

A report of child deaths in Kentucky for the 2013 calendar year, using data files from the Public Health Office of Vital Statistics

# Public Health Child Fatality Review Program 2015 Annual Report

Child Fatality and Injury Prevention Program  
Division of Maternal and Child Health  
Kentucky Department for Public Health



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**This report may be viewed at the following web address:** <http://chfs.ky.gov/dph/mch/cfhi/childfatality.htm>

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Thanks to all members and consultants of the State Child Fatality Review team who volunteer their time and efforts to reviewing this data and reducing child fatalities across the state.

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# THE PUBLIC HEALTH CHILD FATALITY REVIEW PROCESS

## **CHILD FATALITY REVIEW USES SURVEILLANCE TO INFORM PREVENTION EFFORTS**

The goal of the Kentucky Department for Public Health's Child Fatality Review (CFR) Program is ultimately to decrease child deaths through prevention efforts. This is done by monitoring aggregate data from vital statistics in order to identify trends and emerging issues related to fatalities that may be preventable in Kentucky. In collaboration with key partners, this data analysis is applied to the development of recommendations and community interventions that may help prevent future injuries and child deaths.

The Kentucky Department for Public Health established, through legislation, the State Child Fatality Review Team in 1996. In accordance with KRS 211.684, the state team is a voluntary, multidisciplinary body that may assume certain duties, including:

- Facilitating the development of local child fatality review teams, which may include training opportunities and technical assistance;
- Developing and distributing model protocols for local child fatality review teams that investigate child fatalities;
- Reviewing and approving local protocols prepared and submitted by local teams;
- Analyzing data regarding child fatalities to identify trends, patterns and risk factors;
- Evaluating the effectiveness of adopted prevention and intervention strategies; and
- Making recommendations regarding state programs, legislation, administrative regulations, policies, budgets, and treatment and service standards, which may facilitate the development of strategies for the prevention and reduction of the number of child deaths.

The State Child Fatality Review Program supports the State Child Fatality Review team who work to assure a strong child fatality review and injury prevention system throughout Kentucky. Local development of child fatality review teams, who review child deaths at the local level, continues to be one of the most important infrastructure-building responsibilities of the state team. According to KRS 211.686, local child fatality review team composition includes multidisciplinary representation from coroners, law enforcement, health departments, Department for Community Based Services, Commonwealth and county attorneys, medical professionals, and others deemed important by the local team to carry out its purpose.

The Local Child Fatality Review team is called together by the coroner and assists the coroner in gathering as much information as possible to determine the most accurate manner and cause of a child's death. Team members have the opportunity to share information, discuss and prioritize child health and risk factors, and promote local education and community-based prevention programs. The goal of the program is to have local teams in every county so that local initiatives for injury prevention can be implemented. Currently, 83 counties have an active local child fatality review team (Map 1). The state team reviews all death data collected by the program to identify injury trends occurring in multiple communities and develop strategies that will help save the lives of children across the Commonwealth.

Per KRS 211.684, the Public Health Child Fatality Review Program prepares an annual report that includes a statistical analysis of the incidence and causes of child fatalities in the Commonwealth and recommendations for action. This report does not include any information which would identify specific child fatality cases but is an analysis of trends in the data with a focus on opportunities for prevention. This 2015 Child Fatality Review Annual Report presents information from vital statistics data on child deaths from calendar year 2013 (the most recent year with completed data from the Kentucky Office of Vital Statistics). The data is still preliminary and numbers could change. The data was reviewed by the State CFR team and recommendations were developed. Although data in this report is through 2013, activities outlined in the report are current.



*EXECUTIVE SUMMARY*  
*Overview of the 2013 Data*

**Trends in Deaths Among Kentucky Children**

There were a total of 542 deaths among Kentucky children in 2013 as shown on Table 1, which is a decrease from the previous years; this decrease is not statistically significant. While the death rate among Kentucky’s infants and children has varied from year to year, overall there has been a decreasing trend in deaths from 2009 to 2013 (Chart 1). Table 1 shows the number of deaths by age group since 2009.

**Table 1.**

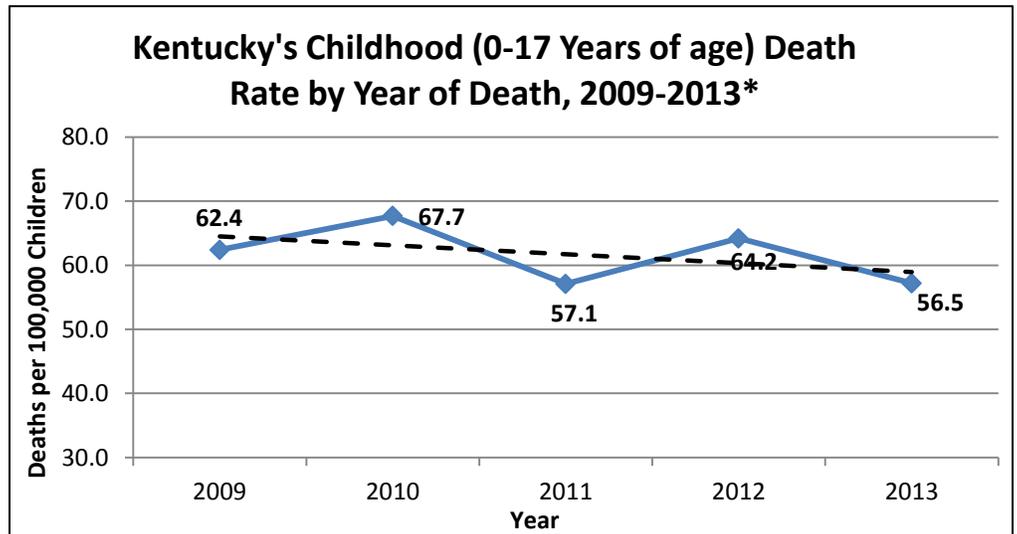
<b>Child Deaths by Age Group and Year, 2009-2013*</b>					
<b>Age Group</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>Infants</b>	369	392	346	391	364
<b>1-9 Years</b>	107	119	112	104	95
<b>10-17 Years</b>	127	144	94	123	83
<b>Total Number of Deaths</b>	<b>603</b>	<b>655</b>	<b>552</b>	<b>618</b>	<b>542</b>
<b>Childhood Death Rate per 100,000</b>	<b>62.4</b>	<b>67.7</b>	<b>57.1</b>	<b>64.2</b>	<b>56.5</b>

**\*Note: 2009-2013 data are preliminary and may change**

**Data Source:** Kentucky Vital Statistics, Death Certificate Files 2009-2013; Kentucky State Data Center, Population Estimates 2009-2013; Additional infant deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2013.

**Chart 1.**

Chart 1 reveals the decline in the rates of child deaths, which is the number of deaths adjusted for the population of children that age. In comparing 2009 to 2013, Kentucky’s overall childhood death rate for children birth to 17 years of age has decreased from 62.4 per 100,000 in 2009 to 56.5 per 100,000 in 2013. This overall decline is depicted in the chart.



**\*Note: 2009-2013 data are preliminary and may change**

**Data Source:** Kentucky Vital Statistics, Death Certificate Files 2009-2013; Kentucky State Data Center, Population Estimates 2009-2013; Additional infant deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2013.

*EXECUTIVE SUMMARY*  
*Overview of the 2013 Data*

**Number of Child Deaths by Age**

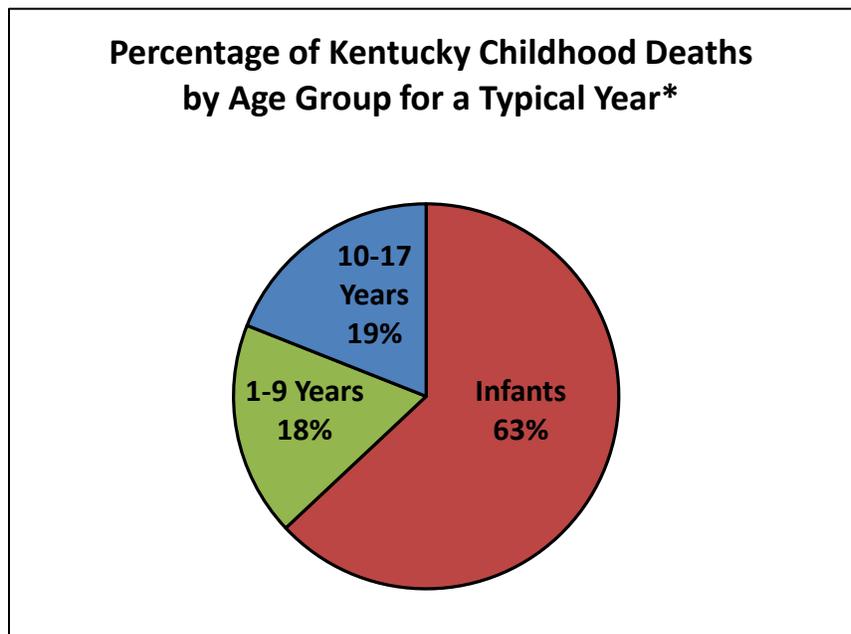
**Infant Deaths**

The largest number of child deaths occurs among infants, as illustrated on Chart 2. On average, infant deaths represent 63% of all child deaths in Kentucky for a year. Infant deaths or infant mortality (deaths occurring before the first birthday) totaled 364 for 2013. The majority of infant deaths are from medical conditions such as prematurity, congenital anomalies (birth defects), and Sudden Unexplained Infant Deaths (SUID).

**Deaths among Young Children ages 1-9**

The total number of deaths for the 1-9 year-old age group has shown no significant changes in the last five years. In a typical year, this age group comprises 18% of all child deaths (Chart 2). In Kentucky, motor vehicle collisions are the leading cause of death among children ages 1-9. Cancer related deaths are the next leading cause of death among children in this age group as seen in Table 2, on page 5. Potentially preventable deaths (from fires, homicides, and drowning) also occur among children ages 1-9, although the numbers of deaths are small and vary from year to year.

**Chart 2.**



**\*Note:** A typical year is determined by taking the average number of deaths for each age group by cause for 2009 through 2013 combined.

**Data Source:** Kentucky Vital Statistics, Death Certificate Files 2009-2013; Additional deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2013.

**Deaths among 10-17 Year-Olds**

Deaths among children ages 10-17 years have been decreasing since 2009. Chart 2 above illustrates that in a typical year in Kentucky, 19% of all child deaths occur among children ages 10-17 years. Motor vehicle collisions remain the leading cause of death among Kentucky's children 10-17 years of age. The second leading cause of death in 2013 among this age group, was suicide. Motor vehicle collisions and suicide are both potentially preventable and will be explored later in this report.

## TAKING A CLOSER LOOK

### Causes of Death by Age Group

#### Causes of Death by Age Group

In order to analyze the leading causes of death by age, the number of child deaths from the past five years (2009-2013) was utilized to determine the average of each cause category by age group in Kentucky for a typical year. The numbers are provided in Table 2.

Kentucky mirrors the nation in that most child deaths occur among infants (children under the age of 1). The majority of these infant deaths are classified as non-injury and are related to prematurity and other medical conditions. The three leading causes of infant deaths in a typical year, as shown in Table 2, are prematurity related conditions, Sudden Unexpected Infant Death (SUID) and birth defects, respectively. The numbers of SUID cases have now surpassed deaths due to birth defects and are approaching the number of deaths due to prematurity among Kentucky infants.

In deaths among children older than 1 year of age, the majority of deaths are injury related. These deaths are significant as they have the potential to be prevented. Motor vehicle collision deaths are the most common cause of death for children ages 1-9 and 10-17.

**Table 2.**

<b>Average Leading Causes of Death among Kentucky's Children by Age Group for a Typical Year*</b>				
<b>Cause of Death</b>	<b>Infants</b>	<b>1-9 Years</b>	<b>10-17 Years</b>	<b>Total</b>
Prematurity Related Conditions†	95	0	0	95
Birth Defects	75	10	3	88
SUID <sup>α</sup>	86	0	0	86
Motor Vehicle Collision	1	16	32	49
Perinatal Conditions	42	2	0	44
Circulatory Disease	10	4	6	20
Cancer	1	12	12	25
Disease of the Nervous System	6	6	6	18
Homicide	5	6	7	18
Suicide	0	0	14	14
Disease of the Respiratory System	8	5	3	16
Drowning	0	9	3	12
Fire	1	9	1	11
Suffocation	1	2	3	6
Infectious Disease	6	4	2	12
Metabolic Disorder	4	3	4	11
Poisoning	1	2	3	6
Undetermined	0	3	1	4
Other <sup>∞</sup>	19	15	13	47
<b>Total</b>	<b>361</b>	<b>108</b>	<b>113</b>	<b>582</b>

Note: 2009-2013 data are preliminary and may change

**NOTE: INFANT DEATHS IDENTIFIED THROUGH MEDICAID CLAIMS WERE EXCLUDED FROM ANALYSIS BECAUSE OF MISSING CAUSE OF DEATH**

\*Note: A typical year is determined by taking the average number of deaths for each age group by cause for 2009 through 2013 combined.

†Note: Prematurity related deaths are those where the infant was born before 37 weeks gestation with the cause of death assigned to one of the following ICD-10 codes; P000, P010, P011, P015, P020, P021, P027, P070-73, P102, P220-29, P250-79, P280, P281, P360-369, P520-23, P77, and K550.

<sup>α</sup>Note: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), and Unspecified threat to breathing (W84).

<sup>∞</sup>Note: Other includes causes of death that varied over the time period and did not have enough data to qualify for a leading cause category.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

## TAKING A CLOSER LOOK

### Categories of Child Deaths

#### The Two Major Categories of Childhood Deaths

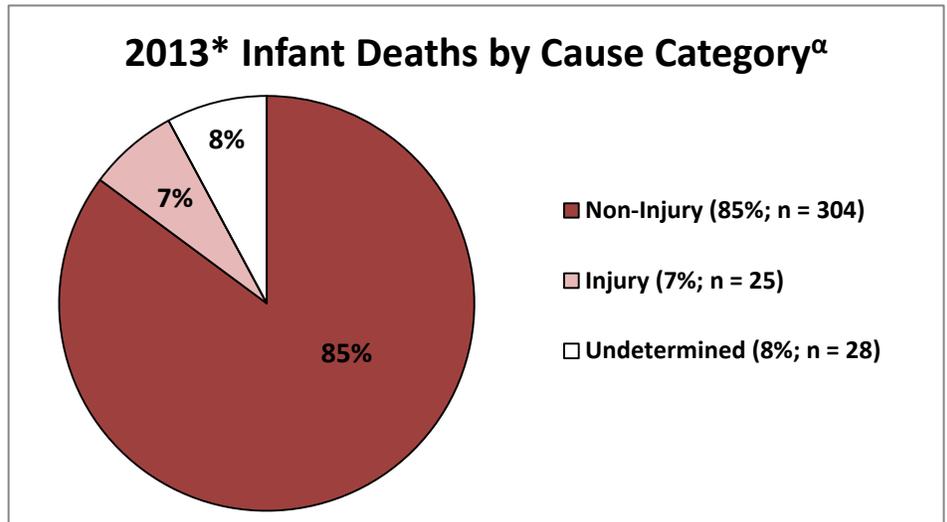
The Centers for Disease Control and Prevention (CDC) group deaths into two major categories, injury or non-injury, according to the cause of death.

- **Non-Injury Deaths** include causes of death which are the result of natural processes such as disease, prematurity, or congenital anomalies (birth defects). Non-injury deaths in children after the first year of life are usually related to specific health conditions, such as cancer or infections.
- **Injury Deaths** include suffocation, poisoning, drowning, fire, suicide, homicide (including child abuse), and vehicular collisions. A major focus of this report is on injury deaths because they are potentially preventable.

Chart 3 shows the 2013 data for infant deaths. Injury related causes contributed to only 7% of infant deaths in Kentucky, while 85% were attributed to non-injury deaths such as prematurity and SUID; 8% were classified as undetermined.

For children 1-17 years of age, injury related causes of death have always accounted for the majority of death among this age group. However, in 2013 injury deaths and non-injury deaths among children were approximately equal. Chart 4 shows that 47% of deaths among children ages 1-17 were due to injury and 47% from non-injury.

**Chart 3.**



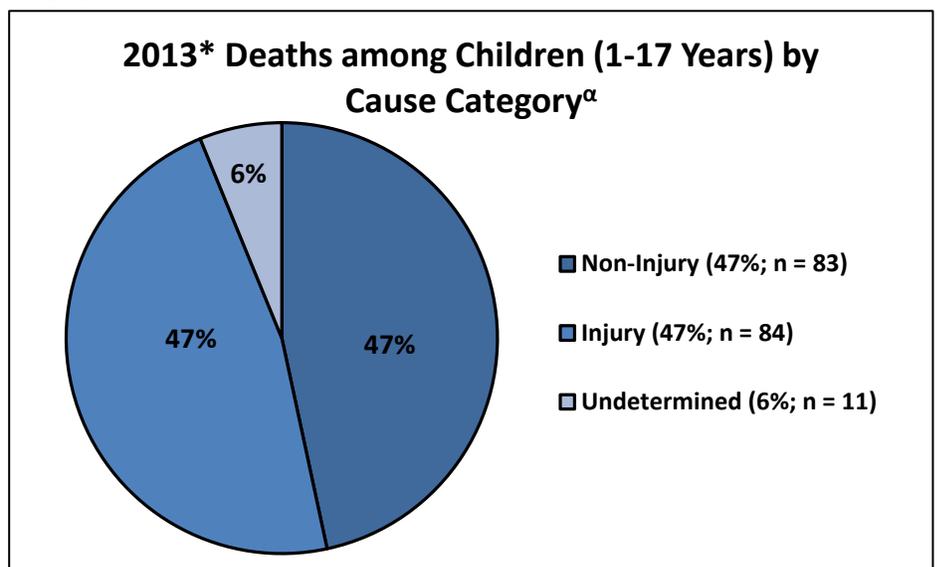
NOTE: 7 INFANT DEATHS WERE EXCLUDED FROM ANALYSIS BECAUSE OF MISSING CAUSE OF DEATH

\*Note: 2013 data are preliminary and may change

<sup>α</sup>Note: Data based on 20 or fewer deaths ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2013.

**Chart 4.**



\*Note: 2013 data are preliminary and may change

<sup>α</sup>Note: Data based on 20 or fewer deaths ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2013.

## TAKING A CLOSER LOOK Racial Disparities in Child Deaths

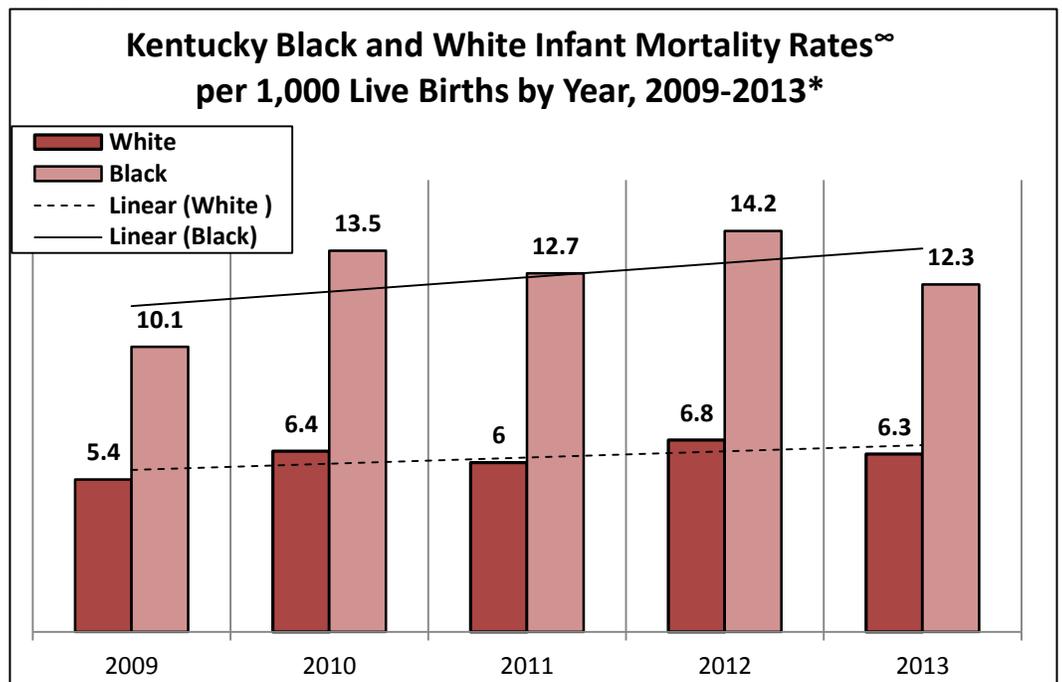
### Racial Disparities in Child Fatalities

Across the US, there are disparities in the number of deaths among black children and white children. In Kentucky, this gap continues to grow, both for infants and for older children. Infant deaths, in Kentucky as well as the nation, are a major component of racial disparity among all childhood deaths.

**Disparities in Infant Mortality.** Nationally, black infants die at twice the rate as white infants in all major cause categories: preterm birth, birth defects, and SUID. One of the biggest discrepancies nationally was found in deaths due to low birth weight, from which black infants die at nearly three times the rate as their white counterparts (MacDorman & Mathews, 2011). Preterm birth is another leading cause of infant mortality among black infants (March of Dimes, 2015).

In Kentucky, black infants continue to be twice as likely to die as white infants (Chart 5). Kentucky's 2013 infant mortality rate for white infants was 6.3 per 1,000 live births, while the rate for black infants was 12.3 per 1,000 live births. As presented on Chart 5, white infant mortality rates have remained fairly consistent over time yet mortality rates have increased among black infants. Although this is preliminary data, the trend is concerning and merits further study. This disproportionate burden reveals the need for prevention efforts to be targeted towards Kentucky's black infant population.

**Chart 5.**



**\*Note: 2009-2013 data are preliminary and may change**

**Note:** Only Black and White Infant Mortality Rates are presented. All other races are excluded so rates presented do NOT equal Kentucky's overall Infant Mortality Rates.

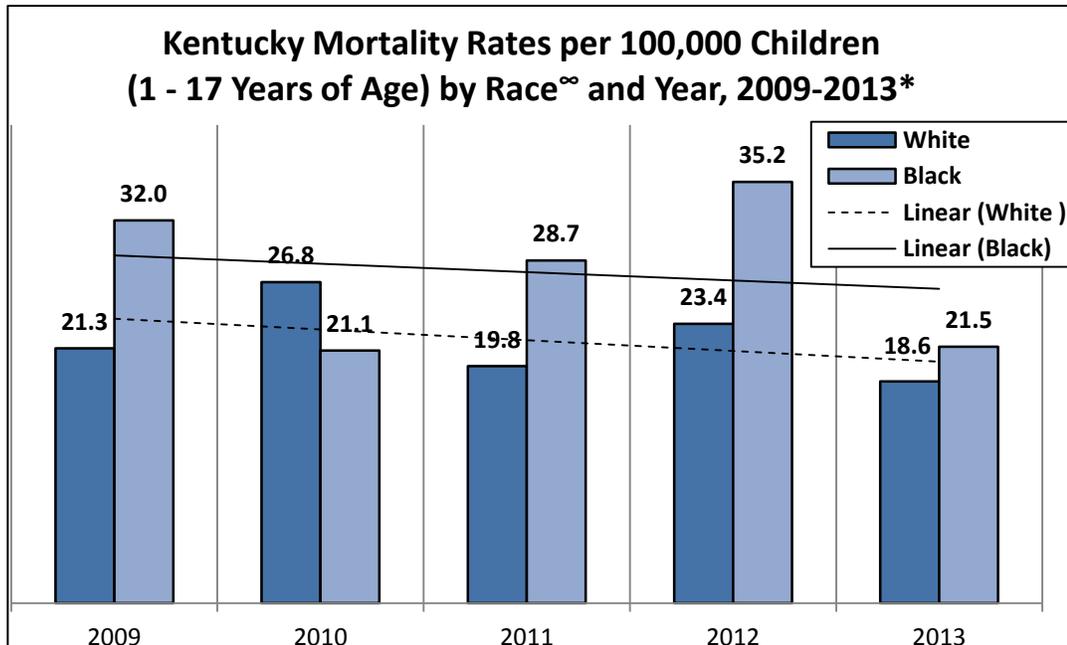
**Data Source:** Kentucky Vital Statistics, Death Certificate 2009-2013 and Birth Certificate Files 2009-2013.

## TAKING A CLOSER LOOK

### Racial Disparities in Child Deaths

**Disparities in Child Deaths (age 1-17).** From 2009-2013, Kentucky's mortality rate among black and white children indicates a slightly decreasing trend (Chart 6). Although the gap in racial disparity is not as great among Kentucky children age 1 to 17 years as it is among Kentucky's infants, the racial disparity is still present. Again, this disproportionate burden emphasizes the need for enhancing prevention efforts targeted towards Kentucky's black population.

**Chart 6.**



\*Note: 2009-2013 data are preliminary and may change

Note: Only Black and White Mortality Rates are presented. All other races are excluded so rates presented do NOT equal Kentucky's overall Child Mortality Rates.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013; Kentucky State Data Center, Population Estimates by Race 2009-2013.

Of note, the five leading causes of death among Kentucky white children (1-17 years) in 2013 were cancer, motor vehicle collisions, fire, suicide, and drowning, respectively. However, the five leading causes of death among black children were cancer, homicide, suicide, fire, diseases of the circulatory system, and diseases of the respiratory system, respectively. In 2013, deaths due to homicide occurred among Kentucky's black children nearly eight times the rate of homicide deaths occurring among white children. This statistic is very troubling and highlights the need for increased efforts in violence prevention.

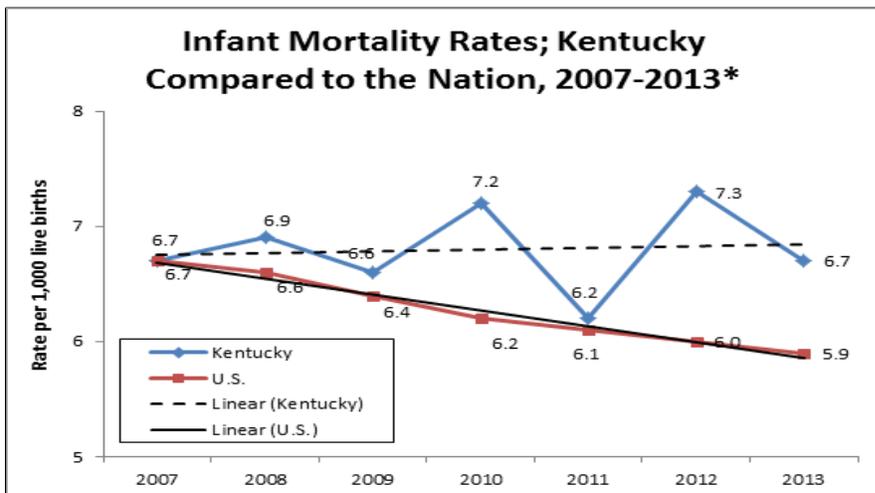
# INFANT DEATHS/ INFANT MORTALITY

## Kentucky's Infant Mortality Remains High

The infant mortality rate (IMR) is the number of infant deaths for every 1,000 live births and is seen as the best indicator of a state's overall health, social, and economic environment. Kentucky's infant mortality rate has, for many years, been close to the national average. However, recently the infant mortality rate in Kentucky is revealing an increasing trend. Kentucky's most current infant mortality rate (2013) is 6.7 per 1,000 live births, while the US rate is much lower at 5.9 per 1,000 live births (Chart 7). Chart 7 illustrates a declining trend in the national IMR, while Kentucky's IMR is increasing over time. Although the data is preliminary, this adverse trend is concerning.

There are multiple factors influencing the state's infant mortality rate. Nationally, Kentucky has one of the highest rates of smoking during pregnancy, which can cause miscarriage, premature birth, and/or low birth weight and is associated with an increased risk of birth defects (Centers for Disease Control and Prevention, 2014c). Smoking, both during pregnancy and in the home after birth, increases the risk of Sudden Infant Death Syndrome (SIDS) (Centers for Disease Control and Prevention, 2014c).

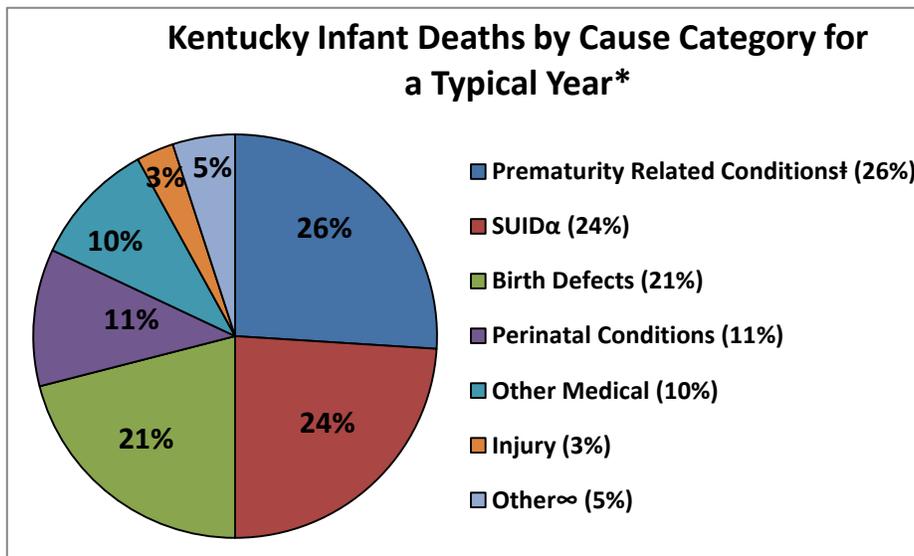
**Chart 7.**



\*Note: 2009-2013 data are preliminary and numbers could change

Data Source: KY Vital Statistics Files, Death Certificate files, Years 2007-2013; Additional infant deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2013; National Center for Health Statistics, Deaths final data 2013.

**Chart 8.**



The three leading causes of infant death in Kentucky (Chart 8) are prematurity-related conditions, Sudden Unexpected Infant Death (SUID), and birth defects. Since infant deaths comprise over half of all childhood deaths, the three leading causes of death among infants are also the three leading causes of death among all children.

\*Note: A typical year is determined by taking the average number of deaths for each age group by cause for 2009 through 2013 combined.

α Note: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), or Unspecified threat to breathing (W84).

† Note: Prematurity related deaths are those where the infant was born before 37 weeks gestation with the cause of death assigned to one of the following ICD-10 codes; P000, P010, P011, P015, P020, P021, P027, P070-73, P102, P220-29, P250-79, P280, P281, P360-369, P520-23, P77, and K550.

∞ Note: Other includes causes of death that varied over the time period and did not have enough data to qualify for a leading cause category.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

## INFANT DEATHS/ INFANT MORTALITY

### Prematurity-Related Deaths

#### Prematurity-Related Deaths

Births that occur before 37 weeks gestation are preterm, births at 37 to 38 weeks are early term, and 39 to 40 weeks gestation is considered full term. Prematurity-related deaths are the most common cause of death for Kentucky infants. The CDC reported that preterm births affect one out of every nine babies born in the U.S. (Centers for Disease Control and Prevention, 2014b). The earlier the baby is born, the higher the risk of disability or death. The CDC reported that as gestational age increases, the rate of infant mortality will decrease (Centers for Disease Control and Prevention, 2014b). As illustrated on Table 3, from 2009 to 2013 the majority of Kentucky's prematurity related deaths occurred among infants less than 23 weeks gestation and infants between 24-25 weeks gestation. However, even a few weeks of prematurity can make a difference and increase the risk of death and complications. Infants should not be delivered prior to 39-40 weeks of gestation without a medical indication.

Common factors that increase the likelihood for preterm birth include: infections, poor nutrition, lower socio-economic status, domestic violence, smoking during pregnancy, substance abuse, and medical disorders (Centers for Disease Control and Prevention, 2014b). The identification of risk factors for poor outcomes is critical to minimizing infant mortality and morbidity. Access to care for the mother before, during, and after pregnancy is critically important for prematurity prevention and positive outcomes for both mother and child. Early access to prenatal care, the identification of high risk pregnancy conditions, and preventative counseling are critical in the improvement of perinatal outcomes. Thus, prenatal care is a key strategy in the prevention of maternal and infant mortality and morbidity and the promotion of continued health and well-being of infants through adulthood.

**Table 3.**

<b>Preterm Related<sup>†</sup> Deaths by Gestational Age and Year*</b>					
<b>Gestational Age</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>≤23 Weeks</b>	53	51	64	104	56
<b>24-25 Weeks</b>	23	23	9	20	8
<b>26-27 Weeks</b>	11	11	8	7	8
<b>28-29 Weeks</b>	--	--	5	--	--
<b>30-33 Weeks</b>	7	0	5	5	--
<b>34-36 Weeks</b>	--	--	0	--	0
<b>&gt;= 37 Weeks</b>	0	0	0	0	0
<b>Missing*</b>	7	7	5	0	--
<b>Total</b>	<b>104</b>	<b>97</b>	<b>96</b>	<b>139</b>	<b>81</b>

Counts less than 5 have been suppressed and are denoted as --

\*Note: 2009-2013 data are preliminary and numbers could change;

Data Source: KY Vital Statistics Files, Linked Birth and Death Certificate files, Years 2009-2013.

†Note: Prematurity related deaths are those where the infant was born before 37 weeks gestation with the cause of death assigned to one of the following ICD-10 codes; P000, P010, P011, P015, P020, P021, P027, P070-73, P102, P220-29, P250-79, P280, P281, P360-369, P520-23, P77, and K550.

*INFANT DEATHS/ INFANT MORTALITY*  
*Sudden Unexpected Infant Deaths*

**Sudden Unexpected Infant Deaths in Kentucky**

The CDC has broadened the focus on infant deaths that occur while sleeping to include not only Sudden Infant Death Syndrome (SIDS) but also accidental suffocation in bed and “undetermined.” These all fall under the designation of Sudden Unexpected Infant Death (SUID). At least some SUID cases are potentially preventable by implementing safe sleep practices. The CDC defines SIDS as the sudden death of an infant less than one year of age that cannot be explained after a thorough investigation has been conducted, including a complete autopsy, examination of the death scene, and review of the clinical history. According to the CDC, it may be difficult to separate SIDS from other types of sudden unexpected infant deaths. Differentiating accidental suffocation in bed from SIDS, even when a thorough investigation is conducted can be challenging. In Kentucky, an infant death is ruled undetermined when there is no anatomic, toxicological, or metabolic cause of death, but there is other compelling investigative information or physical evidence that is concerning and suggests the death was not a natural death. This information may include evidence of unsafe sleep practices.

Using the broader category of SUID, these infant deaths become the second leading cause of death among Kentucky’s infants. While the total numbers of infant deaths are down for 2013, the number of SUID cases has increased over the previous two years. Table 4 presents the types of SUID cases and leading sleep-related risk factors that have occurred over a 5-year span in Kentucky. Table 4 also presents the most common risk factors documented by coroners and medical examiners associated with SUID cases. These infants may have more than one risk factor associated with the death.

**Table 4.**

<b>Number of SUID<sup>α</sup> Cases by Type and Presence of Risk Factors<sup>∞</sup>, 2009-2013*</b>					
	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>Type of SUID<sup>α</sup> Death</b>					
SIDS	61	63	49	45	55
Undetermined	10	22	12	10	20
Asphyxia <sup>†</sup>	22	21	12	16	9
<b>Total Number of SUID<sup>α</sup> Deaths</b>	<b>93</b>	<b>106</b>	<b>73</b>	<b>71</b>	<b>84</b>
<b>Sleep-Related Risk Factors Present<sup>∞</sup></b>					
Sharing sleep surface at time of death	55	62	41	34	46
Surface not designed for infant sleep	64	73	49	41	56
Soft materials in Sleep Area	20	20	30	32	48
Sleep Position (Prone or On-Side)	19	25	25	24	22
<b>At Least One Risk Factor Present</b>	<b>73</b>	<b>89</b>	<b>63</b>	<b>57</b>	<b>76</b>

\*Note: 2009-2013 data are preliminary and may change

<sup>α</sup>Note: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), or Unspecified threat to breathing (W84).

<sup>†</sup>Note: Asphyxia includes deaths where the cause of death was coded as Accidental Suffocation in Bed (W75), Other specified threats to breathing (W83), and Unspecified threat to breathing (W84).

<sup>∞</sup>Note: Categories under the Sleep-Related Risk Factors are not mutually exclusive

Data Source: Kentucky Vital Statistics, Death Certificate File 2009-2013; Coroner’s Reports; Child Fatality Review Team Reports; and Kentucky Medical Examiner’s Reports, 2009-2013.

# INFANT DEATHS/ INFANT MORTALITY

## Sudden Unexpected Infant Death

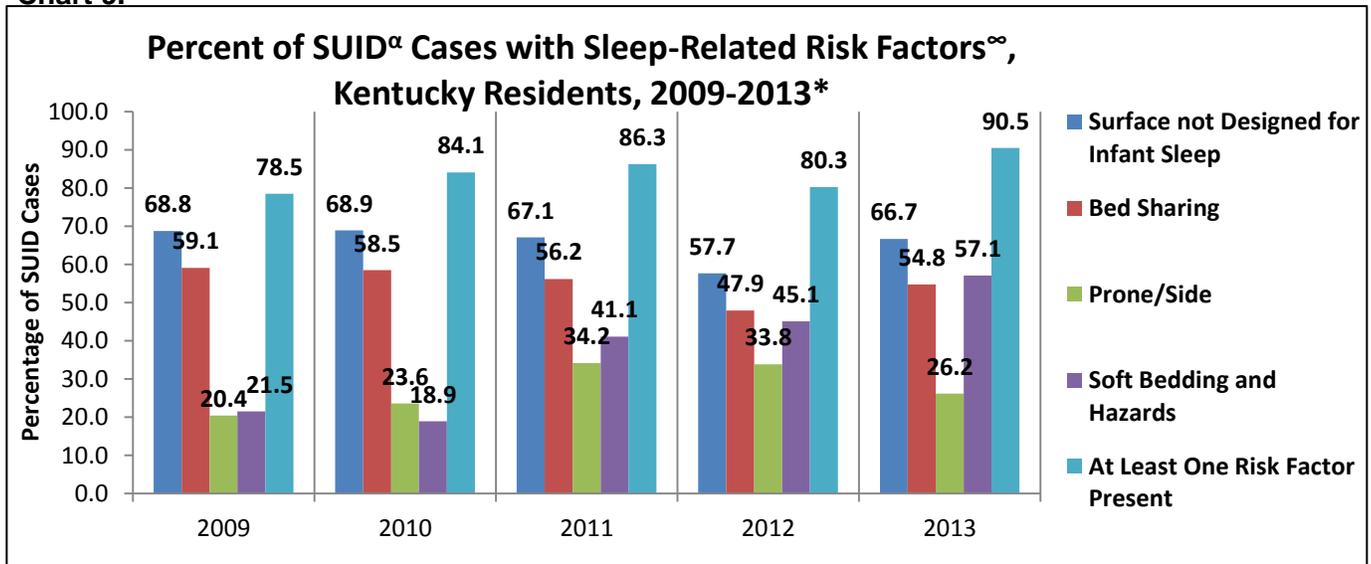
### Sleep-related Risk Factors are Present in Majority of SUID Deaths

Using all three types of SUID cases (SIDS, undetermined, and asphyxia), Kentucky's data from 2013 shows 90% of the deaths had documentation of at least one sleep-related risk factor present. However, there are generally two or more hazardous risk factors present for every death due to SUID. Common risk factors found in sleep-related deaths are: child not put to sleep on their back (placed on stomach or side position); child sleeping on a surface not designed for infant sleep (adult bed, sofa, recliner, etc.); sharing a sleep surface at the time of death (bed, sofa) with an adult or another child; hazards (pillows, blankets, bumper pads, and stuffed animals) in the sleep area; and smoking in the home. A smoke-free environment is vitally important to reduce the risk of SIDS. In a national study, smoking in pregnancy accounted for 23%-34% of deaths due to SIDS (Dietz et al., 2010), so the high rates of smoking in Kentucky place our infants at increased risk.

Many sleep-related deaths among Kentucky infants might have been prevented if the infant was placed in a safe sleep environment. For 2013, the risk factor documented in 67% of the SUID cases was that the infant was placed on a surface not designed for infant sleep; in over half the cases the infant was found with soft bedding in the sleeping area. SUID deaths in Kentucky attributed to the risk factor of bed sharing or same surface sleeping increased from the previous years to 54.8% for 2013. As a result of the increase in risk factors, prevention efforts focusing on sleep-related deaths are occurring across the state.

Chart 9 illustrates the percentage of SUID cases in Kentucky with sleep-related risk factors documented for the years 2009 through 2013. Documentation on SUID cases reveals the practice of placing infants on their stomach or side to sleep, which is contrary to national recommendations, has increased as a contributing factor over the last four years. However, deaths occurring on a surface not designed for infant sleep have been decreasing in the past few years, although the percentages of SUID cases with the risk factor of soft bedding have increased since 2009. Educating parents and caretakers about safe sleep, as well as modeling safe sleep in hospital settings, are key strategies in reducing SUID.

**Chart 9.**



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), or Unspecified threat to breathing (W84).

<sup>b</sup>Note: Categories under the Sleep-Related Risk Factors are not mutually exclusive

Data Source: Kentucky Vital Statistics, Death Certificate File 2009-2013; Coroner's Reports; Child Fatality Review Team Reports; and Kentucky Medical Examiner's Reports, 2009-2013.

## INFANT DEATHS/ INFANT MORTALITY

### *Sudden Unexpected Infant Death*

#### **SUID Prevention Efforts**

##### **What does Safe Sleep Look Like?**

The “Back to Sleep” campaign, which began in 1992, has been successful in reducing infant deaths attributed to unsafe sleeping by more than 50% since its introduction. As a result of new scientific research, the American Academy of Pediatrics (AAP) guidelines were revised and broadened in 2011 to become the “Safe to Sleep” program (Moon, 2011; Task Force on Sudden Infant Death Syndrome, 2005).

The AAP currently recommends (Moon, 2011):

- Infants should always be placed on their backs; in their own bed; on a firm sleep surface; without pillows, comforters, or other soft surfaces. [**A**=alone, **B**=on their Back; **C**=in their own crib (includes bassinet or play yard)];
- Keep the infant’s crib, bassinet, or play yard free of soft objects, toys, and loose bedding. Bumper pads, quilts, blankets, and pillows are potential hazards for the infant;
- Smoking is a common risk factor found in deaths occurring during sleep. There should be no smoking during or after pregnancy, and there should be no smoking around the infant;
- Room sharing with the infant is appropriate but do not share the bed. Infants should be alone in a crib, bassinet, or play yard;
- Breastfeeding has many benefits to both the mother and infant and can reduce the risk of SIDS but always place the infant back in a safe sleep environment;
- Consider giving the infant a clean, dry pacifier when placing the infant down to sleep. There is no need to replace it during sleep if the pacifier falls out;
- Do not let the infant overheat; and
- Avoid products that claim to reduce the chance of SIDS as most have not been tested for safety. Home monitors do *not* reduce the risk of SIDS and should not be used for that purpose.

The new Safe to Sleep materials, endorsed by the AAP, are available at no cost from the National Institute of Child Health and Human Development (NICHD) at <http://www.nichd.nih.gov/sts>.



In Kentucky, prevention efforts include educating families, caregivers, and childcare providers on the AAP recommendations; having hospitals and child care agencies model safe sleep practices; and promoting the “Safe to Sleep” program to anyone caring for an infant, even if they only have the infant for short periods. Kentucky specific information can be found at [www.safesleepky.org](http://www.safesleepky.org).

## DEATHS IN CHILDREN (AGE 1-17)

### Injuries Account for Most Deaths in Children Ages 1-17

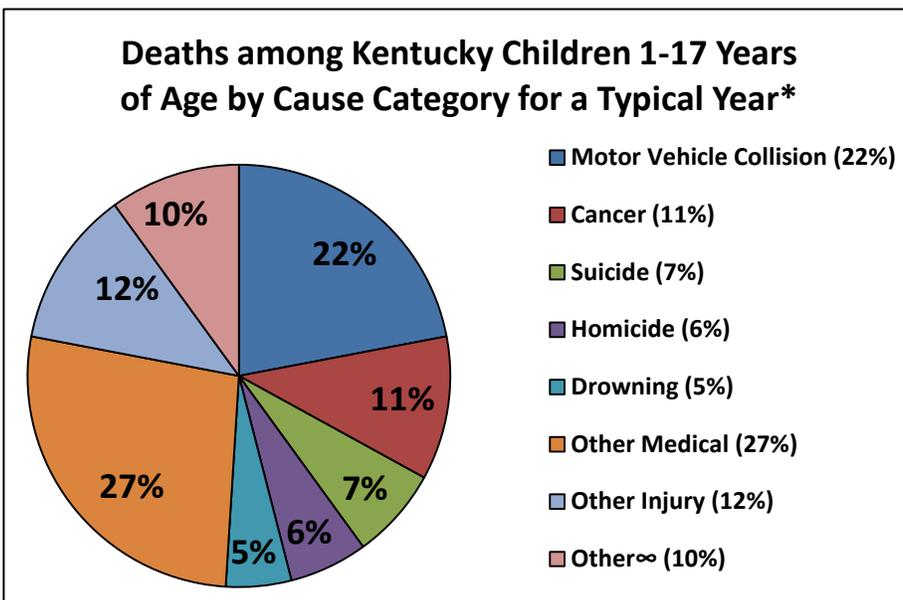
The CDC reports that injury is the number one killer of children and teens (Centers for Disease Control and Prevention, 2013). Although child injury death rates have decreased 29% nationally in the last decade, injury remains a major under-recognized public health problem facing our country today (Richmond-Crum, Joyner, Fogerty, Ellis, & Saul, 2013).

In Kentucky, **injury deaths** account for 52% of all deaths among 1-17 year olds for a typical year. Injuries can be unintentional (accidental) or intentional (non-accidental). The category of unintentional injury includes motor vehicle collisions, suffocation, drowning, and fire. Unintentional injury can also occur from falls, exposures to chemicals, or forces of nature. According to the CDC, unintentional injury is the leading cause of death from age 1 until age 44 (Richmond-Crum, et al., 2013). The category of intentional injury includes deaths from homicide (including child abuse) and suicide.

The most common cause of injury death among children ages 1-17 is motor vehicle collisions, which account for approximately 22% of all childhood deaths in Kentucky (Chart 10). Injury deaths, unintentional or intentional, may be preventable.

**Non-Injury deaths** accounted for 48% of deaths in Kentucky children ages 1-17 years in a typical year. Non-injury deaths among ages 1-17 years include cancer and other medical conditions, such as infectious diseases and digestive and respiratory disorders. Non-injury deaths are less likely to be preventable than injury related deaths.

**Chart 10.**



The “other” category presented in Chart 10 includes deaths in which the causes were unknown. Two additional “other” categories (Other Medical and Other Injury) were created to capture causes of death that vary over time and do not occur with high frequency. Some causes of death that are grouped into the “other medical” category include: infectious disease, heart disease, metabolic disorders, etc. Fire and other external causes are included in the “other injury” category and are typically not leading causes of death among Kentucky’s children 1 to 17 years of age.

\*Note: 2009-2013 data are preliminary and may change

\*Note: A typical year is determined by taking the average number of deaths for each age group by cause for 2009 through 2013 combined.

Note: Other includes causes of death that varied over the time period and did not have enough data to qualify for a leading cause category.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

## DEATHS IN CHILDREN (AGE 1-17) Motor Vehicle Collisions

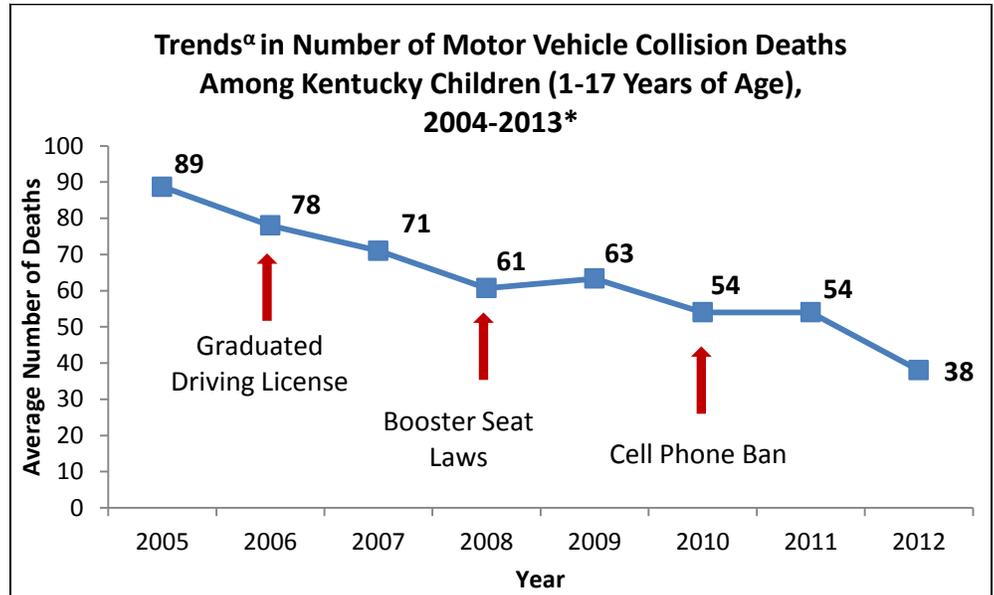
### Motor Vehicle Collisions are the Leading Cause of Death in Children Ages 1-17

Motor Vehicle Collision (MVC) deaths include fatal injuries from being the driver or passenger of a motor vehicle involved in a crash or from being struck by, or falling off of, a moving vehicle. Motor vehicle collisions remain the leading cause of injury-related death in Kentucky for children aged 1-17 years.

However, Kentucky child deaths related to motor vehicle collisions have seen a steady decline since 2004, as depicted on Chart 11. Similarly, The National Highway Traffic Safety Administration (NHTSA) reported that from 2003 to 2013 the number of fatalities nationally in the under-14 year age group decreased by 45% (National Highway Traffic Safety Administration, 2014).

Initiatives such as the graduated driving license law, booster seat law, and the cell phone ban for teen drivers are noted on Chart 11 and have been recognized as potential factors influencing this decrease.

**Chart 11.**



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: A three-year rolling average has been plotted to present the trend in Kentucky's Motor Vehicle deaths from 2004-2013. Therefore, the data point at 2005 is really a yearly average of 2004, 2005, and 2006, the data point for 2006 is the yearly average of 2005, 2006, and 2007, and 2007 is 2006, 2007, and 2008 and so on and so forth.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2004-2013.

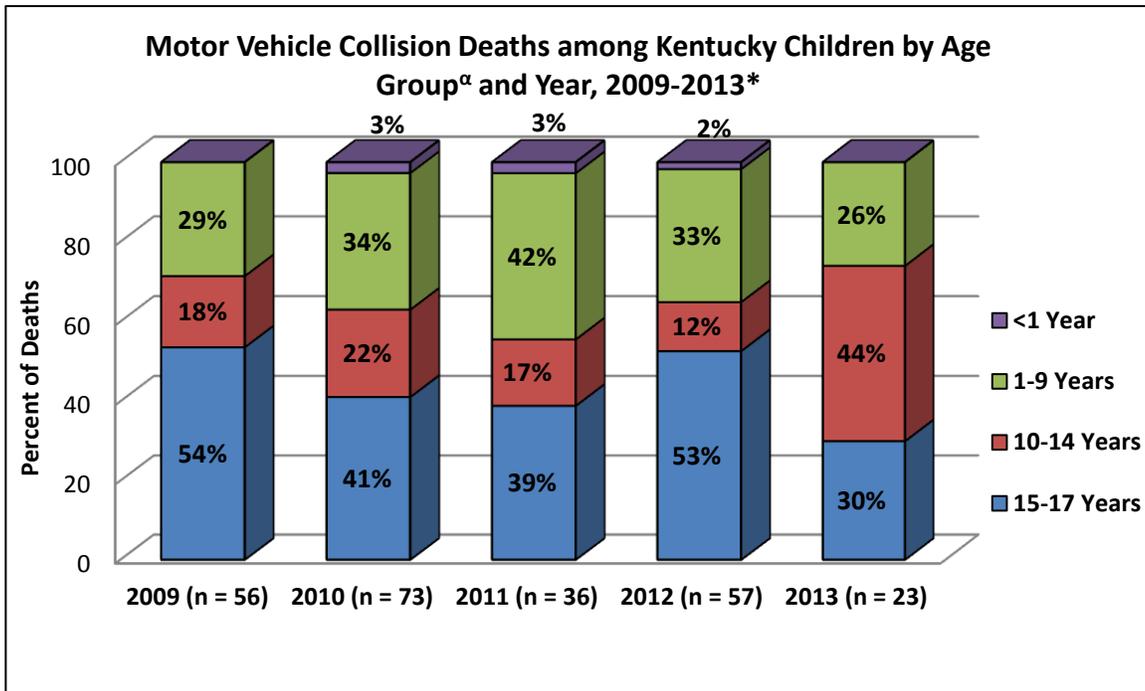
### Child Deaths from Motor Vehicle Collision

In Kentucky during 2013, children aged 1 to 9 years (car and booster seat ages) comprised 22% of the motor vehicle deaths. KRS 189.125 currently requires booster seats for children under the age of eight (8) years who are between forty (40) inches and fifty-seven (57) inches in height. At that time, the decision should be made on an individual basis whether the seat belt is fitting correctly without a booster seat, since almost no child has achieved adult height by age 9. Correctly used child safety seats can reduce the risk of death by as much as 71 percent (Safe Kids Worldwide, 2013b).

In Kentucky, the 2013 data shows that children aged 10 to 14 years (Chart 12) accounted for 44% of the total child motor vehicle collision deaths. While it appears that motor vehicle collisions among 10-14 year olds have increased substantially compared to previous years, this increase is not significant statistically and should be interpreted with caution. Children within this age range should be appropriately buckled and should continue to ride in the back at least through age 12.

## DEATHS IN CHILDREN (AGE 1-17) Motor Vehicle Collisions

**Chart 12.**



Due to Rounding, Numbers may not Equal 100%

\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths for each age group for 2013 compared to previous years; Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING**

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

### Teen Driver Deaths Account for 30% of Motor Vehicle Collision Deaths

For the year 2013, 30% of Kentucky child deaths due to motor vehicle collisions occurred among teenagers 15-17 years of age. Current efforts in Kentucky to reduce the number of deaths of young drivers include the graduated driving license initiative, a cell phone ban for drivers under 18, and driver safety programs that address risk factors for youth drivers. Common patterns are seen between the fatal collisions among Kentucky's teens (15-17 years of age) and others across the nation.

Nationwide, teenage drivers who died due to MVCs decreased 6% from 2011 to 2012 (National Highway Traffic Safety Administration, 2014). According to NHTSA, national fatal teen MVCs occur most frequently between 3 and 8 p.m. but remain high until midnight. A NHTSA study reported that teenage drivers were 2.5 times more likely to engage in risky behaviors while driving with one passenger and 3 times more likely to participate in these activities with multiple passengers (Goodwin, Foss, & O'Brien, 2012). NHTSA data also shows that:

- 50% of teen drivers who died were not restrained;
- 35% of teen drivers were speeding at the time of the fatal crash;
- 27% of teen fatalities had positive blood alcohol concentrations;
- 20% of teens who died were driving with an invalid driver's license at the time of the crash; and
- 12% of teen drivers were distracted (e.g., passengers, cell phone use, etc.) at the time of the crash.

## DEATHS IN CHILDREN (AGE 1-17) Motor Vehicle Collisions

Since 2011, the NHTSA and the AAP have made the following recommendations for child passenger safety:

- Infants and toddlers should ride in a rear-facing car seat until age 2 or until he/she reaches the top height or weight limit allowed by the car seat manufacturer.
- Once a child outgrows the rear-facing car seat, he/she is ready to travel in a forward facing car seat with a harness.



- When a child is too tall for that seat or too heavy for the harness weight specified by the manufacturer, he/she should graduate to a belt-positioning booster seat.
- For safest travel, a child should remain in a booster seat until he/she is big enough (usually between the ages of 8-12 years) to fit in an adult seat belt properly, with the lap belt lying snugly across the thighs and shoulder belt snug across the collarbone.
- For greatest safety, parents are also advised to avoid advancing to the next phase prematurely, and to wait until the size of the child dictates the need to transition into the next phase.
- Keep the child in the back seat at least through age 12 (American Academy of Pediatrics, 2015).



## DEATHS IN CHILDREN (AGE 0-17)

### *Child Maltreatment*

#### **Child Maltreatment highest among the youngest and most vulnerable**

Younger children and infants who die as result of child maltreatment, including those who die from neglect and physical abuse, are homicide deaths. However, child maltreatment is typically not entered as the cause of death on the death certificate. Rather, these deaths are often submitted as “undetermined” or “assault by unspecified means” for the official cause on the death certificate as investigations may take months or years to complete. Making a determination of child maltreatment with a fatality involves a collaborative effort from the Coroner’s office, law enforcement, and the Department of Community Based Services (DCBS).

In Kentucky, child maltreatment deaths remain a major concern due to the violent nature of these deaths and the potential for prevention. In 2013, there were a total of 67 fatalities and near fatalities that were substantiated as reported by Division of Protection and Permanency child fatality and near fatality records; (as of 5/15/2015). Nineteen of these cases resulted in a fatality. Neglect accounted for 42% of the 67 cases and physical abuse accounted for 55%. Three percent of all fatality and near fatality cases had a combination of neglect and physical abuse. Of the 67 fatalities and near fatalities, 45% occurred among infants, 35% among 1 to 4 year olds, 4% among 5 to 9 year olds, 12% among 10 to 14 year olds, and 4% among 15 to 17 year olds. Sixty-three percent of these cases occurred among males. Abusive head trauma accounted for 25% of the cases, while physical abuse accounted for an additional 19% of these cases. Over 50% of the 2013 DCBS cases had substance abuse documented.

The National Child Abuse and Neglect Data System (NCANDS) collects data on child fatalities that result from maltreatment nationally. NCANDS child fatality count reflects the federal fiscal year (FFY) in which the deaths were determined as due to maltreatment. In 2013, an estimated 1,520 children died of abuse and neglect in the United States (U.S. Department of Health and Human Services Administration for Children and Families Administration on Children Youth and Families Children’s Bureau, 2015). NCANDS data reports that children under 3 years of age accounted for nearly three-quarters (73.9) of all maltreatment deaths because the youngest children are the most vulnerable due to dependency and small size.

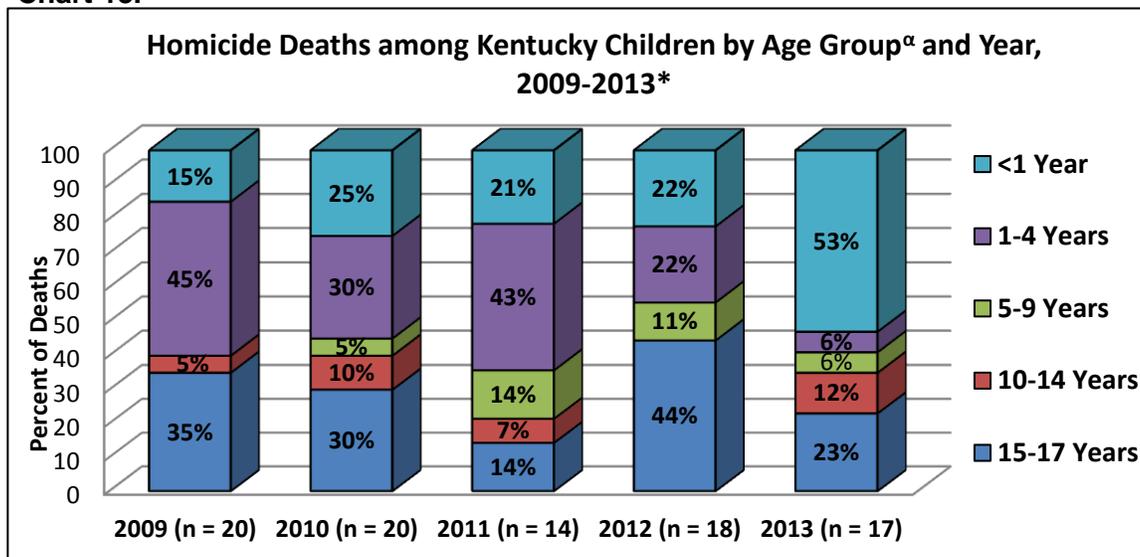
The CDC recommends that communities approach child abuse prevention by seeking to create safe, stable, and nurturing relationships and environments. These are considered **Essentials for Childhood**; conditions necessary to assure children reach their full potential. In this approach, communities develop strategies to promote the types of relationships and environments that help children grow up to be healthy and productive citizens so that they, in turn, can build stronger and safer families and communities for their children (Centers for Disease Control and Prevention, 2014a). Kentucky efforts to promote safe, stable, and nurturing environments support families to promote school readiness and prevent child abuse and neglect. These include the Health Access Nurturing Development Services (HANDS) home visitation program and Kentucky Strengthening Families (KYSF). All families experience times of stress, and research demonstrates that children grow and learn best in families who have the support and skills to deal with such stress.

Kentucky Strengthening Families represents a multi-disciplinary partnership of over 20 national, state, local, public, and private organizations dedicated to embedding six research-based Protective Factors into services and supports for children and their families. The Protective Factors lay the foundation for the Strengthening Families Framework. Protective factors are conditions in families and communities, which when present, help increase the health and well-being of families and children and reduce the risk of child abuse and neglect. The protective factors identified for Kentucky are: 1) Parental resilience, 2) Social Connections, 3) Knowledge of Child Development, 4) Concrete Support in Times of Need, 5) Social and Emotional Competence of Children, and 6) Nurturing and Attachment. To learn more, please visit: <http://chfs.ky.gov/dph/mch/e cd/Kentucky+Strengthening+Families.htm>.

**Homicide data from Vital Statistics files.**

The numbers in the previous section for child maltreatment deaths reported by the Department of Community Based Services are not reflected in the numbers of homicides obtained from Vital Statistics. Many of the child maltreatment deaths are listed as undetermined on the death certificates; homicide is not marked due to the on-going investigations. Some of these deaths could still have pending law enforcement investigations and/or ongoing investigations from DCBS. There is some overlap in the numbers as child maltreatment deaths (i.e., Abusive Head Trauma) will likely be coded on the death certificates. Child deaths that have fractures or a constellation of symptoms may only have those symptoms listed on the certificate and may not be listed in the vital statistics files as a child maltreatment death, even though the trauma was caused from abuse.

**Chart 13.**



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths for each age group for 2013 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING**

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

**Homicide Deaths in Young Children**

The number of homicide deaths has remained relatively consistent over time. However, the age group in which these homicides have occurred has fluctuated overtime. The percentage of homicide deaths among children under the age of 1 has increased, while deaths among 1-4 years of age have decreased. These percentages should be interpreted with caution since they are based on small numbers.

In looking at Chart 13, it is evident that more than half of the homicides occurred among infants in 2013. This is troubling as most infants were the victims of maltreatment and, while the numbers of homicide deaths are low compared to other causes, they are concerning and preventable. The homicide deaths in older children, age 15-17 years of age, were the result of a violent crime, one primarily perpetrated by non-family members.

## DEATHS IN CHILDREN (AGE 1-17)

### Homicides

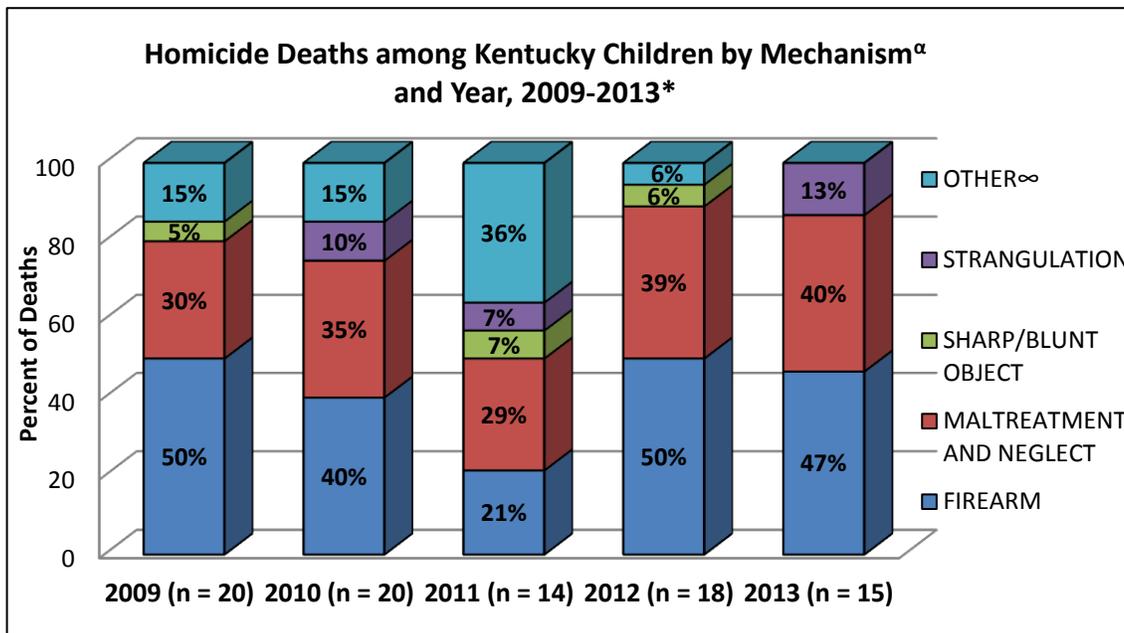
The Office of Juvenile Justice and Delinquency Prevention (OJJDP) reported that homicide is most common among the oldest and youngest children (Office of Juvenile Justice and Delinquency Prevention, 2014). In 2012 (latest data available), 40% of juvenile homicide victims nationally were five and under, and 42% were between ages 15-17 (Office of Juvenile Justice and Delinquency Prevention, 2014). A substantially larger proportion of victims age five and under were killed by family members than victims ages 15–17 (54% vs. 4%). Nationally, firearms were used in 81% of the murders of juveniles ages 12–17 in 2012 and the homicide rate for black children has been nearly five times the white rate, that disparity was seen across victim age groups (Sickmund, 2014). The disparity gap for homicide rates between black children and white increased as the age of the victim increased (Sickmund, 2014)

The CDC recommends the need for continual use of evidence-based, primary prevention strategies to stop youth violence. Utilizing the public health sector to reach the highest-risk youths with effective evidence-based prevention strategies is particularly critical to reduce the number of juvenile homicides, both nationally and statewide (David-Ferdon C & Simon T.R., 2014).

#### Mechanism Used in Child Homicides

Chart 14 illustrates the mechanism used in homicides of children in Kentucky. For 2013, 47% of the homicide deaths among children were the result of a firearm, while child maltreatment accounted for 40% of the deaths. Nationally, the majority of juvenile (12-17 years of age) homicides occur by the use of a firearm (Office of Juvenile Justice and Delinquency Prevention, 2014). Firearm deaths are potentially preventable by educating families and children about gun safety.

Chart 14.



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths for each mechanism category for 2013 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING**

<sup>b</sup>Note: Other category includes homicides in which the mechanism was unspecified, poisonings, and vehicular  
Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

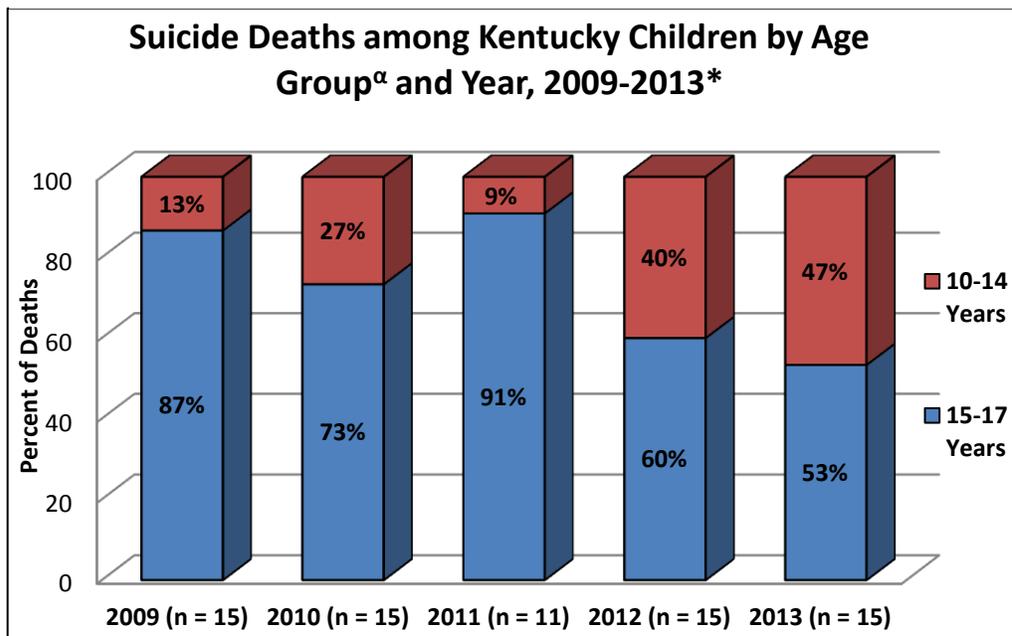
## DEATHS IN CHILDREN (AGE 1-17)

### Suicide

#### Suicide

Nationally, suicide is the third leading cause of death for youth ages 10-24 (Centers for Disease Control and Prevention, 2015). In Kentucky, suicide has been consistently the second leading cause of injury related death among 15-17 year olds since 2009. In 2013, there were 15 youth ages 10 through 17 who ended their own lives, a number that has remained consistent over the past five years. The largest number of youth were aged 17, while the next largest were age 13. Chart 15 shows an increase in suicide among the children ages 10-14, indicating that prevention efforts need to also occur among families and schools with pre-teens.

Chart 15.



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths for each age group for 2013 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING**  
Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

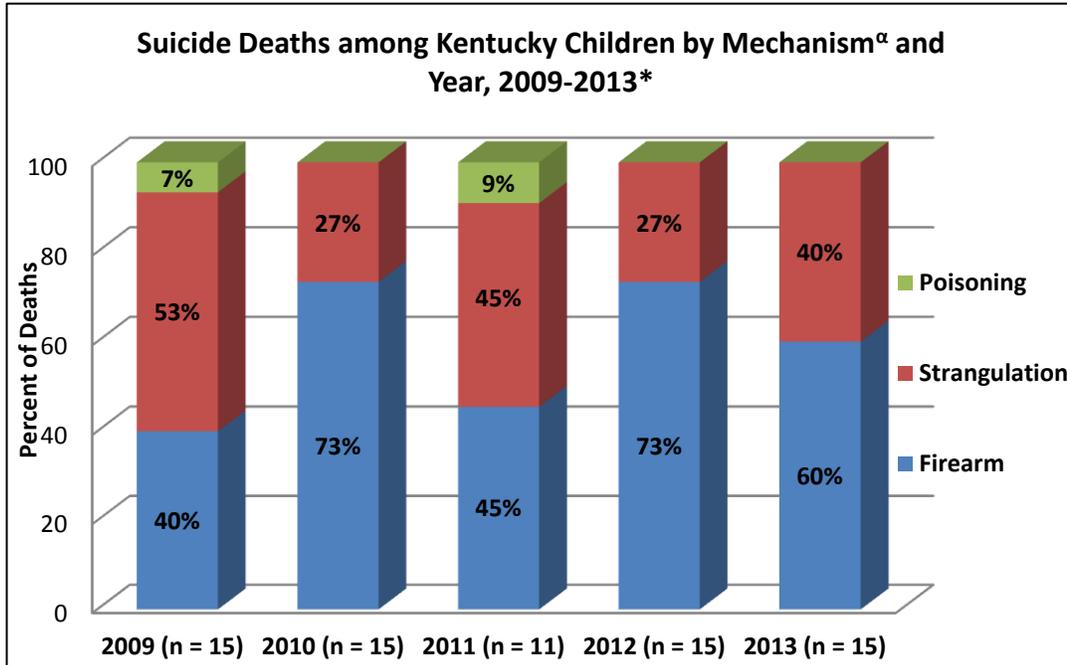
According to a 2013 report by the Kentucky Violent Death Reporting System (KVDRS), between 2005 and 2010 there were 62 documented suicide cases in the 9-17 age group in which precipitating circumstances were known. Mental illness stood out as the most frequent circumstance for death by suicide followed by relationship and school problems.

The top three methods used nationally in suicides of young people remain firearms (45%), suffocation/strangulation (40%), and poisoning (8%) (Centers for Disease Control and Prevention, 2015). For many years the most frequent method of Kentucky youth suicides was divided between guns and hanging, with certain years reflecting more guns. 2013 was a year of many more guns; almost 2/3 of Kentucky youth suicides in 2013 involved guns as shown on Chart 16, which suggests that making gun access more difficult might be a prevention strategy for some cases of suicide. In contrast to the nation, Kentucky has never had poisoning/overdose as a major youth suicide issue. Despite the exploding heroin and opiate overdose deaths among Kentuckians, in 2013 there were no reported teen overdose (poisoning) fatalities.

## DEATHS IN CHILDREN (AGE 1-17)

### Suicide

Chart 16.



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths by mechanism for 2013 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING**

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

Some of the known risk factors for suicide include history of previous attempts of suicide, family history of suicide, depression and/or other mental illness, substance abuse, stressful life event, easy access to lethal methods, and incarceration (Centers for Disease Control and Prevention, 2015). Children in the Juvenile Justice system and those in foster care are at increased risk (Pecora, 2009; Pilowsky & Wu, 2006).

In 2012, the Substance Abuse and Mental Health Services Administration (SAMHSA) also reported that both victims and perpetrators of bullying are at higher risk of suicide than their peers (Substance Abuse and Mental Health Services Administration (SAMHSA), 2012). SAMHSA recently cautioned about their growing concern that bullying was overshadowing the role of other factors in suicide and emphasized the need to consider other mental health issues as well. Centers for Disease Control and Prevention research indicates that linking suicide with bullying as a direct cause and effect minimizes other possible issues that may lead to suicide such as depression, substance use, problems at home, and trauma history. The CDC suggests utilizing a more integrated approach to preventing suicide and youth violence, which focuses on shared risk and protective factors such as individual coping skills, family and school social support, and supportive school environments (Centers for Disease Control and Prevention, 2015).

In response to over 15,000 reported incidents of bullying in Kentucky during the 2012-2013 school years, Governor Steve Beshear announced the creation of the Kentucky Youth Bullying Prevention Task Force. The task force consists of 22 members including students, who will study bullying in schools and recommend practices and policies to help provide safer and harassment-free schools.

## DEATHS IN CHILDREN (AGE 1-17)

### Suicide

Suicide and self-harm related questions were added to the 2014 Kentucky Incentives for Prevention (KIP) Survey on statewide trends related to substance abuse, school safety, and gambling conducted by the Department for Behavioral Health, Developmental and Intellectual Disabilities. School districts use the results of the survey for prevention activities, grant writing and program planning. By grade 10, one in five Kentucky students self-reported having purposely cut or harmed themselves. Community agencies, mental health providers, schools, and health care providers use the KIP survey to propose and develop programs for children affected by school safety and high risk behaviors.

**Table 5.**

KIP Self-harm and Suicide Attempt Survey Results				
	Grade 6	Grade 8	Grade 10	Grade 12
Have you ever cut or harmed yourself on purpose?	8.6%	17%	20.2%	16.4%
During the past 12 months, did you ever seriously consider attempting suicide?	5.8%	13.1%	15.3%	11.7%
During the past 12 months, did you make a plan about how you would attempt suicide?	4.2%	10.4%	12.5%	9.4%
During the past 12 months, how many times did you actually attempt suicide? (**Percent that answered at least one time).	**3.8%	**7.8%	**8%	**5.3%

\*Data Source: 2014 Kentucky Incentives for Prevention (KIP) Survey.

Suicide is a very complicated issue, particularly when involving children. Suicide prevention involves not just the parents or the school officials, but all in the community that have potential contact with an at-risk child.

Many programs and initiatives are underway in Kentucky to address youth suicide. These efforts focus on utilizing the strategic prevention framework and collaborative systems of care approaches to assess needs and build capacity to meet the needs of at-risk youth at whichever point they enter the system. Points of entry could be through the schools, mental health providers, health care providers, or other community agencies. Communities should support schools screening for mental health issues in children.

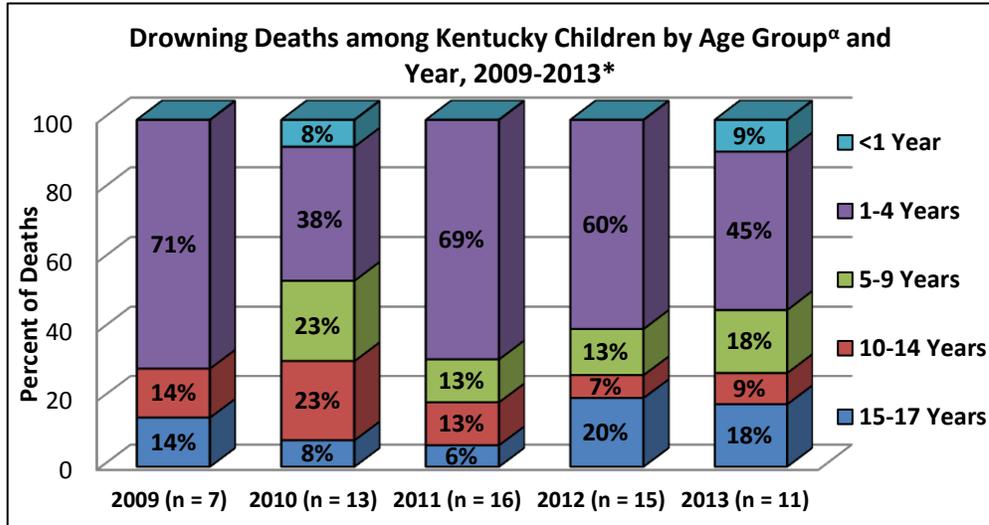
## DEATHS IN CHILDREN (AGE 1-17)

### Drowning

#### Drowning Deaths are Highest Among Children Aged 1-4 Years

In 2013 there were 11 Kentucky children who died from drowning. While drowning deaths decreased from 2012, they have not shown any significant difference from year to year. Children between the ages of 1-4 accounted for almost half (45%) of the drownings that occurred in 2013 (Chart 17). The most common factors contributing to drowning deaths are lack of supervision, lack of physical safety barriers, and inability of a child to swim (Safe Kids Worldwide, 2013c).

**Chart 17.**

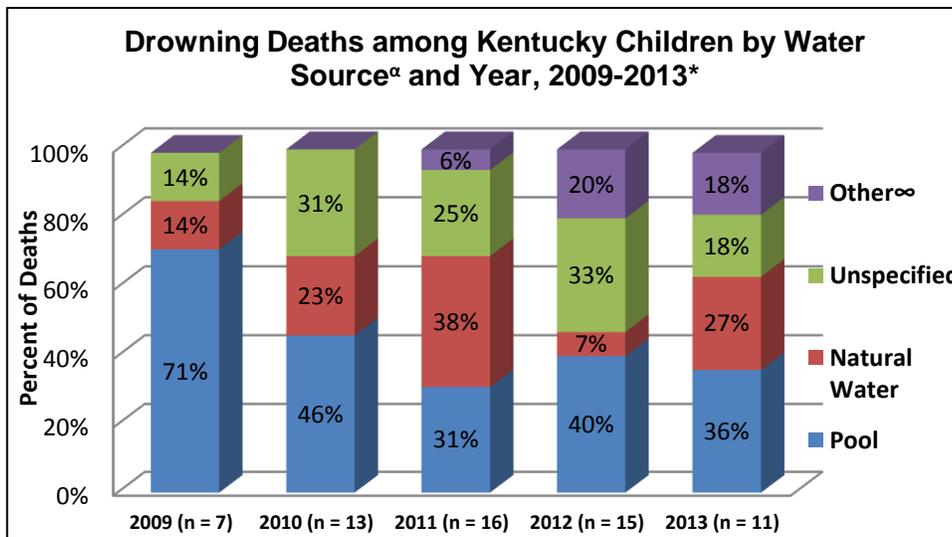


\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths by age group for 2013 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING**

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

**Chart 18.**



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths by water source for 2013 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING**

<sup>b</sup>Note: Other category includes drownings that occurred in the bath tub and those of undetermined intent.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

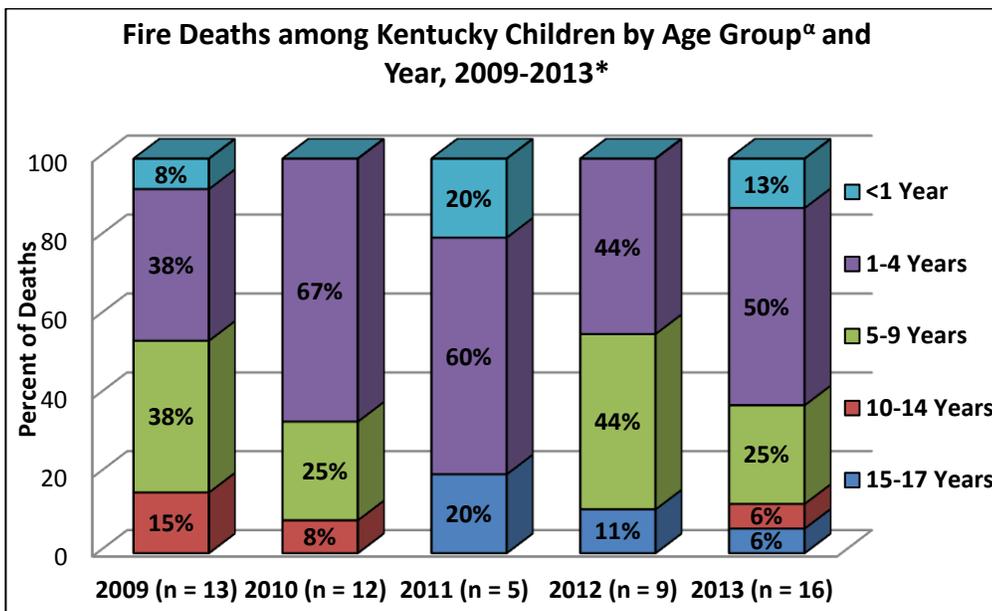
In Kentucky in 2013, the largest proportion (36%) of the drowning deaths took place in a pool (Chart 18). Of note, the deaths related to pools commonly occurred at the child's residence or some other residence and not in public pools. Nationally, children aged 1-4 years were more likely to drown in a swimming pool than any other water source (Xu, 2014).

As expected, the majority of drowning deaths in Kentucky occur during the summer months (May, June, July, and August). Prevention initiatives should start before this peak season for swimming, boating, and other water related activities.

**Child Deaths from Fires Increase for 2013**

In an evaluation of the data for 2013, there was an increase in fire deaths among Kentucky children as a result of fires in which multiple children died. Despite there being only six fatal house fires, fire deaths among Kentucky children in 2013 were the highest they have been in five years (Chart 19). While this increase is alarming, it is not necessarily reflective of a trend. In 2013 fires occurred in single family homes that contained large families, which took the lives of multiple children at once. Over half of the deaths occurred among children 4 years of age and under, and 88% of the children who died were ages nine and younger. Working smoke alarms were not found at any of the sites of the six fatal house fires, which presents an opportunity to prevent these deaths.

**Chart 19.**



\*Note: 2009-2013 data are preliminary and may change

<sup>a</sup>Note: There was no statistically significant difference in the percentage of deaths by age group for 2013 compared to previous years

Data Source: Kentucky Vital Statistics, Death Certificate Files 2009-2013.

Nationally, 47% of children who die from fires or burns are ages four and under (Centers for Disease Control and Prevention National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS), 2014). Every day in the U.S., at least one child dies from a home fire, and approximately 16 children are injured from fires or burns every hour (Safe Kids Worldwide, 2013a). Over half (87%) of all fire-related deaths nationally are due to home fires, which spread rapidly and can leave families as little as two minutes to escape once an alarm sounds (Safe Kids Worldwide, 2015).

Cooking equipment is the leading cause of home fires and home fire injuries. Most deadly fires occur at night (Ahrens, 2013). Risk factors nationally for fire death include malfunctioning or absent smoke alarms, living in poverty, and residence in rural areas (Ahrens, 2014).

Nationally, more than one-third (37%) of home structure fire deaths, and 29% of home fires occurred during the winter months of December, January, and February (Ahrens, 2014). During 2013, Kentucky fires with multiple fatalities occurred in January, March and July.

## DEATHS IN CHILDREN (1-17)

### *Fires*

Prevention efforts in Kentucky should include educating parents and caretakers on fire prevention, detection, and escape. Historically, fire prevention has consisted of keeping smoking materials out of the hands of children, not smoking in bed, taking care to place ashes from fireplaces or wood stoves in a fire-proof container until they are cool, watching food while cooking, not overloading electrical circuits and extension cords, and improving and enforcing electrical code. The Kentucky Injury Prevention Research Center (KIPRC) and the State Fire Marshall's Office offer additional points to consider for prevention:

- 1) Smoke detectors are a proven way to prevent some fire deaths. Communities can develop efforts to install smoke detectors in houses that do not have them and to ensure that batteries are changed at least annually in houses with smoke detectors.
- 2) Helping health departments, social services, and medical providers to educate large families or families living in crowded housing to be especially careful about bedding near any heat source, such as a space heater, baseboard heater, or wood stove.
- 3) Assisting families to understand and develop a family-specific fire safety plan that includes which adult will find and exit with which child or dependent elders and where outside the house the family will gather.
- 4) Families should be provided with education and warnings on flammable materials, such as pesticides, many aerosols, and cleaning liquids that could be potential fire hazards, particularly if the product becomes soaked into carpets, walls, or upholstered furniture.

## PREVENTION EFFORTS

### Examples of Prevention Efforts

The review of child deaths, both at a local and state level, is intended to advance our knowledge of how these deaths occurred and determine what we can learn from them to prevent future child deaths. Everyone has a role in preventing these deaths and providing a safe and healthy environment for Kentucky's children to grow and thrive. The following are some examples of actions taken around the state to prevent child deaths.

#### Infant Mortality Prevention - Prematurity

- In 2015, Kentucky's Healthy Babies are Worth the Wait program (HBWW) was given the Best Practice in Maternal and Child Health Award by the Association of Maternal and Child Health Programs (AMCHP). HBWW began as a pilot project in Kentucky in 2007 and has been adopted by March of Dimes as a signature program, resulting in nine sites across Kentucky and replication in other states. These efforts help prevent prematurity and reduce early elective deliveries (delivery before 39 weeks gestation without a medical indication). March of Dimes collaborates in this effort with the Kentucky Department for Public Health, the Kentucky Hospital Association, and the Kentucky Perinatal Association. While we are making progress, the Commonwealth still has higher rates of prematurity and early elective delivery than the national average. For more information, see [www.prematurityprevention.org](http://www.prematurityprevention.org) or [www.marchofdimes.com](http://www.marchofdimes.com).
- Kentucky participates in the National Collaborative Improvement and Innovation Network (CoIIN) to reduce infant mortality. Strategies including addressing social determinants of health, reductions in preterm and early term births, and Safe Sleep/reducing Sudden Infant Death Syndrome.
- Text4baby is a free text messaging program that provides health messages during the prenatal and postpartum period, including messages focused on preterm birth prevention, maternal and infant nutrition, and safe sleep. The service is provided through a partnership of the National Healthy Mothers, Healthy Babies Coalition (HMHB), the Department of Health and Human Services, and the White House Office of Science and Technology Policy. The Kentucky Department for Public Health is a national partner of Text4baby and promotes this program with local health departments and healthcare providers to share with patients.

#### Infant Mortality Prevention - Sleep-related Infant Deaths

- The most concerning trend in our infant mortality data is the rise in sleep-related infant deaths, many of which are preventable. The number of sleep-related infant deaths is nearly equal now to the number of infant deaths each year from prematurity! The Kentucky Department for Public Health, with numerous partners, is implementing a statewide public awareness campaign in 2015 in an effort to reduce these preventable deaths. The campaign focuses on the ABC's of safe sleep –  
Babies less than a year of age should sleep **ALONE**; on their **BACK** for every sleep; in a clean, clear **CRIB**.
- In addition, Kentucky's External Panel for the Review of Child Fatalities and Near Fatalities has seen disturbing cases of sleep-related infant deaths in which the caregiver is impaired from substance abuse. As a result, the caregiver may put the baby in bed with them, markedly increasing the risk of overlay and suffocation of the infant. The Safe Sleep Campaign will also address this issue in Kentucky.
- Kentucky Local Health Departments (LHDs) are implementing Safe Sleep improvement projects to reduce infant mortality from unsafe sleep practices by educating community agencies that provide childcare, parent classes, or work with their hospitals to assure the newest information on safe sleep is given to parents and caregivers. Last year they reported working with over 400 community partners across the state.

## PREVENTION EFFORTS

### *Examples of Prevention Efforts*

- Hospitals are being encouraged to model safe sleep practices and become certified by the National Safe Sleep Hospital Certification Program. Implementing policies for safe sleep in hospital nurseries and neonatal intensive care units (NICUs) leads to a dramatic increase in safe sleep practices among parents. Materials including sample policies are free and available at [www.cribsforkids.org](http://www.cribsforkids.org)
- FREE materials anyone can use to promote safe infant sleep are available at: <http://www.nichd.nih.gov/sts/Pages/default.aspx>.
- Each local Health Access Nurturing Development Services (HANDS) program in every county received copies of the book *Sleep, Baby Safe and Snug* for each of the families in their program. This board book describes safe sleep habits in the form of a bedtime story, which is intended to remind parents of safe sleep practices at bedtime, when they are most helpful. <http://charlieskids.org/>

### **Motor Vehicle Death Prevention**

- Pediatric staff at the Kentucky Injury Prevention and Research Center, on behalf of MCH, participated in the Children's Safety Network Rural Community of Practice. This virtual working group promotes motor vehicle collision prevention in rural areas and the sustainability of nationally certified child passenger safety workforce.
- In Kentucky, much of the transportation provided by day care centers (especially those serving low-income families) occurs in 15-passenger vans. In an effort to improve child passenger safety for those children who ride to daycare or before- or after- school programs on those vans, Kentucky State Safe Kids (supported with funding from DPH/MCH and with the assistance of Child Passenger Safety technicians and instructors from across the state) embarked on a training program in 2010. This program has provided training for 394 people from 132 daycare centers. Almost 600 harnessed car seats and booster seats, some purchased with federal stimulus funds, have been distributed to 106 centers, and this project is ongoing.
- The Magoffin County CFR (Child Fatality Review) Team, on the night of graduation for seniors and 8<sup>th</sup> graders, had a mock ATV versus car crash that could be seen by everyone going into the graduations. Members of the Magoffin County CFR team were interviewed by the local TV station. The local TV station also filmed a mock collision, which included members of the Magoffin CFR Team as well as local, city, and county police; EMS, and state troopers. The CFR Team advertised in their local newspaper using the slogan "Ride Safe, Ride Smart." This effort was designed to promote ATV safety to the youth of Magoffin County and prevent child deaths from unsafe riding of ATV's.
- The Lee County CFR Team has been meeting twice a year for nine years (more often when needed). The Lee County CFR Team often hosts coroners of neighboring counties in an effort to support and help grow their program. As a team heavy with first responders, a good deal of their community prevention efforts center around improving the lifesaving response capabilities of others. They provide free CPR training for fire, EMS, and Police. The CFR team also provides CPR/First Aid training for the public and works with the local health department to provide infant and child CPR as well as first aid for choking to target audiences, including young mothers. Its work with both local search and rescue teams and water rescue involves continuous training that focuses on preventing child fatalities for Lee County and surrounding areas. The Lee County CFR Team is developing future community prevention efforts that include a 4-wheeler (ATV) safety day and fire prevention work with the Kentucky Injury Prevention and Research Center.

## PREVENTION EFFORTS

### *Examples of Prevention Efforts*

- The Bracken County CFR Team collaborates with several other agencies to address child fatality in Bracken County. One of the biggest events addresses car seat safety because child deaths due to motor vehicle accidents continue to be a concern in collaboration with the local health department, schools, the local library, and Children's Hospital in Cincinnati. Donna Teegarden of the CFR Team provides training and car seat safety checks. Thus far they have provided five events with another scheduled before years end. On an ongoing basis, the CFR Team, in collaboration with the local health department, has car seat checks and safety approved car seats available to families in need. It is also preparing a permanent check point station for onsite car seat safety checks.
- Local health departments, law enforcement, and fire departments participate in conducting car seat checks for families across the state. Child passenger safety technicians have become certified in the installation of infant, child, and booster seats and show parents and caregivers the correct way to install the seats.

### **Child Maltreatment Prevention**

- In April (Child Abuse Prevention Month), the Kentucky Safety and Prevention Alignment Network Committee on Child Abuse worked with partners (Prevent Child Abuse Kentucky, the Kentucky Department for Public Health, the U of L Pediatric Forensics Division, the University of Louisville/Kosair Children's Hospital, University of Kentucky/Kentucky Childrens Hospital, Kentucky Hospital Association, and others) to develop a toolkit for Kentucky Birthing Hospitals to use in educating families of newborns on the prevention of abusive head trauma. Hospital based education programs have proven effective in reducing abusive head trauma in the populations who get this education. Still, few Kentucky hospitals have implemented this evidence-based practice. Free materials, as well as free training for staff, are still available through Prevent Child Abuse Kentucky.
- Several videos for educating parents on prevention of pediatric abusive head trauma are now available, including one specific to Kentucky. "Hope for Tomorrow" is an educational tool designed by the Kentucky Partnership to Eliminate Child Abuse for new parents and caregivers that explains the dangers and risks of shaking a baby, what to do for an infant that won't stop crying, and what to do in the event you feel frustrated with your newborn. "Hope for Tomorrow" was created in Kentucky and uses Kentucky families to demonstrate that the heartbreak of child abuse does not discriminate but can and does touch every member of society. "Hope for Tomorrow" can be viewed at <http://www.kosairchildrenshospital.com/hopefortomorrow>.
- The Kentucky HANDS Program, Health Access Nurturing Development Services, provides home visiting to pregnant women and the family until the child turns two. Independent evaluations continue to show many health improvements for both mother and baby as well as reductions in child maltreatment. Kentucky HANDS was recently acknowledged as an evidence-based model for home visiting, meaning that positive outcomes have been verified by academically stringent studies.
- Kentucky Strengthening Families (KYSF) represents a multi-disciplinary partnership of over 20 national, state, local, public, and private organizations dedicated to providing better supports and embedding six research-based protective factors into services for children and their families. Supporting families is a key strategy for promoting school readiness and preventing child abuse and neglect. All families experience times of stress and research demonstrates that children grow and learn best in families who have the supports and skills to deal with those times. By supporting families and building their skills to cope with stressors, we can reduce the likelihood of abuse. To learn more, please visit: <http://chfs.ky.gov/dph/mch/ece/Kentucky+Strengthening+Families.htm>.

## *PREVENTION EFFORTS*

### *Examples of Prevention Efforts*

#### **Fire Prevention**

- Following the loss of an entire family in a house fire a few years ago, the Estill County CFR team partnered with the Injury Free Coalition for Kids of Lexington at Kentucky Children's Hospital on a successful year-long fire prevention project in 2014-15. A new fire prevention/detection/escape curriculum for 2<sup>nd</sup> graders was presented as part of fire-fighter visits to the Estill Springs Elementary school, teachers were involved in homework to test smoke alarms and request working ones if needed, and then almost 500 smoke alarms were installed in homes by the Estill County and Irvine Fire Departments which also provided fire safety education during their visit. Home visits with alarm installations are ongoing. School referrals for alarms were augmented by referrals from the Estill County Health Department HANDS program and the Senior Citizens Center. More than half the homes they visited did not have a single working smoke alarm, so the most vulnerable citizens were successfully protected. 1,000 smoke alarms were donated by the makers of First Alert, and the purchase of additional fire prevention educational materials was made possible by this grant. Funding from the Federal Emergency Management Agency (FEMA) through the Michigan Public Health Institute and the Injury Free Coalition National Program Office was provided to five Injury Free sites across the country, with Estill County being the only rural one. This project will be continued and expanded to additional counties through additional FEMA funds in the next year.
- Bracken County CFR Team also works with the local health department and fire department to promote and install smoke detectors in area homes after the loss of a family of four in a house fire. These smoke detectors are currently being promoted to home maker groups in the community.

#### **Suicide Prevention**

- Kentucky's Zero Suicide in Healthcare initiative is about organizations and systems working together to make suicide a "never event" in programs and systems of care that include emergency departments; medical-surgical units; primary care and general medical settings; behavioral health entities; crisis services; primary, secondary, and post-secondary education; justice systems; workplaces; and others. Collaborating with community mental health centers, regional forums occurred across the Commonwealth to open dialogue within and across various systems of care regarding continuity of care, increasing awareness and knowledge of suicide prevention, informing clinical practices, and ultimately saving lives.
- In 2014, funds were provided to the Kentucky Department for Behavioral Health, Developmental and Intellectual Disabilities to implement a school-based screening tool in collaboration with the Kentucky Department of Education to intervene with at-risk youth before they enter the judicial or social services systems. There are six school districts participating in a demonstration project related to implementing the school-based behavioral health screenings to middle and high school-age youth. Trained staff at the demonstration sites uses the Global Appraisal of Individual Needs - Short Screener (GAIN SS) screening instrument to screen for behavioral health risks, including suicidality, depression, anxiety, substance abuse, and other internalizing and externalizing behavioral health concerns. Screeners make referrals for further evaluation to appropriate mental health providers for children and families when behavioral health risks are noted.

## RECOMMENDATIONS

*Based on a review of child fatality data for 2013 and related trend data, the Child Fatality Review State Team makes the following recommendations for the prevention of child deaths in Kentucky.*

**Recommendation # 1 - Safe Sleep:** As reported, sleep-related deaths are a leading cause of infant deaths. Recommendations for the prevention of sleep-related deaths are as follows:

- Birthing hospitals should participate in the Cribs for Kids® National Safe Sleep Hospital Certification program, which awards recognition to hospitals that demonstrate a commitment to reducing infant Sleep-Related Deaths by promoting best safe sleep practices and by educating on infant sleep safety. By becoming certified, a hospital has demonstrated that it is committed to being a community leader and is proactively eliminating as many sleep-related deaths as possible. - See more at:  
<http://www.cribsforkids.org/safesleephospitalcertification/#sthash.33LN3H6x.dpuf>
- Healthcare providers, childcare providers, and other community organizations should provide the most current, cost-free, and evidence-based Safe Sleep materials, which can be accessed from the Eunice Kennedy Shriver National Institute of Child Health and Human Development. These materials can be used to educate communities and families about safe sleep practices.  
<http://www.nichd.nih.gov/sts/> or, [www.safesleepky.org](http://www.safesleepky.org)
- Childcare serving agencies, domestic violence shelters, and emergency shelters should have infant safe sleep policies that follow the national safe sleep practices recommended by the American Academy of Pediatrics.

**Recommendation # 2 - Prematurity:** In Kentucky, prematurity is the leading cause of infant deaths. Recommendations for the prevention of deaths due to prematurity related causes are as follows:

- Local health departments and communities should participate in the Healthy Babies are Worth the Wait Collaborative. Partners in the collaborative include the March of Dimes, state and local health departments, hospitals, and community organizations. Information and strategies to reduce preterm birth are shared among partners via conference calls and in-person meetings. For more information, or to join the Collaborative, please contact the Greater Kentucky Chapter of the March of Dimes at <http://www.marchofdimes.org/kentucky/>

**Recommendation # 3 - Motor Vehicle Collisions:** Motor vehicle collisions are the leading cause of injury related deaths for children ages 1-17 years-old. Proper use of child passenger safety restraints reduces the risk of death.

- Medical providers, community service providers, and labor/delivery units should offer parents materials and education on the National Highway Traffic Safety Administration and American Academy of Pediatrics recommendations for appropriate child passenger safety seats and booster seats. This includes recommendations for children to remain in a rear facing seat until he/she reaches the top height or weight limit allowed by the infant seat's manufacturer. Booster seat information should also be given to families indicating that booster seats should be used until your child can correctly fit in the adult lap and shoulder seat belts, typically when they are around 4 feet 9 inches in height and 8 to 12 years old. (<http://www.safecar.gov/>) ([How to Use a Booster Seat - HealthyChildren.org](http://www.HealthyChildren.org)).
- High Schools should be encouraged to participate in the Seat Belt Challenge, sponsored by the National Organization of Youth Safety and supported by the National Highway Traffic Safety Administration. Information, rules, and guidelines can be found at <http://www.seatbeltssave.org/rules-guidelines/>.

## RECOMMENDATIONS

**Recommendation # 4 - Child Maltreatment Prevention:** Child maltreatment is a serious and ongoing issue across the nation with younger children particularly vulnerable and at risk for injuries and death. Recommendations for child maltreatment prevention are:

- All Kentucky birthing hospitals should implement an evidence-based parent training program for pediatric abusive head trauma prevention for families of newborns. These programs can be provided at no or low cost and have been proven to be effective in reducing the incidence of pediatric abusive head trauma in communities. Parents should be educated on acceptable and safe ways to deal with infant crying and ways to soothe a crying infant. Prevent Child Abuse Kentucky ([www.pcakky.org](http://www.pcakky.org)) can provide materials and technical assistance.
- Parenting classes in communities, regardless of the agency providing the classes, should include education on the current national recommendations for safe sleep, pediatric abusive head trauma prevention, identification of child abuse, as well as basic childhood development.

**Recommendation # 5 – Suicide Prevention:** Teen suicide rates are not declining and the number of younger children committing suicide is increasing. There are many factors associated with teen suicide. It is imperative that parents, educators, and service providers from all systems of care that interact with children and youth are aware of the warning signs and are equipped to talk to children in crisis.

- Providers in both healthcare and behavioral healthcare should use the unique opportunities available to them to screen and assess for suicide risk and ensure that at risk youth receive competent suicide treatment and management within and across systems of care ([zerosuicide.com](http://zerosuicide.com)).
- School systems should have protocols for addressing suicide, which include evidence-based screening tools and resources. Middle schools should be included to target the younger children who are contemplating suicide. (Substance Abuse and Mental Health Services Administration. Preventing Suicide: A Toolkit for High Schools. HHS Publication NO. SMA-12-4669. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2012).
- Parents and caregivers who chose to have guns in house should be encouraged to follow gun safety procedures at home by keeping firearms locked up with ammunition stored separately. They should also practice and model gun safety in front of children and use gun safety locks supplied by many local police and sheriff departments.

**Recommendation # 6- Racial Disparity:** In Kentucky, black infants continue to be more likely to die than white infants. Black children, particularly ones in the teenage years, are more likely to die from homicide than white children.

- Education, outreach, and prevention programs should be targeted to at-risk populations using evidence-based programs and techniques that include reducing existing barriers which restrict at-risk families from receiving appropriate services or education opportunities. These barriers include transportation issues, lack of extended office/agency hours, and non-culturally sensitive programs. Agencies should partner and engage faith based agencies/groups to assist in providing outreach activities for these at-risk families and children.

## RESOURCES

### Free Trainings offered for Injury Prevention:

#### Continuing Education Program on Sudden Infant Death Syndrome (SIDS) Risk Reduction

The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development and its partners developed a FREE continuing education (CE) program on SIDS risk reduction for nurses available at <http://www.nichd.nih.gov/SIDS/Pages/sidsnursesce.aspx>

Pharmacists can access this free continuing education (CE) activity, developed by the NICHD and its pharmacist partners, which explains the latest research on SIDS and SIDS risk reduction and outlines how pharmacists can help spread safe sleep messages to parents and caregivers in just a few minutes. <http://www.nichd.nih.gov/SIDS/pages/PharmacistCE.aspx>

Child care providers can access a free training on safe sleep developed by Healthy Child Care America at <http://www.healthychildcare.org/PDF/SIDSAccessFlyer.pdf> use promotional code **SIDSCCP**.

#### Pediatric Abusive Head Training (Meets Kentucky State law requirements) and Child Maltreatment

Free 1 hour training on pediatric abusive head trauma (PAHT) training for physicians is offered at <http://www.nortonhealthcare.com/pediatric-abusive-head-trauma>.

Free online training for healthcare/other child care providers for PAHT, titled “Understanding Abusive Head Trauma”, course ID number 1029373 can be accessed at <https://ky.train.org>.

## DEFINITION OF TERMS

**Cause of Death** – Event that causes a physical problem, no matter how brief or prolonged, that leads to a child’s death. Categories for cause of death are injury deaths and non-injury deaths:

- 1. Injury Deaths** – more likely to be preventable than non-injury deaths, including but not limited to: suffocation, poisoning, drowning, fire, child abuse, suicide, homicide, and vehicular collisions.
- 2. Non-Injury Deaths** – deaths that are the result of natural processes such as disease, prematurity, or congenital anomalies (birth defects).

**Child** – A person between 0 and 17 years of age (all references to “child” in this report specify which age group/range is being discussed).

**Disparity** – Term used to describe the difference or inequity between two groups.

*Example: If the infant death rate was lower in white infants compared to the infant death rate in all other races, a racial disparity exists because one racial group (all other races) has a higher rate of infant death compared to another racial group (white infants).*

**Infant** – A person under 1 year of age.

**Infant Mortality** – Death of an infant before his or her first birthday.

**Infant Mortality Rate** – Number of infant deaths per 1,000 live births for a specified time period.

**Rate** – Measure that indicates how often an event is occurring during a certain time period; it is calculated by taking the count of an event during a specific time period and dividing this number by the population that is at risk for experiencing the event during the time period. Rates are often expressed in units of 10, such as per 100, per 1,000, or per 100,000.

*Example: The infant death rate is expressed as the number of deaths that occurred among infants 1 to 364 days old who were born alive during a given year divided by the number of live births that occurred in the same year multiplied by 1,000. Therefore, if 200 infants died during 2011 and there were 16,000 live births during the same year, the infant death rate would be 12.5 deaths per 1,000 live births (calculated by taking 200 divided by 16,000 and multiplying by 1,000).*

**Sleep-Related Risk Factors** – These factors are hazards and unsafe for infant sleep space and should be avoided to reduce: bed-sharing, use of sofa/couch or other surface not designed for infant sleep, soft bedding or presence of stuffed animals in sleep environment, use of an adult bed, and placed prone (on stomach) or side position; which can lead to an unsafe sleep environment.

**Sudden Unexpected Infant Deaths (SUID)** - defined as deaths in infants less than 1 year of age that occur suddenly and unexpectedly, and whose cause of death are not immediately obvious prior to investigation. SUID includes these categories:

1. Sudden Infant Death Syndrome (SIDS): a sudden, unexplained death of an infant less than 1 year old. It is a diagnosis of exclusion, meaning that after an extensive review of the infant’s medical history, a complete autopsy, and a death scene investigation no cause can be identified.
2. Accidental Suffocation in bed: a result of another person lying on the baby, wedging of the baby, or the baby’s face in a soft surface such as a pillow, blanket, or bumper pad.
3. Undetermined: there is no anatomic, toxicological or metabolic cause of death but there is other compelling information, investigative omission, or physical evidence that is concerning and suggests that death was not a natural death.

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