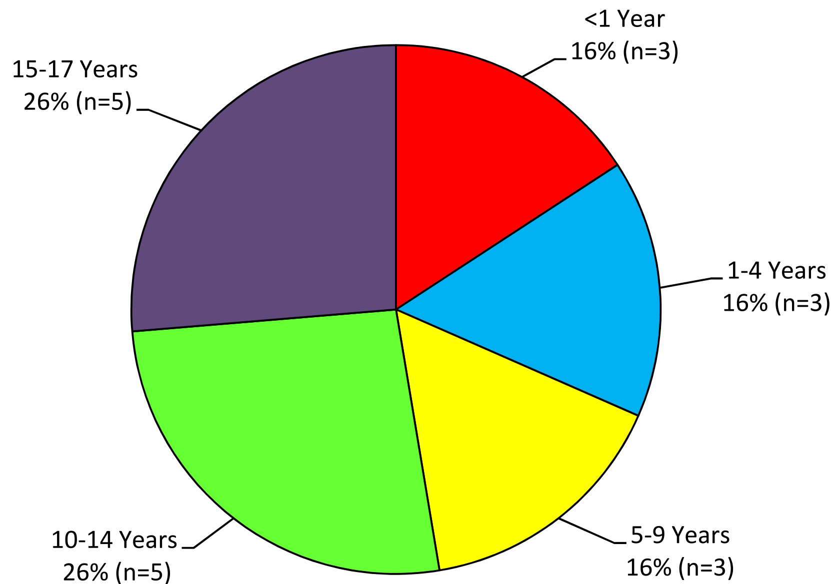
The Arizona Department of Health Services Office of Infectious Disease Services (ADHS-OIDS) identified 12,580 pediatric cases of influenza during 2009, and 4,524 of these cases were confirmed by a laboratory to be the H1N1 strain of the virus. The ADHS-OIDS confirmed 25 pediatric deaths associated with influenza in 2009, and 20 of these deaths were associated with the H1N1 strain of the influenza virus. The Arizona Child Fatality Review Teams identified 19 child deaths in 2009 resulting from an influenza infection; 17 of these deaths were from the H1N1 strain of influenza. Local Child Fatality Review Teams identified four additional cases in which influenza played a role but was not the primary cause of death.

Influenza is a serious respiratory disease and a common cause of pneumonia in children. The Arizona Child Fatality Review Teams identified 52 child deaths resulting from pneumonia/influenza, with 19 of these deaths known to be due to influenza (two percent of all child deaths in 2009). This is a sharp increase in pneumonia/ influenza deaths from 2008, in which 21 deaths resulted from pneumonia/ influenza, and 2007, in which 17 deaths were due to pneumonia/ influenza.

Sixty-eight percent of the 19 deaths resulting from influenza in 2009 were among males (n=13) and 32 percent were among females (n=6). Thirty-seven percent of the children who died in 2009 due to influenza were White, non-Hispanic (n=7), 37 percent were Hispanic (n=7), 11 percent were African American (n=2), 11 percent were American Indian (n=2), and five percent were Asian (n=1).

Over half of the influenza deaths in 2009 were among children ten through 17 years of age (52 percent, n=10). Figure 15 shows influenza deaths among children by age group.

Figure 15. Influenza Deaths Among Children by Age Group, Arizona 2009 (n=19)



Children with chronic medical conditions are more likely to experience medical severe complications, including death, from influenza infection than healthy children. Seventy-nine percent of the influenza deaths in 2009 were among children with one or more underlying medical conditions (n=15). Six of the children had cerebral palsy, two children had chronic lung disease, and one child was born extremely prematurely as a result of maternal influenza infection.

Deaths due to influenza infection can be prevention by immunization and prompt medical care. Though each death is reviewed individually, local review teams generally considered influenza deaths to be unpreventable if the family sought timely and appropriate medical care for the ill child, and if the medical treatment provided was clinically appropriate. While influenza vaccination is a preventable factor for these deaths, the vaccine was not widely available throughout Arizona before the end of 2009. Given the limited availability of the vaccine, local review teams often did not know if influenza vaccine was available when reviewing individual cases, and therefore could not assess this preventable factor in most cases. Eleven percent of the child influenza deaths in 2009 were determined to have been preventable (n=2). For 32 percent of influenza deaths, local review teams were not able to determine preventability (n=6).

SUDDEN UNEXPECTED INFANT DEATHS

Local review teams define sudden unexpected infant deaths as deaths that occur 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. Sudden infant death syndrome (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.

Although the number of sudden unexpected infant deaths declined in 2009, these deaths comprised the same percentage of total deaths compared to 2008. There were 123 unexpected infant deaths in Arizona in 2009 (13 percent of all deaths that year). In 2008, there were 140 unexpected infant deaths in Arizona, which accounted for 13 percent of all child deaths. Fifty-two percent of unexpected infant deaths in 2009 were among males (n=64), and 48 percent were among females (n=59).

Hispanic infants accounted for 37 percent of sudden unexpected infant deaths (n=45), non-Hispanic Whites accounted for 31 percent (n=38), African Americans accounted for 18 percent (n=22), American Indians accounted for 14 percent (n=17), and one percent were among Asian children (n=1).

Nearly half of the deaths were among infants younger than three months of age (49 percent, n=60). Forty-six deaths were among infants between three and six months of age (37 percent), and 17 infants who died unexpectedly were older than six months of age (14 percent).

For 40 deaths, teams were unable to determine the cause of death (33 percent). Thirty-four deaths were due to medical causes (28 percent), including 14 deaths due to pneumonia/influenza. Seventeen sudden unexpected infant deaths were due to suffocation (14 percent) and 28 sudden unexpected infant deaths were due to SIDS (23 percent). Table 10 shows sudden unexpected infant deaths by cause.

Table 10. Sudden Unexpected Infant Deaths by Cause, Arizona 2009 (n=123)

Cause	Number	Percent
Undetermined	40	33%
SIDS	28	23%
Suffocation	17	14%
Pneumonia/influenza	14	11%
Cardiovascular	10	8%
Other medical	10	8%
Other injury	4	3%
Total	**123**	

Investigation

Law enforcement conducted scene investigations in 72 percent of sudden unexpected infant deaths (n=89). Eighty-eight percent of sudden unexpected infant deaths were referred to medical examiners' offices (n=108), and 101 of those cases received an autopsy. For the 15 deaths that were not referred to medical examiners, most were deaths due to medical causes (n=14).

Ninety-one children were known to have had toxicology tests performed. Three children tested positive for cough/cold medication, two tested positive for anti-anxiety medications, one tested positive for caffeine, and one tested positive for a non-toxic level of acetaminophen. Eighty-five children were known to have had radiographs.

Unsafe Sleep Environments

Of the 123 sudden unexpected infant deaths, 74 percent occurred in sleep environments (n=91). Seventy-seven of these sleep environments were determined to have been unsafe (63 percent). Suffocation was the cause of 17 unsafe sleep-related deaths, and 20 deaths in unsafe sleep environments were identified as SIDS. For 32 deaths that occurred in unsafe sleep environments, the review teams could not determine the cause of death.

Thirty-four infants were bed sharing with adults and/or other children. Twenty-one of the adults who were bed sharing with infants were known to have been using illegal drugs, prescription drugs, and/or alcohol. Forty-three infants were sleeping in adult beds, two were sleeping on couches or chairs, and three were sleeping in car seats or strollers. Thirty-six infants were put to sleep on their sides or stomachs.

More than half of the 123 sudden unexpected infant deaths were determined to have been preventable (54 percent, n=67). Unsafe sleep environments was a contributing factor in 74 of these deaths (60 percent), followed by lack of supervision (54 percent, n=66). Table 11 shows preventable factors for sudden unexpected infant deaths.

Table 11. Preventable Factors for Sudden Unexpected Infant Deaths, Arizona 2009

Factor*	Number	Percent
Unsafe sleep environment	77	63%
Lack of supervision	66	54%
Drugs and/or alcohol	50	41%
Infant exposure to smoking	29	24%

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

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 were 28 deaths identified by local review teams as SIDS in 2009, compared to 20 in 2008.

Forty-six percent of the children who died of SIDS were male (n=13) and 54 percent were female (n=15). Four of the infants who died of SIDS had been born prematurely (all were singleton births). Fifty-seven percent of the children who died of SIDS were Hispanic (n=16), 25 percent were non-Hispanic Whites (n=7), 11 percent were American Indian (n=3), and seven percent were African American (n=2).

Investigation

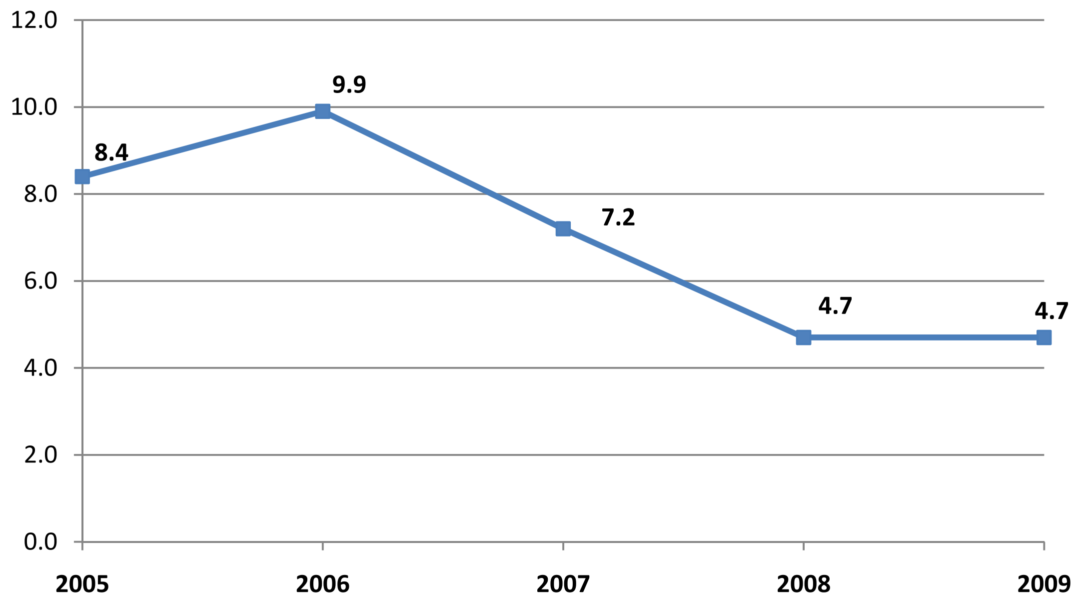
Twenty-six SIDS deaths were known to have had law enforcement investigations of the death scenes. Twenty-seven SIDS deaths received autopsies, and 22 had the official cause of death determined by a medical examiner. Twenty-three children who died of SIDS were known to have had toxicology tests performed. One child tested positive for an anti-anxiety medication and one tested positive for caffeine. Eighteen of the 28 children were known to have had x-rays.

All 28 SIDS deaths occurred in sleep environments. Thirteen of the deaths occurred while the infant was sleeping in a crib or bassinette, and eight occurred while the infant was sleeping in an adult bed. Nine of the infants who died of SIDS were bed sharing with at least one adult or child. For eight infants, the sleep position was unknown to the review teams. Seven infants were known to have been put on their backs to sleep, and thirteen of the infants who died of SIDS were put to sleep on their stomachs or sides. Three children who died of SIDS were sleeping in cribs on their backs. Of the 15 infants who were not in cribs or bassinettes, scene investigations showed that four of these families had a crib in the home.

MOTOR VEHICLE CRASH FATALITIES

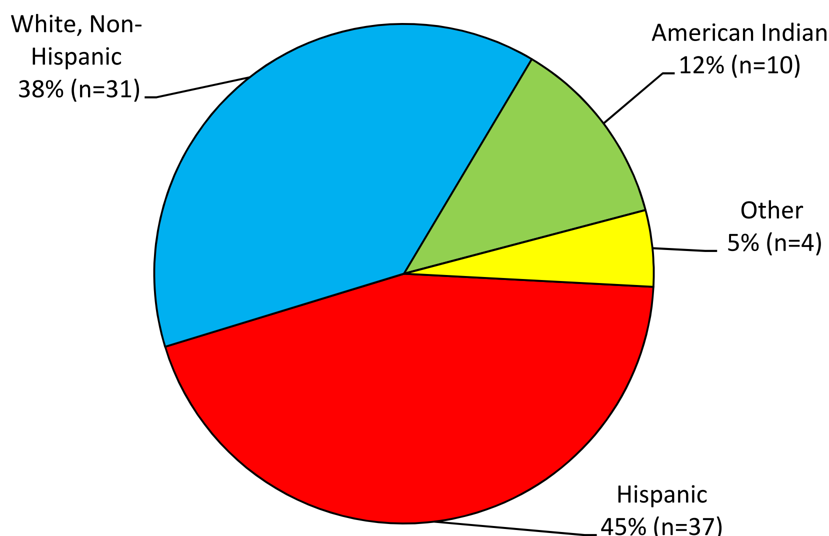
In 2009, 82 children died as the result of motor vehicle crashes in Arizona (nine percent of child fatalities). In 2008, 82 children died as the result of motor vehicle crashes in Arizona (8 percent of child fatalities). The rate of motor vehicle fatalities in 2009 was 4.7 deaths per 100,000 children, a 44 percent decline from 2005 when the motor vehicle fatality rate was 8.4 deaths per 100,000 children. Figure 16 shows the rates of child deaths due to motor vehicle crashes from 2005 through 2009.

Figure 16. Rate of Child Deaths due to Motor Vehicle Crashes (per 100,000 children), Arizona 2005-2009



The majority of motor vehicle-related deaths in 2009 were among males (65 percent, n=53) and 35 percent were among females (n=29). Forty-five percent of the children who died were Hispanic (n=37), 38 percent were Non-Hispanic White (n=31), 12 percent were American Indian (n=10), and five percent were other races/ethnicities (n=4). Figure 17 shows motor vehicle-related deaths by race/ethnicity.

Figure 17. Motor Vehicle-Related Deaths Among Children by Race/Ethnicity, Arizona 2009 (n=82)



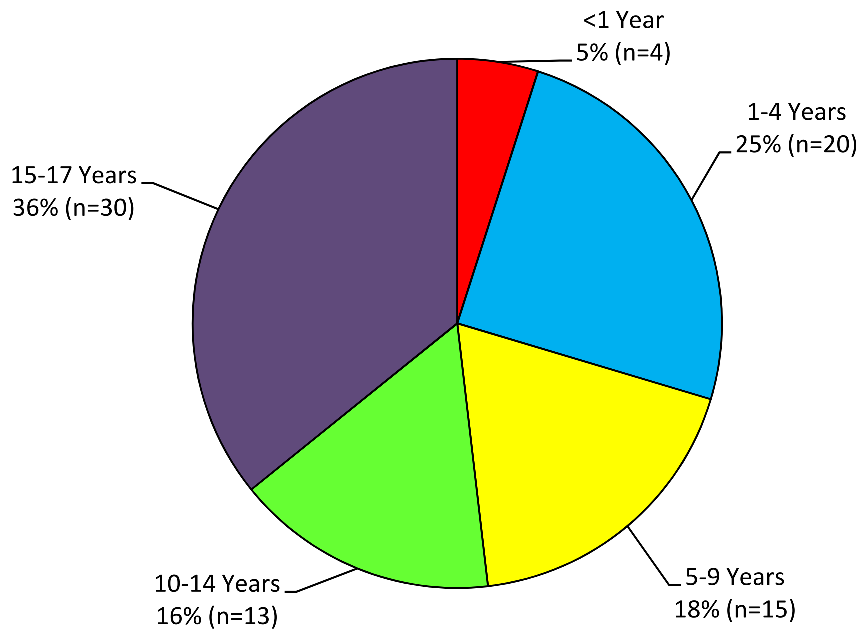
The distribution of motor vehicle-related deaths by race/ethnicity was different in 2008 when 18 percent of the deaths were among American Indian children, 44 percent of the deaths were among Hispanics, 32 percent were among Non-Hispanic Whites, and six percent were among other races/ethnicities. Table 12 shows motor vehicle-related deaths among children by race/ethnicity for 2006 through 2009.

Table 12. Motor Vehicle-Related Deaths Among Children by Race/Ethnicity, Arizona 2006-2009

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

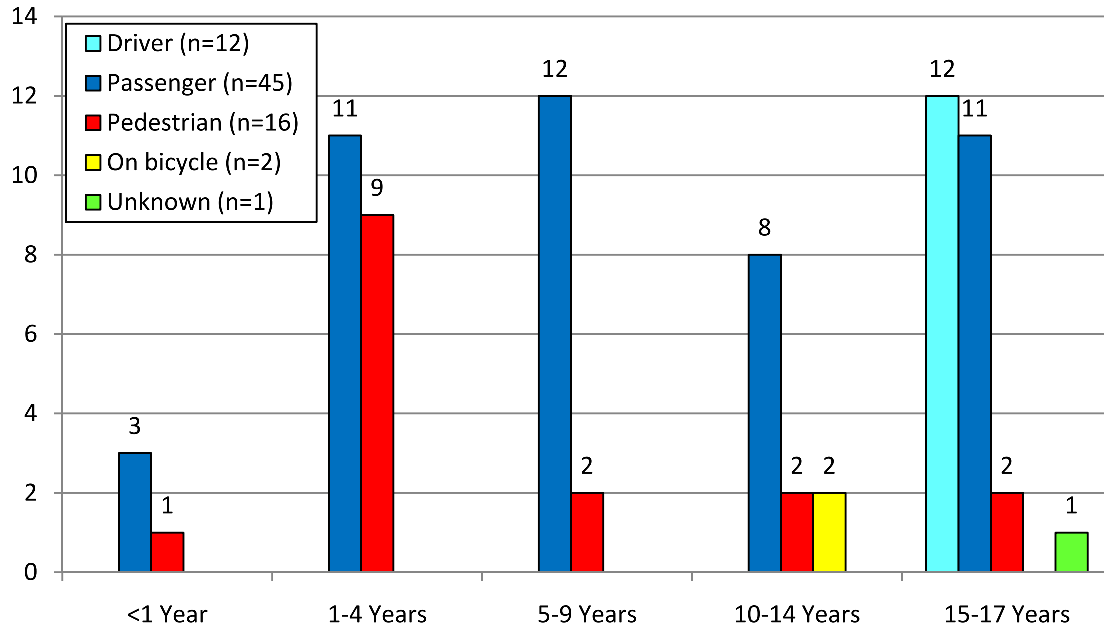
The largest percentage of motor vehicle-related deaths was among children ages 15 through 17 years (36 percent, n=30), followed by children ages 1 through 4 years (25 percent, n=20). Figure 18 shows motor vehicle-related deaths by age group.

Figure 18. Motor Vehicle-Related Deaths Among Children by Age Group, Arizona 2009 (n=82)



Of the 76 children who died in vehicle crashes, 45 were passengers of motor vehicles, 12 were drivers, 16 were pedestrians, and two were on bicycles. Six child pedestrians were killed due to vehicle backovers. All of these children were struck by sport utility vehicles or trucks, and all were two years of age and younger. Figure 19 shows motor vehicle crashes by age group and location. This figure excludes deaths due to off-highway vehicle (OHV) crashes, such as those involving recreational use of an ATV or dirt bike.

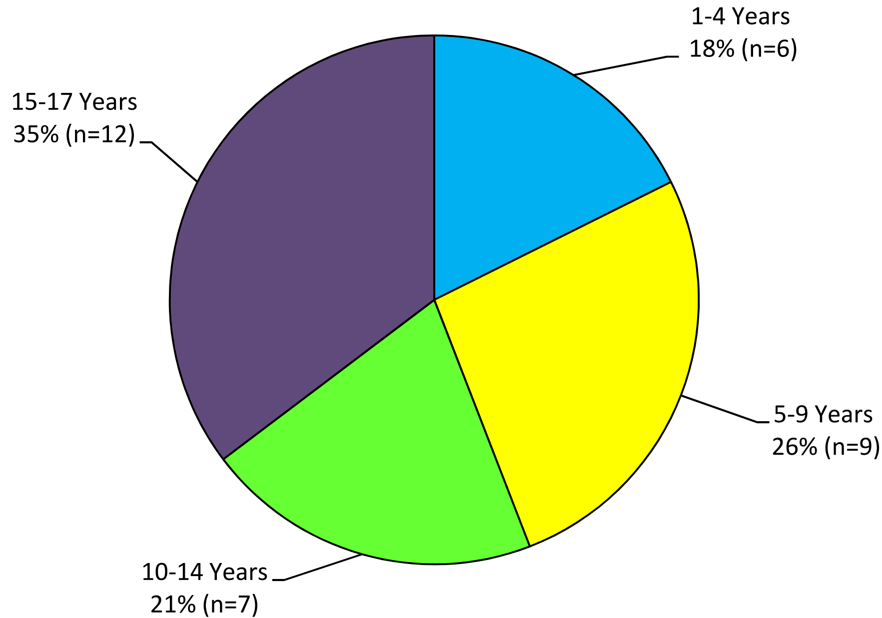
Figure 19. Motor Vehicle-Related Deaths Among Children by Age Group and Location (Excluding OHV Crashes), Arizona 2009 (n=76)



Among the total 45 passengers, 23 were located in the back seat, 8 were in the front seat, three were riding in truck beds, and 11 were in other or unknown locations. Of the eight children who were in front seats, four were 13 years of age and younger. Two children died as a result of *in utero* trauma during a motor vehicle crash. Four unrestrained teen passengers died in a motor vehicle crash while being smuggled into the United States from Mexico.

Sixty percent of children riding in vehicles were known to be improperly restrained (n=34). Over one-third of all children who were not properly restrained were ages 15 through 17 years (35 percent, n=12), and all of these children were one year of age or older. Figure 20 shows motor vehicle deaths associated with improperly restrained occupants by age group.

Figure 20. Motor Vehicle Crash Deaths with Improperly Restrained Occupants by Age Group, Arizona 2009 (n=34)



Ninety-three percent of all motor vehicle crash fatalities during 2009 were determined to have been preventable (n=76). Lack of vehicle restraints was identified as a preventable factor for 34 motor vehicle crash fatalities among children (41 percent). Eleven children died in crashes involving drugs and alcohol, and seven deaths involved substance-impaired drivers; for four of these deaths, the impaired driver was the child who died. For 24 deaths, excessive speed was a contributing factor (29 percent). Table 13 shows preventable factors for motor vehicle crash deaths among children. This table includes factors that were identified for the six deaths due to OHV crashes.

Table 13. Preventable Factors for Motor Vehicle-Related Deaths Among Children, Arizona 2009

Factor*	Number	Percent
Lack of vehicle restraint	34	41%
Excessive driving speed	24	29%
Driver inexperience	17	21%
Reckless driving	15	18%
Drugs and/or alcohol	11	13%
Red light running	7	9%
Driver distraction	6	7%
Lack of helmet	4	5%

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

Off-Highway Vehicle Crashes

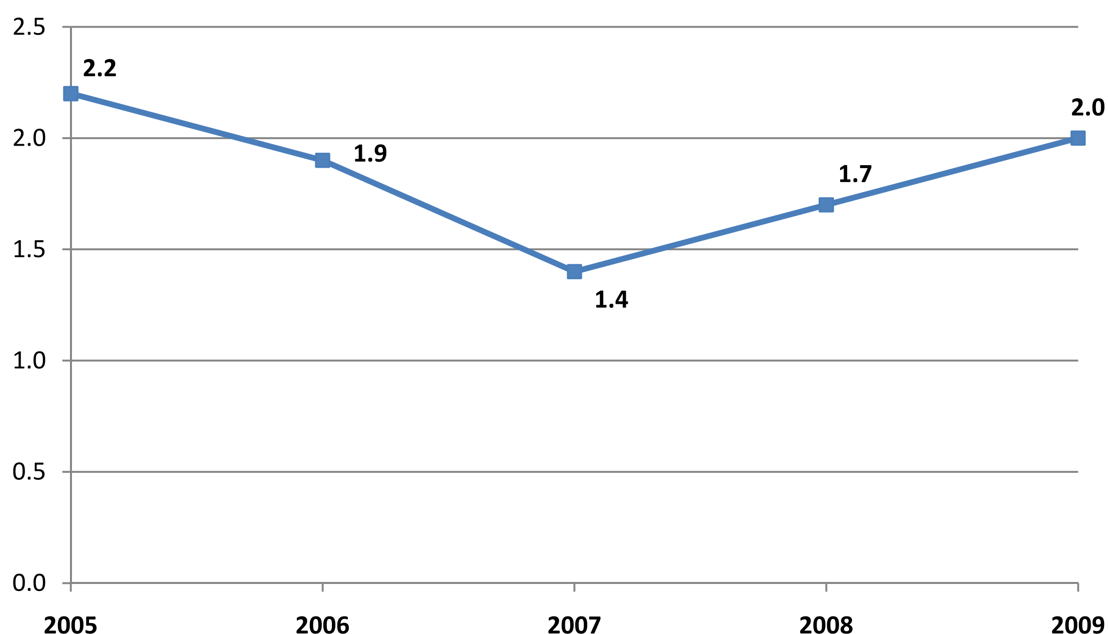
Six children died in off-highway vehicle (OHV) crashes; off-highway vehicles include any vehicle designed to be operated on unpaved surfaces, including all-terrain vehicles (ATVs) and dirt bikes. Five children were 10 years of age and older, and one child was younger than ten years of age. Five of the children who died in OHV crashes were drivers, and one child was a passenger. Three of the children who were driving were less than 16 years of age. Four of the ATV crashes were single vehicle, and two crashes involved collisions with other vehicles. Three of the single vehicle OHV crashes were known to involve the driver hitting an object.

Two children who died in OHV crashes were not wearing helmets properly. One ATV driver was known to have been travelling at excessive or unsafe speeds, and two were known to have been riding with more occupants than the number for which the vehicle was designed. In four cases, review teams identified drivers' inexperience as contributing to the deaths. None of the OHV crash deaths in 2009 involved drugs and/or alcohol.

DROWNINGS

In 2009, there were 35 child deaths due to drownings, which accounted for four percent of all child deaths. In 2008, there were 29 drowning fatalities among children (three percent of all child deaths). The rate of drowning fatalities in 2009 was 2.0 deaths per 100,000 children. While the mortality rate of child drowning decreased nine percent from 2005 through 2009, the 2009 rate has increased 43 percent since 2007 when the drowning rate was 1.4 deaths per 100,000 children. Figure 21 shows the rates of child deaths due to drowning from 2005 through 2009.

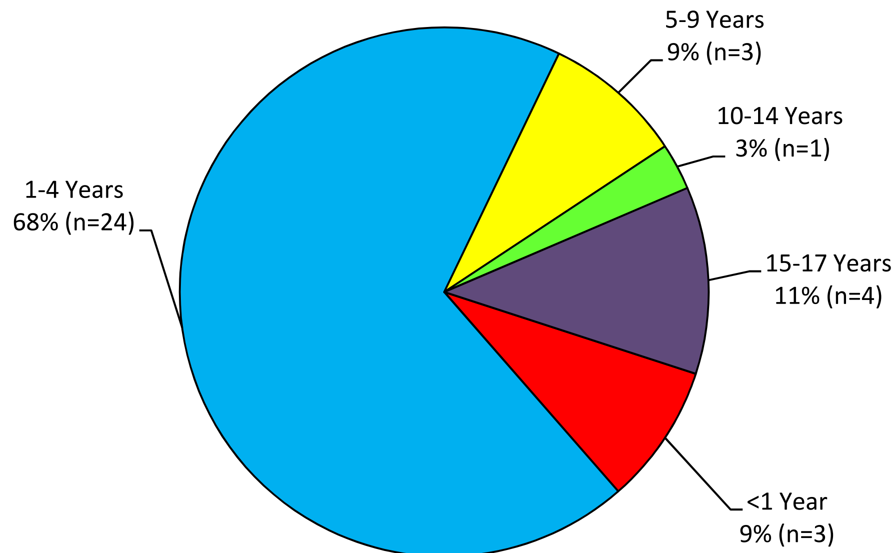
Figure 21. Rate of Child Deaths due to Drowning (per 100,000 children), Arizona 2005-2009



Seventy-seven percent of drowning deaths in 2009 were among males (n=27), and 23 percent were among females (n=8). Forty-six percent of children who drowned were White, Non-Hispanic (n=16), 43 percent of children who drowned were Hispanic (n=15), six percent were Asian (n=2), and six percent were African American (n=2). There were no drowning deaths among American Indian children in 2009.

Sixty-eight percent of drowning deaths in 2009 were among children ages one through four years of age (n=24), 11 percent were among children ages 15 through 17 years (n=4), nine percent were among children ages five through nine years (n=3), nine percent were among infants younger than one year of age, and three percent were among children ages 10 through 14 years (n=1). Figure 22 shows drowning deaths by age group.

Figure 22. Drowning Deaths Among Children by Age Group, Arizona 2009 (n=35)



Consistently since 2005, the largest percentage of drownings has been among children ages one through four years. The percentage of deaths in this age group decreased from 87 percent in 2008 (n=25) to 68 percent in 2009 (n=24). Table 14 shows drowning deaths among children by age from 2005 through 2009.

Table 14. Drowning Deaths Among Children by Age Group, Arizona 2005-2009

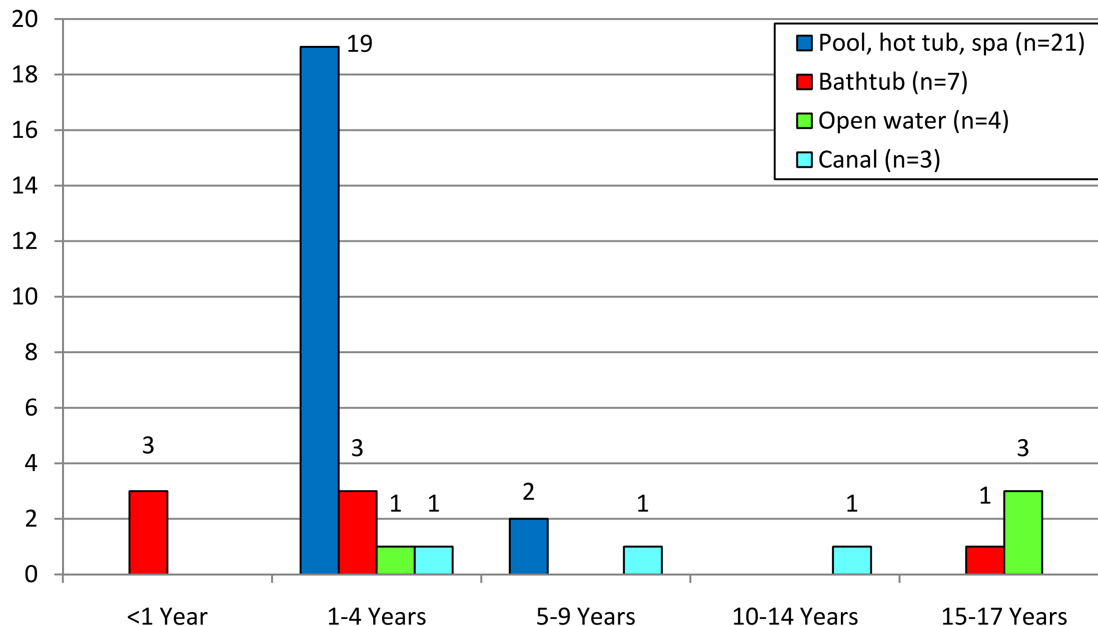
Age Group	2005		2006		2007		2008		2009	
0-27 Days	1	3%	0	0%	1	4%	0	0%	0	0%
28-365 Days	1	3%	2	10%	5	22%	1	3%	3	9%
1-4 Years	20	57%	16	51%	12	53%	25	87%	24	68%
5-9 Years	6	17%	4	13%	4	17%	2	7%	3	9%
10-14 Years	1	3%	3	10%	1	4%	0	0%	1	3%
15-17 Years	6	17%	6	16%	0	0%	1	3%	4	11%
Total	**35**		**31**		**23**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

In 2009, 20 drowning fatalities occurred in pools (18 cases occurred in in-ground pools, two cases were in above ground pools), seven fatalities occurred in open water, seven occurred in bathtubs, and one occurred in hot tubs or spas. There were no deaths occurring in buckets or other containers. Among the seven open water drownings, three were in canals, two were in a lake, and two were in rivers. Table 15 shows drowning fatalities by location.

Table 15. Location of Child Drowning Fatalities, Arizona 2009 (n=35)		
Location	**Number**	**Percent**
In ground pool	18	51%
Bathtub	7	20%
River/lake	4	11%
Canal	3	9%
Above ground swimming pool	2	6%
Hot tub/spa	1	1%
Total	**35**	

The highest number of pool drownings were among children ages one through four years (54 percent of all drownings, n=19), and three of the seven bathtub drownings were also among children ages one through four years. Figure 23 shows drowning location by age group.

Figure 23. Drowning Deaths Among Children by Age Group and Location, Arizona 2009 (n=35)



One hundred percent of child drownings were identified as preventable (n=35). Lack of supervision was the most commonly identified preventable factor in child drowning fatalities (80 percent, n=28), followed by access to water (66 percent, n=23). Table 16 shows preventable factors for child drownings in Arizona during 2009.

Table 16. Preventable Factors for Child Drownings, Arizona 2009		
Factor*	**Number**	**Percent**
Lack of supervision	28	80%
Access to water	23	66%
Drugs and/or alcohol	1	3%
*More than one factor may have been identified for each death		

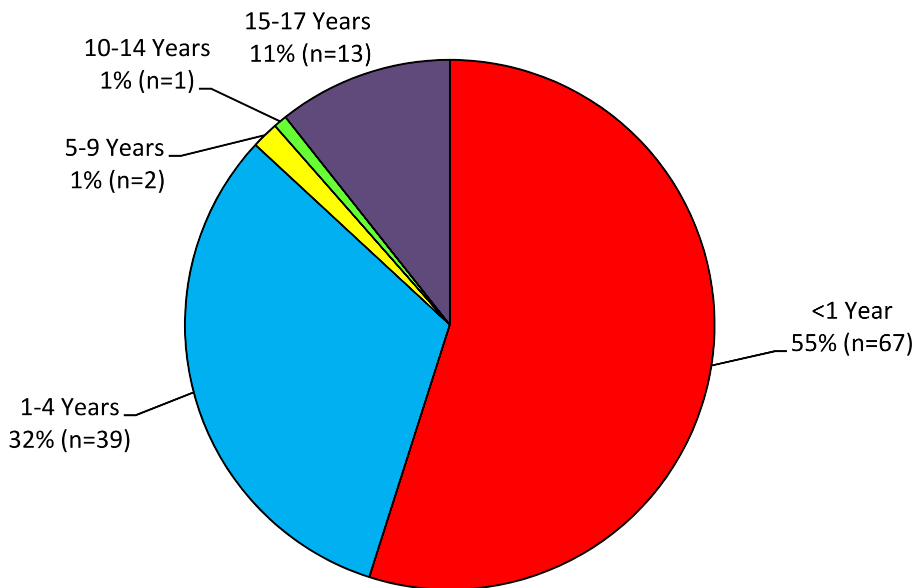
HOME SAFETY-RELATED DEATHS

Deaths included in this section occurred in or around home environments (e.g. bedroom, driveway, or yard) and were due to accidents (unintentional injuries) or were of undetermined manner. Suicides, homicides, and natural deaths were excluded. In 2009, 122 children died in or around the home (13 percent of all deaths that year). The majority of these deaths occurred among males (61 percent, n=74), 39 percent of these deaths were among females (n=48).

Thirty-nine percent of deaths that occurred in or around the home were among White, Non-Hispanic children (n=48), 33 percent were among Hispanic children (n=40), 18 percent were among African Americans (n=21), seven percent were among American Indians (n=9), and three percent were among Asian children (n=4).

More than half of the deaths that occurred in or around the home during 2009 were among infants younger than one year of age (55 percent, n=67). Thirty-two percent were among children ages one through four years (n=39). Figure 24 shows home safety-related deaths by age group.

Figure 24. Home Safety-Related Deaths Among Children by Age Group, Arizona 2009 (n=122)



For 36 percent of deaths, the cause of death was undetermined (n=44), and most of these deaths were among infants in unsafe sleep environments (n=32). The second most common cause of death was drowning (19 percent, n=23). Seventeen children drowned in family pools or hot tubs and six children drowned in bathtubs. Three children were crushed by heavy objects in the home, usually after climbing or pulling on these objects. One child died as the results of a fall. Three children died in home fires and

each incident involved a barrier to an effective exit and emergency response. Table 17 shows child deaths that occurred in or around the home by cause.

Table 17. Child Deaths In or Around the Home by Cause, Arizona 2009 (n=122)		
Cause	**Number**	**Percent**
Undetermined	44	36%
Drowning	23	19%
Suffocation	14	11%
Poisoning	11	9%
SIDS	8	7%
Other	5	4%
Fall/crush	4	3%
Hanging	4	3%
Motor vehicle crashes	4	3%
Fire	3	2%
Firearm-related injury	2	2%
Total	**122**	

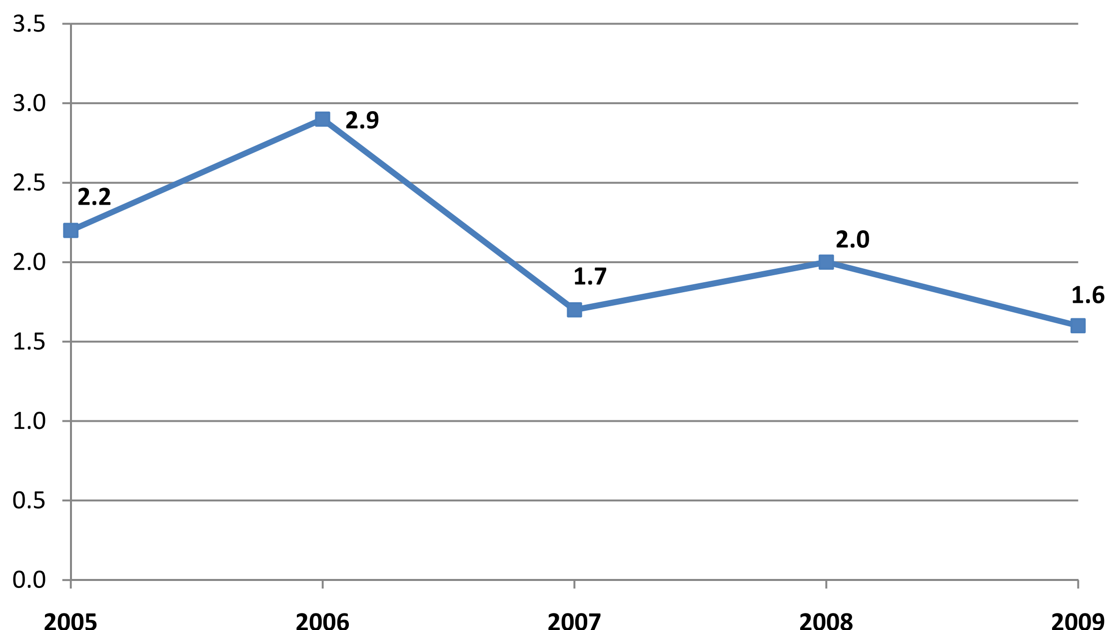
Eighty-seven percent of home safety-related deaths were determined to have been preventable (n=106) and for 11 percent, teams were not able to determine preventability (n=14). The most commonly listed contributing factors were lack of supervision (66 percent, n=81) and drugs and/or alcohol (48 percent, n=59). Table 18 shows preventable factors for home safety-related deaths.

Table 18. Preventable Factors for Child Deaths In or Around the Home, Arizona 2009		
Factor*	**Number**	**Percent**
Lack of supervision	81	66%
Drugs and/or alcohol	59	48%
Access to water	14	11%
*More than one factor may have been identified for each death		

SUICIDES

In 2009, there were 27 suicides among children in Arizona, which accounted for three percent of all child deaths. In 2008, suicide accounted for three percent of all child deaths (n=35). The child suicide rate in 2009 was 1.6 deaths per 100,000 children. This was a 27 percent decrease from 2005 when the suicide rate was 2.2 deaths per 100,000 children. Figure 25 shows the rates of child suicides from 2005 through 2009.

Figure 25. Rate of Child Deaths due to Suicide (per 100,000 children), Arizona 2005-2009



Seventy-eight percent of the children who died by suicide during 2009 were males (n=21) and 22 percent were females (n=6). Forty-four percent of the children who died by suicide were Hispanic (n=12), 33 percent were White, non-Hispanic (n=9), 19 percent were American Indian (n=5), and four percent were other races/ethnicities (n=1).

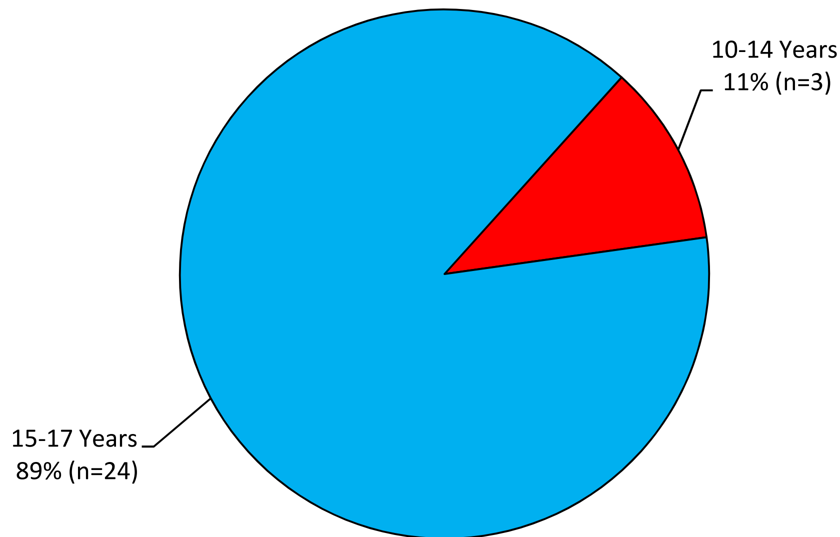
The distribution of suicides by race/ethnicity was different from 2008 when the largest percentage of suicides was among White, non-Hispanic children (51 percent, n=18). Table 19 shows suicides among children by race/ethnicity for 2006 through 2009.

Table 19. Suicides Among Children by Race/Ethnicity, Arizona 2006-2009

Race/Ethnicity	**2006**		**2007**		**2008**		**2009**	
American Indian	9	19%	4	14%	6	17%	5	19%
Hispanic	13	27%	15	54%	9	26%	12	44%
White, Non-Hispanic	24	50%	8	29%	18	51%	9	33%
Other	2	4%	1	3%	2	6%	1	4%
Total	**48**		**28**		**35**		**27**	

In 2009, the majority of suicides were among children ages 15 through 17 years (89 percent, n=24), and 11 percent were among children 14 years of age and younger (n=3). The youngest child who died by suicide in 2009 was 11 years old. Figure 26 shows suicides among children by age group.

Figure 26. Suicides Among Children by Age Group, Arizona 2009 (n=27)



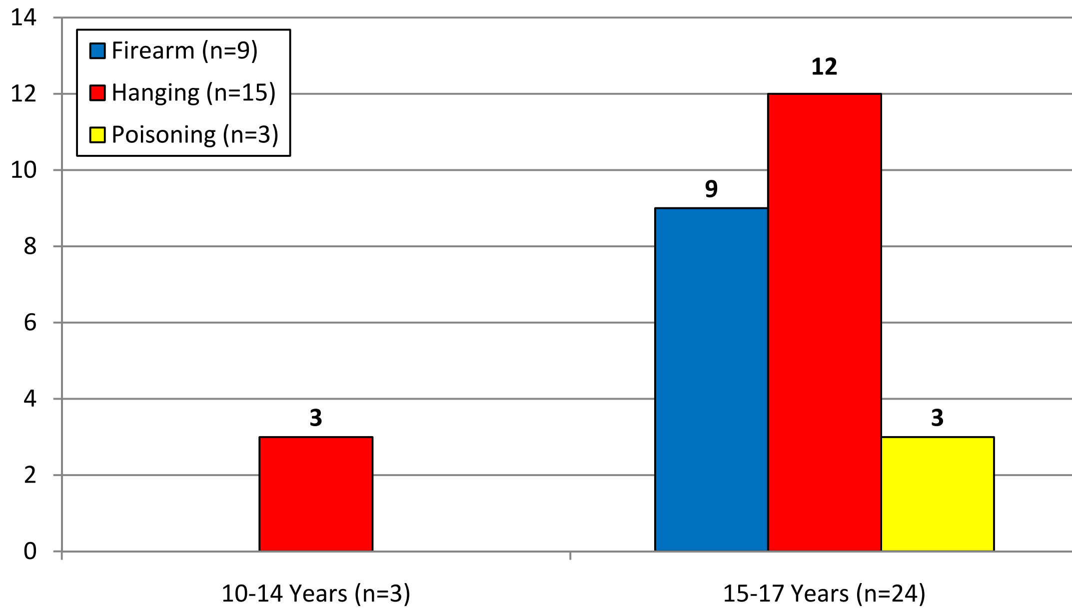
The distribution of suicides by age group remained consistent from 2006 through 2008. Table 20 shows suicides among children by age group for 2005 through 2009.

Table 20. Suicides Among Children by Age Group, Arizona 2005-2009

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

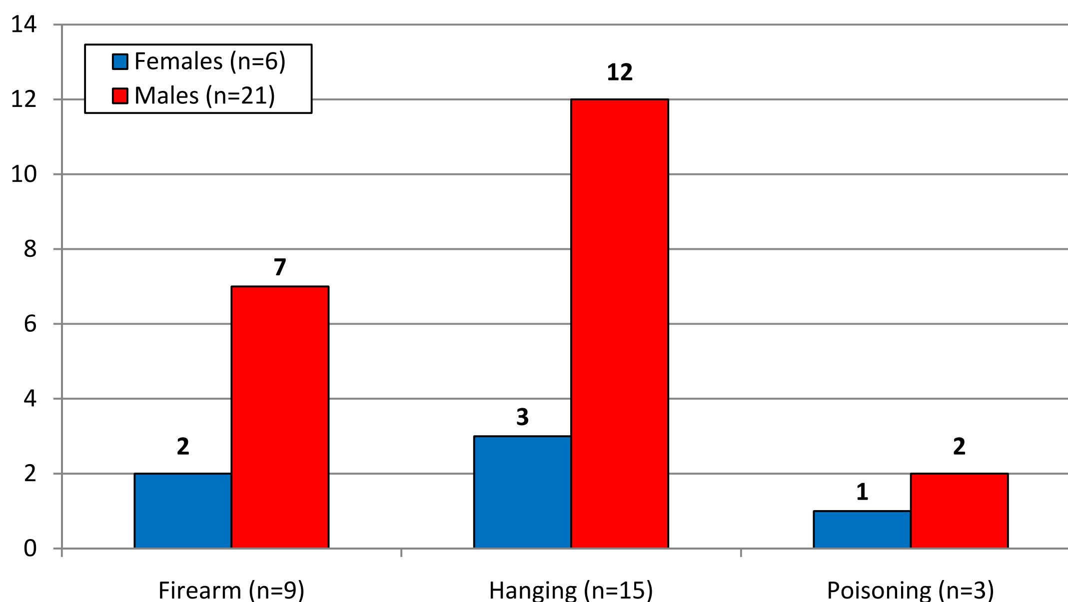
Hangings accounted for 56 percent of child suicides in Arizona during 2009 (n=15) and firearm injuries accounted for 33 percent (n=9). The objects used in hanging suicides included ropes, belts, and shoelaces. Eleven percent of child suicides were caused by poisonings (n=3). Figure 27 shows suicides among children by cause of death and age group.

Figure 27. Suicides Among Children by Cause of Death and Age Group, Arizona 2009 (n=27)



The distribution of cause of death varied by the sex of the child. As observed in previous years, males were more likely to have used firearms to die by suicide. For hangings and poisonings, the distributions between males and females were less disparate. Figure 28 shows suicides among children by cause of death and sex.

Figure 28. Suicides Among Children by Cause of Death and Sex, Arizona 2009 (n=27)



Identification of children at risk for suicide can be difficult, and warning signs are not always recognized or taken seriously. Eleven children who took their own lives in 2009 were known to have talked about suicide to others (41 percent), ten children were known to have made prior suicide threats (37 percent), and three children had made prior suicide attempts (11 percent). Only two children were known to have been on medication for mental illness at the time of their deaths (7 percent). Six children who died by suicide were known to have received prior mental health services (22 percent), but only three children were known to have been receiving mental health services at the time of their deaths (11 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 issue was a history of drug or alcohol use, which was identified in eight suicides (30 percent). Table 21 shows factors that may have contributed to the child's despondency prior to suicide.

For nearly half of all suicides, important information regarding risk factors was unknown to review teams, even after review of law enforcement records. For example, in 37 percent of suicides, prior mental health services were unknown (n=10). For 41 percent of suicides, it was unknown if the child was receiving mental health services at the time of death (n=11). Improvements in the investigations of child suicides may increase review teams' abilities to identify risk factors and help us develop strategies for preventing these deaths.

Table 21. Factors That May Have Contributed to the Child's Despondency Prior to Suicide, Arizona 2009		
Factor*	**Number**	**Percent**
History of drug and/or alcohol use	8	30%
Family discord	7	26%
Recent breakup with boyfriend or girlfriend	6	22%
Failure at school	5	19%
Recent argument with parents/caregivers	4	15%
History of physical or sexual abuse/assault	3	11%
Pregnancy or possible pregnancy	2	7%
Recent argument with boyfriend or girlfriend	1	4%
Victim of bullying	1	4%
*More than one factor may have been identified for each death		

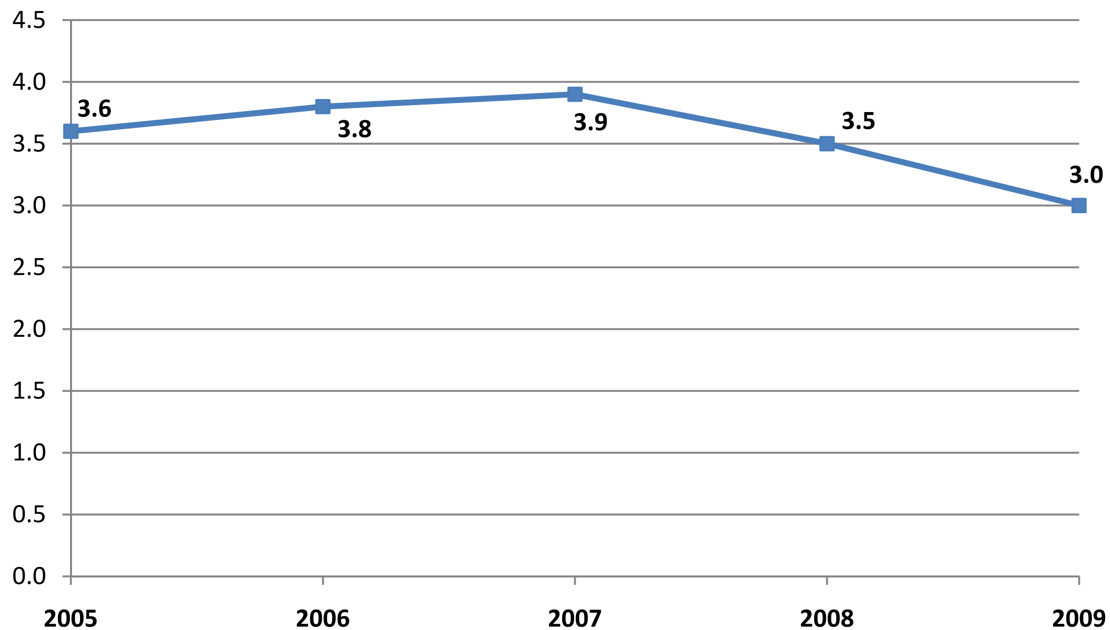
Eighty-nine percent of child suicides were determined to have been preventable (n=24). For 11 percent of suicides, local review teams were not able to determine preventability (n=3). Lack of mental health treatment was the most commonly identified preventable factor (48 percent, n=13), followed by access to firearms (33 percent, n=9). Table 22 shows preventable factors for child suicides.

Table 22. Preventable Factors for Child Suicides, Arizona 2009		
Factor*	**Number**	**Percent**
Lack of mental health treatment**	13	48%
Access to firearms	9	33%
Drugs and/or alcohol	8	30%
*More than one factor may have been identified for each death		
**For 37 percent of suicides, it was unknown if the child had ever received mental health services (n=10). For 41 percent of suicides, it was unknown if the child was receiving mental health services at the time of death (n=11).		

HOMICIDES

Fifty-one children were victims of homicide in Arizona during 2009, compared to 60 in 2008. Homicide accounted for five percent of all child deaths in Arizona during 2009, a decrease from six percent of all child deaths in 2008. The child homicide rate in 2009 was 3.0 deaths per 100,000 children. This was a 17 percent decline from 2005 when the homicide rate was 3.6 deaths per 100,000 children. Figure 29 shows the rates of child homicides from 2005 through 2009.

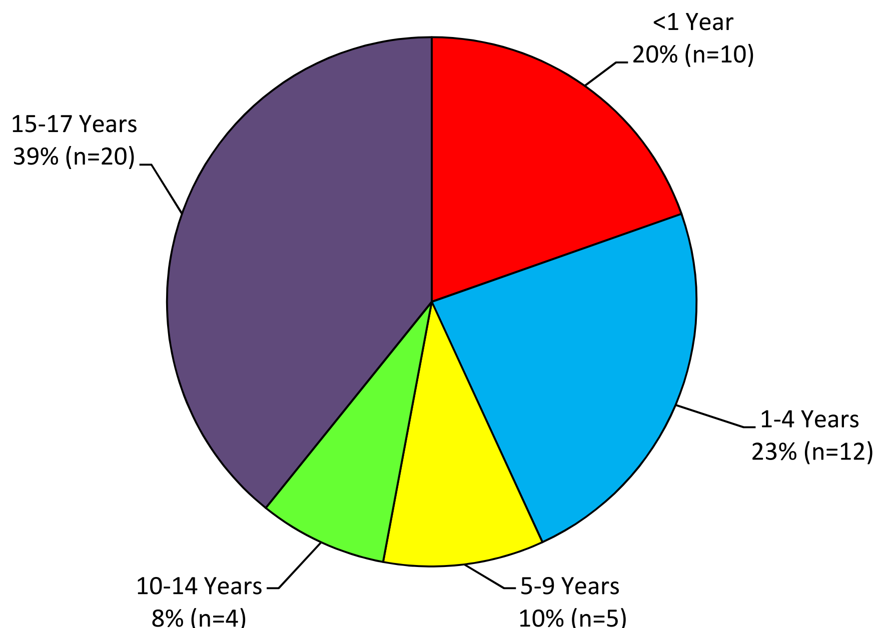
Figure 29. Rate of Child Deaths due to Homicide (per 100,000 children), Arizona 2005-2009



Fifty-one percent of homicide victims in 2009 were males (n=26) and 49 percent were females (n=25). Nearly half of child homicides were among Hispanics (47 percent, n=24), 33 percent were among White Non-Hispanics (n=17), 14 percent were among African Americans (n=7), and six percent were among American Indians (n=3).

Children ages 15 through 17 years accounted for 39 percent of homicides (n=20). Twenty percent of homicides were among children younger than one year of age (n=10). Figure 30 shows homicides among children by age group.

Figure 30. Homicides Among Children by Age Group, Arizona 2009 (n=51)



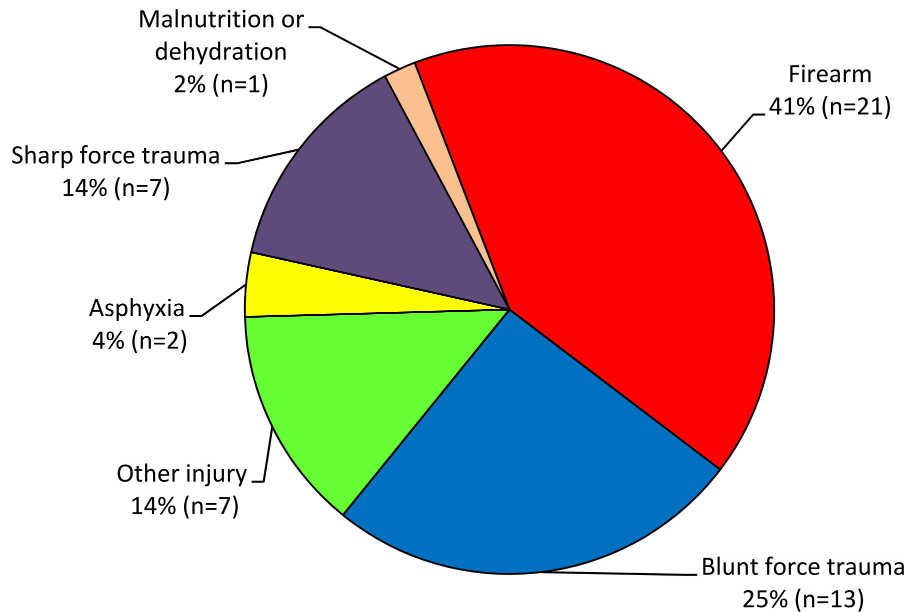
Compared to 2008, the greatest increase in homicides in 2009 was observed among children ages 1 through 4 years (from 12 percent in 2008 to 24 percent in 2009). Table 23 shows homicides among children by age group for 2005 through 2009.

Table 23. Homicides Among Children by Age Group, Arizona 2005-2009

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

In 2009, firearms were the leading cause of death among child homicides (41 percent, n=21), followed by blunt force trauma (25 percent, n=13). Figure 31 shows homicides among children by cause of death.

Figure 31. Homicides Among Children by Cause of Death, Arizona 2009 (n=51)



For 47 percent of homicides, the perpetrator was a parent or step-parent of the child (n=24), and in an additional eight percent of cases the perpetrator was the child's mother's partner (n=4). In 16 percent, the perpetrator was someone that the child did not know (n=8). Friends or acquaintances of the children accounted for an additional six homicides. In three cases, the perpetrator was unknown to the review teams. Table 24 shows homicides among children by perpetrator.

Table 24. Homicides Among Children by Perpetrator, Arizona 2009 (n=51)		
Perpetrator	**Number**	**Percent**
Parent/step-parent	24	47%
Stranger	8	16%
Child's friend/acquaintance	6	12%
Mother's partner	4	8%
Unknown	3	6%
Rival gang member	2	4%
Other non-relative known to child	2	4%
Law enforcement officer	1	2%
Total	**51**	

Ninety-eight percent of child homicides were determined to have been preventable (n=50). In one homicide, the team did not have enough information to determine if the death was preventable. Drugs and/or alcohol were the most commonly identified preventable factors in child homicides (57 percent, n=29), followed by access to firearms (41 percent, n=21). Gang conflict was a factor in four homicides (8 percent). Table 25 shows preventable factors for child homicides in Arizona during 2009.

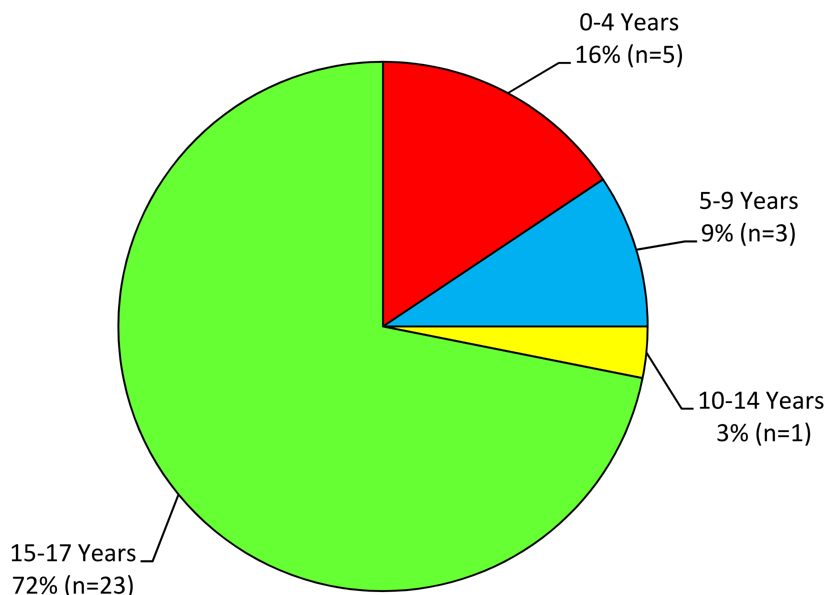
Table 25. Preventable Factors for Child Homicides, Arizona 2009		
Factor*	**Number**	**Percent**
Drugs and/or alcohol	29	57%
Access to firearms	21	41%
Lack of supervision	12	24%
Involvement in gang	4	8%
*More than one factor may have been identified for each death		

FIREARM-RELATED FATALITIES

There were 32 firearm-related fatalities in 2009, compared to 49 in 2008. Firearms accounted for three percent of all child deaths in 2009 and five percent in 2008. Seventy-two percent of the firearm-related deaths in 2009 were among males (n=23) and 28 percent were among females (n=9). Nearly half of firearm-related deaths were among Hispanics (44 percent, n=14), 41 percent were among Non-Hispanic Whites (n=13), nine percent were among African Americans (n=3), and six percent were among American Indians (n=2).

Seventy-two percent of these deaths were among children ages 15 through 17 years (n=23). There were nine deaths due to firearms among children 14 years of age and younger. Figure 32 shows firearm-related fatalities among children by age group.

Figure 32. Firearm-Related Deaths Among Children by Age Group, Arizona 2009 (n=32)

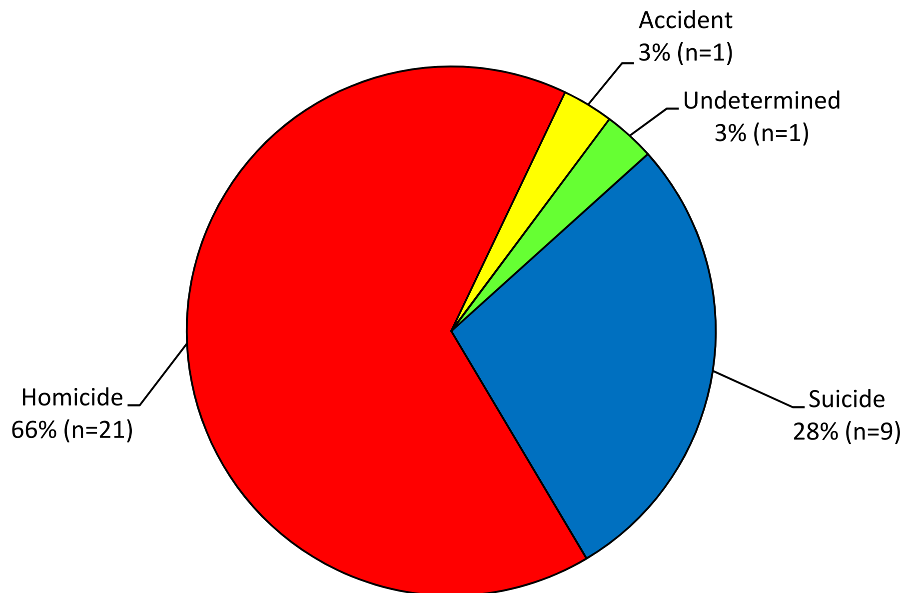


The age group distribution in 2009 was similar to what has been observed in previous years for children 15 through 17 years of age. The age distribution in 2009 is shown above, and in 2008, there were 37 firearm-related deaths among children ages 15 through 17 years (76 percent), seven among children ages 10 through 14 years (14 percent), and five among children younger than 10 years of age (10 percent). Table 26 shows firearm-related deaths among children by age group from 2005 through 2009.

Table 26. Firearm-Related Deaths Among Children by Age Group, Arizona 2005-2009										
Age Group	**2005**		**2006**		**2007**		**2008**		**2009**	
<10 Years	2	5%	1	2%	5	10%	5	10%	8	25%
10-14 Years	7	16%	13	22%	7	15%	7	14%	1	3%
15-17 Years	34	79%	46	76%	36	75%	37	76%	23	72%
Total	**43**		**60**		**48**		**49**		**32**	

In 2009, 66 percent of firearm-related deaths were homicides (n=21), 28 percent were suicides (n=9), three percent were accidents (unintentional injuries) (n=1), and three percent were of undetermined manner (n=1). These percentages were similar to those from 2007, although there were 17 fewer deaths. Figure 33 shows firearm-related deaths among children by manner.

Figure 33. Firearm-Related Deaths Among Children by Manner, Arizona 2009 (n=32)

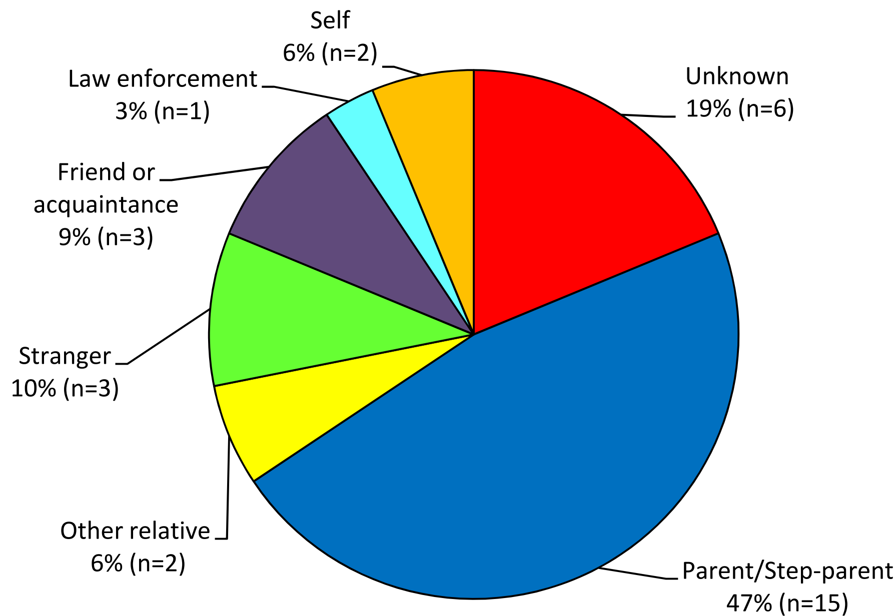


Handguns accounted for the majority of firearm-related fatalities among children in 2009 (78 percent, n=25), followed by shotguns and rifles (each nine percent, n=3). Table 27 shows types of firearms involved in child deaths during 2009.

Table 27. Types of Firearms Involved in Child Deaths, Arizona 2009 (n=32)		
Type	**Number**	**Percent**
Handgun	25	78%
Shotgun	3	9%
Rifle (hunting, assault)	3	9%
Unknown firearm	1	3%
Total	**32**	

Among the 32 firearm-related deaths, 34 percent of firearms were stored with ammunition (n=11), and nine percent of firearms were stored loaded (n=3). In 59 percent of cases the presence of ammunition was unknown to the review team (n=19), and whether or not the firearm was stored loaded was unknown to the review team in 75 percent of cases (n=24). The largest percentage of firearms belonged to parents or step-parents (47 percent, n=15). Figure 34 shows the owners of the firearms used in child fatalities.

Figure 34. Owners of Firearms Involved in Child Deaths, Arizona 2009 (n=32)



For a notable percentage of firearms, the storage location was unknown to the review teams (44 percent, n=14). One firearm was stored in a locked cabinet, but the remaining firearms were not stored in secured locations. Table 28 summarizes the locations of the firearms involved in child deaths during 2009.

Table 28. Locations of Firearms Involved in Child Deaths, Arizona 2009 (n=32)

Location	**Number**	**Percent**
Unknown	14	44%
Other not stored (unsecured location)	6	19%
In or under furniture (e.g. in a drawer or under a bed)	6	19%
Closet	5	16%
Locked cabinet	1	3%
Total	**32**	

Ninety-one percent of the firearm-related deaths in 2009 were determined by the review teams to have been preventable. Drugs and/or alcohol were involved in 53 percent of firearm-related deaths (n=17). Lack of supervision was a factor in 25 percent of the deaths (n=8). While access to firearms was identified as a preventable factor for 53 percent of firearm-related fatalities among children (n=17), in 44 percent of firearm-

related fatalities the storage location and security of the firearm was unknown (n=14). Table 29 shows preventable factors for firearm-related fatalities in Arizona during 2009.

Table 29. Preventable Factors for Firearm-Related Deaths Among Children, Arizona 2009		
Factor*	**Number**	**Percent**
Access to firearm	17	53%
Drugs and/or alcohol	17	53%
Lack of supervision	8	25%
Involvement in gang	2	6%
*More than one factor may have been identified for each death		

MALTREATMENT FATALITIES

To gain greater understanding of the contribution of neglect and abuse 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. "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" 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 (unintentional injury) 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, it would be maltreatment if a child died in a motor vehicle crash due to the parent driving while intoxicated with the child in the car.

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 substantiated 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, were unable to have been substantiated after an investigation, 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.

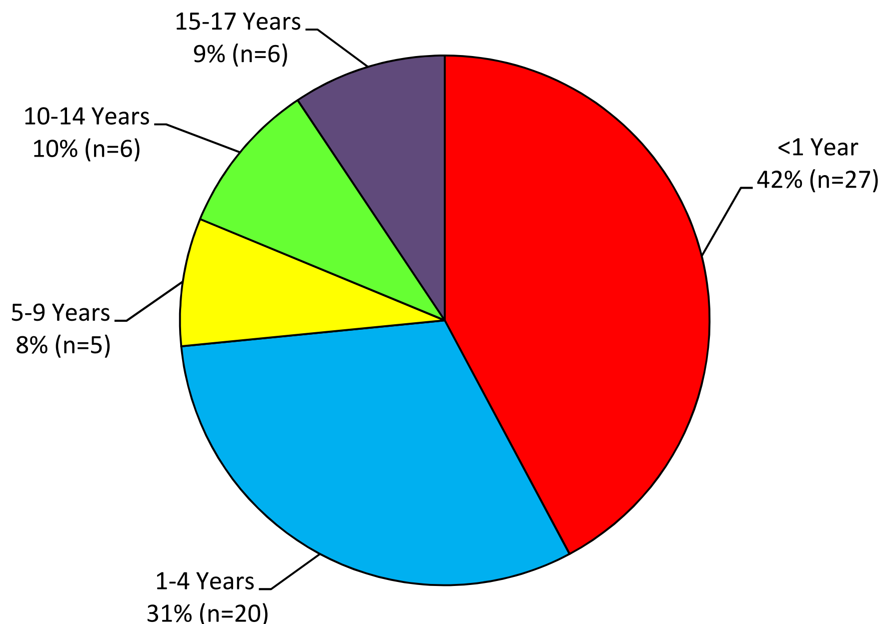
In 2009, there were 64 deaths classified as maltreatment, which was seven percent of all child deaths. This was an increase from 51 child maltreatment deaths in 2008 (five percent of all child deaths). A portion of this increase may be attributed to two major factors: a change in the Arizona Revised Statutes and an increase in familial murder-suicides. A statutory change in 2009 included prenatal substance exposure in the definition of neglect; there were seven such deaths involving substance exposed newborns. Prior to the statutory change such deaths would not have been counted as

maltreatment deaths. In 2009, there were eight child deaths resulting from six familial murder-suicide incidents by a child's parent or caregiver.

In 2009, 52 percent of maltreatment deaths were among males (n=33) and 48 percent were among females (n=31). Forty-two percent of the children who died due to maltreatment were White, non-Hispanic (n=27), 31 percent were Hispanic (n=20), 14 percent were African American (n=9), 11 percent were American Indian (n=7), and two percent were Asian (n=1).

In the past, the majority of maltreatment deaths were among children younger than one year of age. In 2009, however, less than half of all maltreatment deaths were among children younger than one year of age (42 percent, n=27). Part of this trend may be attributed to the familial murder-suicide incidents, as none of the children murdered were infants. Figure 35 shows maltreatment deaths among children by age group.

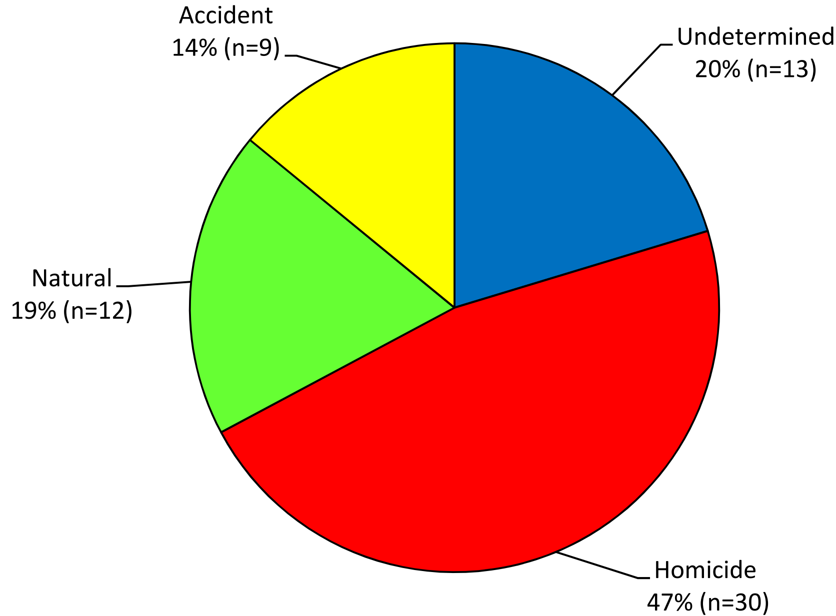
Figure 35. Maltreatment Deaths Among Children by Age Group, Arizona 2009 (n=64)



In 2009, homicide comprised almost half of child maltreatment deaths in Arizona (47 percent, n=30). Fourteen percent of maltreatment deaths were due to accidents (unintentional injuries) (n=9). Examples of maltreatment-related accidental (unintentional injury) deaths included situations in which the child's supervisor was impaired, left the child unsupervised in a potentially dangerous environment, or failed to take appropriate steps to seek medical care for the child after an injury occurred. For 19 percent of child maltreatment deaths the manner of death was deemed to be natural (n=12). Examples of maltreatment deaths due to natural manner of death included prenatal substance use associated with premature birth, neglect which resulted in an illness, or failure to obtain medical care. Twenty percent of child maltreatment deaths

were of undetermined manner (n=13). Figure 36 shows maltreatment deaths by manner.

Figure 36. Maltreatment Deaths Among Children by Manner, Arizona 2009 (n=64)



The leading causes of child maltreatment deaths were blunt force trauma (23 percent, n=15) and deaths resulting from undetermined causes (17 percent, n=11). Table 30 shows maltreatment deaths among children by cause and manner.

Table 30. Maltreatment Deaths Among Children by Cause and Manner, Arizona 2009 (n=64)

Cause	Accident (Unint. Injury)	Homicide	Natural	Undetermined	Total
Blunt force trauma	0	14	0	1	15
Undetermined	0	2	0	9	11
Firearm injury	1	7	0	0	8
Medical	0	1	6	0	7
Drowning	4	0	0	2	6
Prematurity	0	0	6	0	6
Poisoning	2	1	0	0	3
Suffocation	0	2	0	1	3
Motor vehicle crash	2	0	0	0	2
Other injury	0	2	0	0	2
Fall/crush	0	1	0	0	1
Total	**9**	**30**	**12**	**13**	**64**

Twenty-eight percent of the maltreated children in Arizona during 2009 were known to have had physical, mental, and/or sensory disabilities (n=18), including three children with cerebral palsy.

For 81 percent of maltreatment deaths, the perpetrator was the child's biological parent (n=52), and for an additional eight percent, the perpetrator was the mother's boyfriend (n=5). While more than one perpetrator may have contributed to a child's maltreatment, only the primary person responsible for the child's death is listed below. Because the perpetrator in the case of substance exposed newborns is the child's mother, the number of mothers as perpetrators of maltreatment is higher than in previous years. Table 31 shows maltreatment deaths among children by perpetrator.

Table 31. Maltreatment Deaths Among Children by Perpetrator, Arizona 2009 (n=64)		
Perpetrator	**Number**	**Percent**
Mother	29	45%
Father	23	36%
Mother's boyfriend	5	8%
Other relative	3	5%
Child's boyfriend/girlfriend*	1	2%
Foster parent	1	2%
Other relative's boyfriend/girlfriend	1	2%
Unknown	1	2%
Total	**64**	
*May not have been under the jurisdiction of Arizona Child Protective Services		

There were 11 fatalities among children two years of age and younger due to abusive head trauma during 2009. This was an increase from 2008, when seven children two years of age and younger died as a result of abusive head trauma. Of the children who died from abusive head trauma in 2009, seven of the children were known to have been shaken.

Ninety-one percent of the child maltreatment deaths in 2009 were determined to have been preventable (n=58). For three percent of maltreatment deaths, local review teams were not able to determine preventability (n=2). Drugs and/or alcohol contributed to 55 percent of the deaths (n=35), partially impacted by the increase in cases of substance exposed newborns. Lack of supervision contributed to 39 percent of maltreatment deaths (n=25). Table 32 shows preventable factors for child maltreatment deaths.

Table 32. Preventable Factors for Maltreatment Deaths Among Children, Arizona 2009		
Factor*	**Number**	**Percent**
Drugs and/or alcohol	35	55%
Lack of supervision	25	39%
Unsafe sleep environment	11	17%
*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 the deceased child or 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 or was not substantiated.

In 2009, 36 percent of maltreated children were from families with prior child protective services involvement (n=23), and four of these children had prior involvement with Tribal Nation child protective services. Among these 23 families, five were open cases with Arizona Child Protective Services at the time of the child's death. Two open cases were in the process of being closed at the time of the child's death.

For 22 maltreatment deaths, mandatory reporters did not notify Arizona Child Protective Services that the deaths were suspected to have been due to maltreatment even after investigation. For an additional six cases resulting from familial murder-suicide, Arizona Child Protective Services was not notified because the perpetrator and child to be investigated were deceased. The number of maltreatments deaths that were not reported to Arizona Child Protective Services declined from 23 in 2008 to 22 in 2009.

For one child maltreatment death during 2009, the child was abused by an individual other than a parent, guardian, or custodian (as defined in A.R.S. § 8-201) and may not have been under the investigative jurisdiction of Arizona Child Protective Services. These deaths were investigated by law enforcement (as defined in A.R.S. § 13-3620).

For 23 maltreatment deaths in 2009 charges were filed or expected to be filed against the perpetrator(s) of the abuse. In an additional six cases, charges were not filed because the perpetrator was deceased. At the time of review, charges in one case have been dismissed, six cases are awaiting completion of the criminal investigation, and 16 cases have had charges filed.

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 five years, 100 percent of child deaths in Arizona have been reviewed, and data from 2005 through 2009 are included in the following tables.

The Neonatal Period, Birth Through 27 Days

Table 33. Deaths Among Children Ages Birth Through 27 Days by Cause and Manner, Arizona 2009 (n=366)

Cause	Accident (Unint. Injury)	Homicide	Suicide	Natural	Undetermined	Total
Prematurity	0	0	0	221	0	**221**
Medical*	0	0	0	128	0	**128**
Undetermined	0	0	0	0	5	**5**
SIDS	0	0	0	0	1	**1**
Motor vehicle crash	2	0	0	0	0	**2**
Suffocation	3	0	0	0	1	**4**
Other Injury	1	2	0	0	0	**3**
Firearm Injury	0	1	0	0	0	**1**
Poisoning	1	0	0	0	0	**1**
Total	**7**	**3**	**0**	**349**	**7**	**366**
*Excluding SIDS and prematurity						

Table 34. Deaths Among Children Ages Birth Through 27 Days by Cause, Arizona 2005-2009

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

Table 35. Deaths Among Children Ages Birth Through 27 Days by Manner, Arizona 2005-2009										
Manner	**2005**		**2006**		**2007**		**2008**		**2009**	
Natural	421	97%	432	98%	464	96%	414	98%	349	95%
Undetermined	3	1%	2	0%	6	1%	6	1%	7	2%
Accident (Unint. Injury)	7	2%	2	0%	12	2%	2	<1%	7	2%
Homicide	3	1%	4	1%	3	1%	1	<1%	3	1%
Suicide	0	0%	0	0%	0		0	0%	0	0%
Total	**434**		**440**		**485**		**423**		**366**	

The Post-Neonatal Period, 28 Days Through 365 Days

Table 36. Deaths Among Children Ages 28 Days Through 365 Days by Cause and Manner, Arizona 2009 (n=183)						
Cause	**Accident (Unint. Injury)**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Medical*	0	1	0	76	0	**77**
Undetermined	0	0	0	2	33	**35**
Suffocation	9	2	0	0	2	**13**
SIDS	0	0	0	20	7	**27**
Prematurity	0	0	0	18	0	**18**
Blunt force trauma	0	3	0	0	0	**3**
Motor vehicle crash	2	0	0	0	0	**2**
Other injury	1	0	0	0	0	**1**
Fall/crush	3	0	0	0	0	**3**
Poisoning	0	1	0	0	0	**1**
Drowning	3	0	0	0	0	**3**
Total	**18**	**7**	**0**	**116**	**42**	**183**
*Excluding SIDS and prematurity						

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

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

Children, One Through Four Years of Age

Table 39. Deaths Among Children Ages One Through Four Years by Cause and Manner, Arizona 2009 (n=130)						
Cause	**Accident (Unint. Injury)**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Medical*	0	0	0	50	0	**50**
Drowning	23	0	0	0	1	**24**
Motor vehicle crash	20	0	0	0	0	**20**
Undetermined	0	1	0	3	6	**10**
Other injury	2	2	0	0	0	**4**
Blunt force trauma	0	6	0	0	1	**7**
Prematurity	0	0	0	1	0	**1**
Firearm injury	1	3	0	0	0	**4**
Fire/burn	3	0	0	0	0	**3**
Fall/crush	2	0	0	0	0	**2**
Hanging	5	0	0	0	0	**5**
Total	**56**	**12**	**0**	**54**	**8**	**130**
*Excluding SIDS and prematurity						

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

Table 41. Deaths Among Children Ages One Through Four Years by Manner, Arizona 2005-2009										
Manner	**2005**		**2006**		**2007**		**2008**		**2009**	
Natural	56	43%	74	48%	49	43%	67	53%	54	42%
Accident (Unint. Injury)	54	42%	64	42%	45	40%	43	34%	56	43%
Undetermined	7	5%	4	3%	7	6%	9	7%	8	6%
Homicide	13	10%	11	7%	12	11%	7	5%	12	9%
Suicide	0	0%	0	0%	0	0%	0	0%	0	0%
Total	**130**		**153**		**113**		**126**		**130**	

Children, Five Through Nine Years of Age

Table 42. Deaths Among Children Ages Five Through Nine Years by Cause and Manner, Arizona 2009 (n=67)						
Cause	**Accident (Unint. Injury)**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Medical*	0	0	0	42	0	**42**
Prematurity	0	0	0	1	0	**1**
Motor vehicle crash	15	0	0	0	0	**15**
Firearm injury	0	3	0	0	0	**3**
Drowning	3	0	0	0	0	**3**
Undetermined	1	0	0	0	0	**1**
Other injury	0	2	0	0	0	**2**
Total	**19**	**5**	**0**	**43**	**0**	**67**
*Excluding SIDS and prematurity						

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

Table 44. Deaths Among Children Ages Five Through Nine Years by Manner, Arizona 2005-2009										
Manner	**2005**		**2006**		**2007**		**2008**		**2009**	
Natural	43	51%	30	47%	37	55%	42	63%	43	64%
Accident (Unint. Injury)	39	46%	32	50%	23	34%	19	28%	19	28%
Undetermined	0	0%	1	1%	0	0%	4	6%	0	0%
Homicide	3	4%	0	0%	7	10%	2	3%	5	7%
Suicide	0	0%	1	1%	0	0%	0	0%	0	0%
Total	**85**		**64**		**67**		**67**		**67**	

Children, 10 Through 14 Years of Age

Table 45. Deaths Among Children Ages 10 Through 14 Years by Cause and Manner, Arizona 2009 (n=73)						
Cause	**Accident (Unint. Injury)**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Medical*	0	0	0	43	0	**43**
Motor vehicle crash	13	0	0	0	0	**13**
Firearm injury	0	1	0	0	0	**1**
Drowning	1	0	0	0	0	**1**
Hanging	0	0	3	0	0	**3**
Fall/crush	1	1	0	0	0	**2**
Undetermined	0	0	0	4	1	**5**
Exposure	2	0	0	0	0	**2**
Other injury	0	2	0	0	1	**3**
Total	**17**	**4**	**3**	**47**	**2**	**73**
*Excluding SIDS and prematurity						

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

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

Children, 15 Through 17 Years of Age

Table 48. Deaths Among Children Ages 15 Through 17 Years by Cause and Manner, Arizona 2009 (n=128)						
Cause	**Accident (Unint. Injury)**	**Homicide**	**Suicide**	**Natural**	**Undetermined**	**Total**
Firearm injury	0	13	9	0	1	**23**
Motor vehicle crash	29	1	0	0	0	**30**
Medical*	0	0	0	32	0	**32**
Hanging	0	0	12	0	0	**12**
Poisoning	11	0	3	0	1	**15**
Other	0	4	0	0	0	**4**
Exposure	5	0	0	0	0	**5**
Undetermined	0	0	0	0	1	**1**
Blunt force trauma	0	2	0	0	0	**2**
Drowning	3	0	0	0	1	**4**
Total	**48**	**20**	**24**	**32**	**4**	**128**
*Excluding SIDS and prematurity						

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

Table 50. Deaths Among Children Ages 15 Through 17 Years by Manner, Arizona 2005-2009										
Manner	**2005**		**2006**		**2007**		**2008**		**2009**	
Accident (Unint. Injury)	92	51%	109	53%	74	46%	49	36%	48	37%
Natural	35	19%	29	14%	34	21%	30	22%	32	25%
Homicide	25	14%	29	14%	26	16%	30	22%	20	16%
Suicide	23	13%	36	18%	21	13%	26	19%	24	19%
Undetermined	5	3%	3	1%	6	4%	2	1%	4	3%
Total	**180**		**206**		**161**		**137**		**128**	

APPENDIX B: POPULATION DENOMINATORS FOR ARIZONA CHILDREN

The population denominators shown below were used in computing the rates presented in this report. These denominators 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.

Table 51. Population of Children Ages 0 Through 17 Years by County of Residence, Arizona 2005-2009

	2005	2006	2007	2008	2009
Apache	28,451	26,177	25,708	25,713	25,888
Cochise	34,862	34,132	34,478	34,786	35,356
Coconino	37,476	35,979	35,867	35,840	36,439
Gila	13,626	13,436	13,130	13,545	14,002
Graham	10,574	9,987	9,833	10,536	10,819
Greenlee	2,585	2,359	2,355	2,551	2,495
La Paz	4,405	4,222	4,143	4,130	4,074
Maricopa	980,054	1,032,185	1,051,575	1,059,737	1,064,572
Mohave	43,266	43,954	45,146	45,589	45,296
Navajo	38,807	36,426	35,821	35,684	35,814
Pima	234,407	239,165	242,411	243,987	244,390
Pinal	61,497	67,010	72,802	80,600	81,414
Santa Cruz	14,764	14,475	14,624	14,880	14,898
Yavapai	42,936	42,682	43,925	44,725	44,969
Yuma	54,181	57,034	58,446	59,083	59,089
Total	**1,601,891**	**1,659,223**	**1,690,264**	**1,711,386**	**1,719,515**

Table 52. Population of Children Ages 0 Through 17 Years by Age Group, Arizona 2005-2009

	2005	2006	2007	2008	2009
<1 Year	90,288	97,113	102,587	98,995	92,263
1-4 Years	355,874	385,231	396,458	402,486	406,201
5-9 Years	457,483	450,576	457,956	465,088	469,372
10-14 Years	443,912	457,207	455,724	462,890	467,149
15-17 Years	254,334	269,096	277,539	281,927	284,530
Total	**1,601,891**	**1,659,223**	**1,690,264**	**1,711,386**	**1,719,515**

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.

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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Apache County Sheriff's Office

Criss Candelaria
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Eagar Police Department

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Eagar Police Department

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Springerville Police Department

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Jim Staffnik, PhD
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Sandra Thompson
Little Colorado Behavioral Health Center

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Mary Scott
Cochise County Prosecutor's Office

Coconino County Child Fatality Review Team

<u>**Chair/Coordinator**</u>
Vacant

Members

Child deaths occurring to residents of Coconino County in 2009 were reviewed by the State Team Chair and designees. A new team coordinator has been identified and a review team has been formed for 2010.

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Katrisha Stuler
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Graham County and Greenlee County Child Fatality Review Team

Chair/Coordinator
Vacant

Members
Child deaths occurring to residents of Graham or Greenlee Counties in 2009 were reviewed by the State Team Chair and designees. A new team coordinator has been identified and a review team is being formed for 2010.

Maricopa County Child Fatality Review Team

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Kathy McLaughlin
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Cynthia Ross
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Detective Debbie Machin
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Jim Miller
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Alice Nelson
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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

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