



# External Causes of Death in Indiana: Youth Accidents, Suicides, and Homicides

Prepared for the Indiana Criminal Justice Institute  
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*Note: This technical report is the third in a series of four reports on external causes of death in Indiana. The first report presented basic demographic descriptions for those Hoosiers who died from external causes of death—accidents, suicides, and homicides—from 1981-2004. The Indiana trends were also compared to U.S. trends. The second report looked at detailed race, age, and gender interaction effects among those dying from the five major accidental death categories (motor vehicle, overdoses and other accidental poisonings, falls, drowning, and fire and burn-related deaths), suicide, and homicide to identify precisely those at the highest risk for external causes of death in Indiana, as compared to U.S. trends. The current report focuses on the external causes of death for those under age 18. An analysis of the most likely categories for youth accidents as well as the circumstances of suicide and homicide for Indiana youth will allow policymakers to identify more precise intervention and prevention strategies.*



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## BACKGROUND AND METHODS

The two previous reports in this series described overall patterns of accidents, suicides, and homicides and focused on race, age, and gender interactions.<sup>1</sup> This report focuses on the accidental deaths, suicides, and homicides of those persons under age 18. The nature and the frequency of the accidental deaths of children vary from the accidental deaths of adults and so our accidental death categories of focus are different than those of the previous two reports (e.g., including suffocation/choking deaths and excluding deaths from falls). Also incorporated into this study are other sources of homicide data, specifically, the homicide data available from the Bureau of Justice Statistics.<sup>2</sup>

We also discuss information from the Indiana Child Fatality Review Team. As noted in the fiscal year 2005 report released by the Indiana State Child Fatality Review team, Centers for Disease Control and Prevention (CDC) data found that Indiana led the nation in preventable deaths of children less than one year of age and ranked third in the nation for preventable deaths of children age 0-4 years of age.<sup>3</sup> Child abuse can obviously result in homicides and perhaps even suicides, but child neglect can also manifest itself as many different types of accidents including motor vehicle, drowning, fires, choking, and sleeping-related deaths.

This report reflects a triangulation strategy for assessing child deaths. Other assessments are more limited; for example, child fatality reviews reflect only those deaths investigated by child protective services and police-generated homicide statistics present only known child homicides. By using both of those sources as well as child deaths as coded on death certificates, we believe this report to be the most comprehensive source of the nature of child deaths in Indiana.

This report studies the time period 1990-2004—the previous two reports encompassed a longer time series and included 1981-2004. The custom age ranges we have selected for analysis in the present study are only available from 1990-2004, thus, this analysis is a shorter time series. Additionally, because of the rarity of some events for a small age group in one year,<sup>4</sup> the 15-year time series is collapsed into five groups reflecting three years of the series in each group.

The age categories included in this study were selected after a review of the literature on the deaths of children. The default categories of the Centers for Disease Control and Prevention (CDC) were not adequate to capture what we felt were significant lifestyle and risk differences by age. The present report will analyze the external deaths of infants (under one year of age), ages 1-4, 5-9, 10-14, and 15-17.<sup>5</sup> This categorization allows for the most distinction of risk for accidents, suicides, and homicides. Comparisons of the risk for all age groups were previously reported. The focus of this report is to look at risk categories within the entire youth group, ages 0-17.<sup>6</sup>

As of 2004, in Indiana, accidents, homicides, and suicides were the first, third, and fourth leading causes of death for those ages 1-17. Similar trends are found at the national level.<sup>7</sup> The deaths of infants, those under age 1, are very different from those of older children and neither homicide nor suicide is a top 10 leading cause of death, but accidents are the fourth leading cause of death for infants in Indiana. Further investigation into the nature of child deaths, specifically those involving accidents, suicides, or homicides, is warranted.

Our earlier work on causes of accidental death focused on the most

<sup>1</sup>Quinet and Newby. (December 2007). External causes of death in Indiana. Quinet and Newby. (February 2008). External causes of death in Indiana: Race, age, and gender risks. Both prepared for the Indiana Criminal Justice Institute through the Center for Urban Policy and the Environment.

<sup>2</sup>Note that this source of Supplementary Homicide Reports (SHR) includes 2005, while as of January 2008, CDC WISQARS is only updated through 2004. Retrieved January 16, 2008, from [www.ojp.usdoj.gov/bjs/homicide/children.htm](http://www.ojp.usdoj.gov/bjs/homicide/children.htm)

<sup>3</sup>Information from [www.cdc.gov/ncipc/wisqars](http://www.cdc.gov/ncipc/wisqars) as cited by the Indiana State Child Fatality Review Team Report for SFY 2005.

<sup>4</sup>As this report was going to press, the CDC posted cause of death statistics for 2005. Although not a major part of the present trend analysis, 2005 deaths will be examined and mentioned when relevant.

<sup>5</sup>The default categories for CDC WISQARS are 0-4, 5-9, 10-14, and 15-19. Using these categories would conceal the distinctive death patterns for infants and include persons age 18 and over.

<sup>6</sup>The primary data source for this analysis is the Centers for Disease Control and Prevention, National Center for Health Statistics' WISQARS and WONDERs data.

<sup>7</sup>Bernard, S., Paulozzi, L., and Wallace, L.J.D. (May 18, 2007). Fatal Injuries among children by race and ethnicity—United States, 1999-2002. *Morbidity and Mortality Weekly Report*. CDC. 56(SS-5).



common accidental death categories over time, all ages combined. In this we look more closely at the most common accidental death types for our five youth age categories. Over the 15-year period, the top three sources of accidental death may have changed, making such an analysis less relevant for policymakers today. Thus, for each of our age categories, we determined the top three accidental death categories from 2002-2004, which were then the basis for further inquiry. The downside to this approach—

truncated time series combined with the truncated study population—is that types of events are much more uncommon and result in unreliable rates. To mitigate this, data were grouped in three-year increments resulting in five data intervals. However, because of how age categories were defined (i.e., five-year intervals or less versus larger intervals), a statistical analysis of specific rates is often unreliable and so the actual raw numbers of events, rather than the rates, are typically presented.<sup>8</sup>

<sup>8</sup> Rates based on less than 20 events are statistically unreliable.



# YOUTH DEATHS BY ACCIDENTAL CAUSES

<sup>9</sup>Persons less than one year old are treated as a separate group in leading cause of death calculations because of specific death types affecting early infancy.

<sup>10</sup>Due to changes in the ways in which some deaths may be coded, readers should interpret the 1990-2004 external death data series as two series, one from 1990-1998 and the other from 1999 to present. As you will see, in many cases, trends remained the same when the codes were modified. But, in the event that change occurs from 1998-1999 it could be attributed to changes in the coding of deaths as opposed to any real change. Although this paper graphs the time series as one series, most interpretation analyzes change occurring within the 1990-1998 time period and notes the trends occurring from 1999-2004. Indiana trends as well as some age, gender, and race trends often appear to be more unstable than U.S. trends—this is due to a smaller number of events—rates based on 20 or fewer deaths are unstable rates and should be interpreted with caution. Rather than focus on the highs and lows of Indiana rates, the reader should look at overall trend lines to see if the trend line is similar to national patterns.

There are approximately 250 youth accident deaths in Indiana each year, which account for roughly 12 percent of all accident-related deaths in the state—a proportion slightly higher than the U.S. rate at ten percent—but well below youth as a percentage of the total Indiana population, approximately 25 percent. By far the leading cause of death for persons 1-17 years of age in Indiana, accidental deaths are generally four to five times more common than the second leading cause of death (commonly malignant neoplasm; cancer) for this age group.<sup>9</sup> There is notable variation in terms of the types of accidents that cause death and the youth who are affected. The most common (i.e., leading cause) types of youth accidents—motor vehicle traffic, fire/burn, drowning, suffocation, and other land transport—are reviewed in detail below with particular attention given to identifying which youth are the victims of these accidents.

## *Motor vehicle traffic*

Motor vehicle traffic accident deaths are the leading cause of death for the 1-4, 5-9, 10-14, and 15-17 age groups in Indiana and third for those less than one year old (based on 2004 data) (a more in-depth discussion of the leading accidental causes of death for specific age groups follows). Generally, the number of motor vehicle accident deaths (and rates) increase with

age but have decreased over time in Indiana (Table 1).

For example, during the 2002-2004 period, Indiana females less than one year old experienced a rate of 2.4 motor vehicle accident deaths per 100,000 population, 1-4 year olds 3.8, 5-9 year olds 2.9, 10-14 year olds 3.5, and 15-17 year olds 20.7. Similarly Indiana males less than one year old experienced a rate of 2.3 motor vehicle accidents per 100,000 population, 1-4 year olds 3.8, 5-9 year olds 2.7, 10-14 year olds 5.3, and 15-17 year olds 28.5. Thus, for both males and females, motor vehicle accident death rates generally increased with age. When comparing males to females, Indiana males less than one year old to 5-9 experience similar rates compared to females of the same age, but higher rates for 10-14 year olds and substantially higher rates for 15-17 year olds.

In terms of general rate decreases, seven out of ten male/female age group combinations experienced lower or equal 1996-1998 rates compared to their 1990-1992 rates and six out of ten saw lower or equal 2002-2004 rates compared to their 1999-2001 rates.<sup>10</sup> Regardless of gender, persons 15-17 years old in Indiana (and nationally) are much more likely to die from motor vehicle accidents than any younger age groups—a finding that reasonably follows from their status as novice drivers.

**Table 1:** Youth (0-17) motor vehicle accident deaths and rates by gender and age group, Indiana, 1990-2004 (three-year intervals, per 100,000 population)

Years	Females										Males									
	<1		1-4		5-9		10-14		15-17		<1		1-4		5-9		10-14		15-17	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
1990-1992	2	1.7	19	4.1	29	5.0	28	4.7	73	20.9	7	5.5	37	7.6	41	6.7	44	7.0	146	39.6
1993-1995	8	6.7	17	3.5	22	3.7	29	4.7	72	19.6	6	4.8	30	5.9	43	6.9	47	7.2	132	33.9
1996-1998	2	1.7	21	4.3	26	4.2	25	4.0	100	25.8	5	4.0	17	3.3	38	5.8	55	8.3	147	35.6
1999-2001	3	2.4	14	2.8	19	3.0	18	2.8	85	22.1	2	1.5	27	5.2	21	3.1	28	4.1	121	29.6
2002-2004	3	2.4	19	3.8	18	2.9	23	3.5	80	20.7	3	2.3	20	3.8	18	2.7	37	5.3	116	28.5
<b>Total</b>	<b>18</b>		<b>90</b>		<b>114</b>		<b>123</b>		<b>410</b>		<b>23</b>		<b>131</b>		<b>161</b>		<b>211</b>		<b>662</b>	



**Table 2: Motor vehicle traffic accident deaths and rates by race for 15-17 ages, Indiana and United States, 1990-2004 (three-year intervals, per 100,000 population)**

Years	Indiana				United States			
	Black		White		Black		White	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate
1990-1992	8	11.1	210	32.9	707	15.1	6,682	27.5
1993-1995	8	10.5	196	29.2	802	15.8	6,696	25.9
1996-1998	6	7.3	241	34.0	822	15.0	6,815	24.4
1999-2001	8	9.7	198	28.2	726	13.0	6,314	22.2
2002-2004	9	10.4	186	26.7	711	12.1	6,545	22.6
<b>Total</b>	<b>39</b>		<b>1,031</b>		<b>3,768</b>		<b>33,052</b>	

When looking at the same age groups and race, whites and blacks experience relatively similar rates for the less than one through 10-14 age groups (though all black rates are based on fewer than 20 deaths) but marked differences when comparing the 15-17 age group (Table 2). Here, white rates in Indiana are typically three times that of blacks—in the United States white rates are twice that of the rates for blacks.

### Fire/burn

Accidental deaths from fires/burns are relatively rare (typically fewer than 100 each year) but are more common among males and younger youth. Though generally declining since 1990, average fire/burn accident death rates for Indiana males ages 1-4 have exceeded national rates by more than 2 points (5.1 versus 3), and rates for Indiana females have also outpaced the national average (3.4 versus

2.1) (Table 3). The U.S. Fire Administration has suggested that fire deaths vary by region because of factors such as climate, poverty, education, demographics, etc.<sup>11</sup> Understanding how these factors are associated with fire deaths in *Indiana* may help to explain and prevent fire-related deaths among current high risk youth ages 1-4.

Blacks are much more likely to be victims of fire deaths (based on rates) than other race groups according to the U.S. Fire Administration.<sup>12</sup> Table 4 confirms this when compared to whites for the high risk 1-4 age group and indicates that race—for persons 1-4 years old—is a greater predictor of fire/burn accidental death than is gender. Though black rates for persons 1-4 years old have been declining and converging towards white rates—both for Indiana and U.S. blacks—they continue to experience higher likelihoods of fire/burn accident deaths. Because

<sup>11</sup>U.S. Fire Administration. Retrieved February 7, 2008, from <http://www.usfa.dhs.gov/statistics/state/index.shtml>

<sup>12</sup>U.S. Fire Administration. (2007). *Fire in the United States 1995-2004* (14th Ed.). Retrieved February 7, 2008, from <http://www.usfa.dhs.gov/downloads/pdf/publications/fa-311.pdf>

**Table 3: Fire/burn accident deaths and rates by race for persons less than one and 1-4, Indiana and United States, 1990-2004 (three-year intervals, per 100,000 population)**

Years	Indiana								United States							
	Males				Females				Males				Females			
	<1		1-4		<1		1-4		<1		1-4		<1		1-4	
Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	
1990-1992	6	4.7	32	6.6	2	1.7	22	4.7	175	2.9	1,080	4.6	163	2.8	673	3.0
1993-1995	5	4.0	40	7.9	4	3.4	27	5.6	141	2.4	1,024	4.2	144	2.6	645	2.8
1996-1998	2	1.6	27	5.3	3	2.5	12	2.5	85	1.5	597	2.5	70	1.3	435	1.9
1999-2001	1	< 1	13	2.5	1	< 1	12	2.4	73	1.2	498	2.1	60	1.1	337	1.5
2002-2004	3	2.3	16	3.1	4	3.2	10	2.0	45	< 1	387	1.6	55	< 1	296	1.3
<b>Total</b>	<b>17</b>		<b>128</b>		<b>14</b>		<b>83</b>		<b>519</b>		<b>3,586</b>		<b>492</b>		<b>2,386</b>	





**Table 4:** Fire/burn accident deaths and rates by race for 1-4 ages, Indiana and United States, 1990-2004 (three-year intervals, per 100,000 population)

Years	Indiana				United States			
	Black		White		Black		White	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate
1990-1992	10	9.9	44	5.2	658	9	1,053	2.9
1993-1995	22	19.5	45	5.2	657	8.4	946	2.5
1996-1998	12	10.2	26	3	423	5.5	566	1.6
1999-2001	9	7.4	16	1.8	322	4.3	489	1.4
2002-2004	4	3.1	22	2.5	243	3.2	419	1.1
<b>Total</b>	<b>57</b>		<b>153</b>		<b>2,303</b>		<b>3,473</b>	

persons 1-4 years old are dependent on others for their care and well-being, the nature of care provided to these young children should be researched to determine which factors might be predictive of fire/burn accidents among this population and how these factors translate into (greater) risk for fire/burn accidents.

### *Drowning*

Similar to accidental deaths from fire/burns, drownings are a relatively infrequent occurrence for youth. When they do occur, they typically involve persons 1-4 years old, and males are more likely to be victims than are females. Table 5 shows the male/female comparison using total drownings for each male/female age group from 1990-2004. The ratio column indicates that for each age group, males are generally twice as likely to be victims of accidental drownings compared to females and 15-17 year old males are more than seven times as likely to die from accidental drownings. These findings are

interesting in light of past studies about self-reported swimming ability that have found that men and younger persons typically report higher swimming ability than women and older persons.<sup>13</sup>

Table 5 also shows race comparison for the five youth age groups. Based on raw numbers, whites make up the largest part of drowning deaths for each age group with the degree of this difference varying by age group and highest for 1-4 year olds (21.3:1)—the age group among whites most impacted by accidental drownings. However, when looking at rates for both Indiana and the United States (comparison with national figures allows for some mitigation of the unreliability of Indiana rates), two age groups, 5-9 and 10-14, stand out for blacks when compared to whites (Table 6). While white rates for these age groups have historically been less than one per 100,000 persons in Indiana (and the United States), black rates have averaged more than three per 100,000. And, though declining since 1990, blacks in these age

**Table 5:** Youth (0-17) drowning deaths by gender/race and age group, Indiana, 1990-2004

Age group	Males	Females	Ratio	White	Black	Ratio
<1	17	7	2.4:1	21	3	7:1
1-4	96	63	1.5:1	149	7	21.3:1
5-9	41	19	2.2:1	37	23	1.6:1
10-14	47	21	2.2:1	46	22	2.1:1
15-17	64	9	7.1:1	55	17	3.2:1
<b>Total</b>	<b>265</b>	<b>119</b>	<b>2.2:1</b>	<b>308</b>	<b>72</b>	<b>4.3:1</b>

<sup>13</sup>Gilchrist, J., Sacks, J.J., & Branche, C. M. (2000). Self-reported swimming ability in U.S. adults, 1994. *Public Health Reports 2000*, 115(2-3):110-1.



**Table 6:** Drowning accident deaths and rates by race for 5-9 and 10-14 ages, Indiana and United States, 1990-2004 (three-year intervals, per 100,000 population)

Years	Indiana								United States							
	White				Black				White				Black			
	5-9		10-14		5-9		10-14		5-9		10-14		5-9		10-14	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
1990-1992	5	< 1	14	1.3	6	5.0	8	6.5	449	1.0	381	< 1	192	2.3	273	3.3
1993-1995	11	1.0	11	< 1	5	3.8	5	3.9	378	< 1	380	< 1	167	1.8	277	3.2
1996-1998	10	< 1	13	1.1	2	1.4	5	3.8	404	< 1	343	< 1	235	2.3	242	2.6
1999-2001	6	< 1	7	< 1	7	4.5	2	1.4	328	< 1	251	< 1	199	1.9	230	2.3
2002-2004	5	< 1	1	< 1	3	2.0	2	1.3	250	< 1	216	< 1	131	1.4	198	1.9
<b>Total</b>	<b>37</b>		<b>46</b>		<b>23</b>		<b>22</b>		<b>1,809</b>		<b>1,571</b>		<b>924</b>		<b>1,220</b>	

groups continue to experience higher drowning rates than whites in the most recent period of the series (2002-2004).

### *Suffocation*

As indicated below in the discussion about accidents as leading causes of death, accidental suffocation mainly affects persons less than one year old. In fact, no other youth age category (as defined here) experiences rates greater than two per 100,000 and most have rates that are less than one—which is also true at the national level. Accidental suffocation rates for persons less than one year old in Indiana have steadily increased since 1990, are substantially higher for males, and considerably higher than national rates (Figure 1).<sup>14</sup>

Rate increases among both males and females less than one year old in Indiana that nearly doubled from 1996 to 1999 most likely are at least in part attributable to changes in how deaths are coded.<sup>15</sup> However, the rates for these groups continued to increase from 1999 to 2002 after coding changes were implemented, and national rates did not see such sharp increases—male and female rates for persons less than one year old in Indiana have been nearly two and a half times the

national rates since 1999. Attention should be directed at identifying the causes behind these large increases.

Some anecdotal information may help to shed light on these trends. Prior to July 2007, there was no requirement in Indiana for any sort of certification to do child forensic autopsies and although a law was passed to increase the qualifications of persons performing these autopsies, there is no evidence to support adherence. Some jurisdictions (e.g., Vanderburgh County) in Indiana rarely, if ever, diagnose SIDS as a cause of death and so all deaths of this sort are coded as positional asphyxia or undetermined, thus potentially underestimating the numbers of SIDS deaths. Other Indiana eccentricities include the matrix used to diagnose asphyxial deaths in Marion County—it changes under different coroners and differs from national trends. Thus, specific pathology practices and the lack of adequate death scene training and investigation likely complicate the coding of child deaths in Indiana.<sup>16</sup>

Accidental suffocation rate increases and differences are even more pronounced when looking at race and persons less than one year old (Table 7). Though the rate for blacks less than one year old decreased

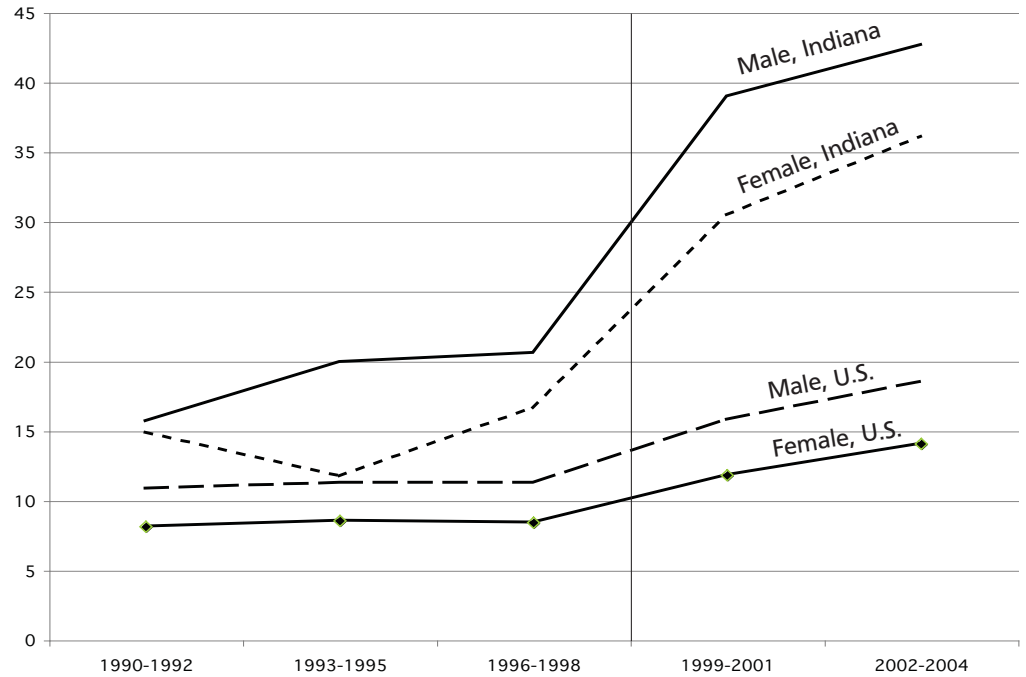
<sup>14</sup>Rates for females less than one year old during the 1990-1992 and 1993-1995 periods are based on fewer than 20 deaths. These rates should be treated with caution.

<sup>15</sup>Until 1998, causes of death were coded according to the World Health Organization's ninth revision of the International Classification of Diseases. Since 1999, causes of death have been coded using the tenth revision of the International Classification of Diseases.

<sup>16</sup>These anecdotal observations are a result of Dr. Antoinette Laskey's experiences on the Indiana State Child Fatality Review Team. See her January 28, 2008, letter from the INCFRT.



**Figure 1.** Suffocation accident death rates (per 100,000) by gender for persons less than one year old, Indiana and United States, 1990-2004 (three-year intervals)



from 1999 to 2002 in Indiana, it was still more than five times greater than the white rate during 1999-2001 (125.4 versus 22.7) and more than three times greater than the white rate during the 2002-2004 time period (105.3 versus 30.5). Moreover, the Indiana black rate for persons less than one year old was more than four times greater than the national black rate during the 1999 interval and ten times greater than the national white rate (125.4 versus 28.7 and 12.1). An investigation into the relationship between race and accidental suffocations, particularly in Indiana, is needed.

### *Other land transport*

As indicated above, accident types were selected based on whether or not they were in the top three leading causes of accidental death (2002-2004) for each age group. While “other land transport” accidents did not meet these criteria for each of the groups in the less than one to 14 ages, it was the third leading cause of death for 15-17 year olds in Indiana. However, data were only reviewed for the 1999-2004 time period because of various data issues—for example, the 1999-2004

**Table 7:** Suffocation accident deaths and rates by race for persons less than one year old, Indiana and United States, 1990-2004 (three-year intervals, per 100,000 population)

Years	Indiana				United States			
	Black		White		Black		White	
	Count	Rate	Count	Rate	Count	Rate	Count	Rate
1990-1992	11	41.6	27	12.3	371	19.4	708	7.5
1993-1995	12	44.3	27	12.6	335	18.2	766	8.4
1996-1998	16	59.1	30	13.9	360	20.6	718	8.1
1999-2001	39	125.4	50	22.7	541	28.7	1,337	12.1
2002-2004	34	105.3	67	30.5	687	35.0	1,230	13.0
<b>Total</b>	<b>112</b>	<b>375.7</b>	<b>201</b>	<b>91.9</b>	<b>2,294</b>	<b>121.9</b>	<b>4,759</b>	<b>49.0</b>



data were not comparable to the 1990-1998 data as provided by the data source due to coding differences. Thus, data for this accident type are presented for 15-17 year olds only during 1999-2004.

Other land transport accidents are generally defined in one of four ways: (1) accidents involving modes of transportation other than vehicles,<sup>17</sup> (2) traffic accidents where the victim's mode of transport was unknown,<sup>18</sup> (3) non-traffic accidents where the victim's mode of transport was unknown, or (4) motor or non-motor vehicle accidents where the type of vehicle was unspecified.<sup>19</sup>

From 1999-2004, 22 males and 4 females 15-17 years old and 23 whites and 3 blacks 15-17 years old died from other land transport accidents in Indiana (Table 8). As suggested by these numbers and confirmed by U.S. data, males and whites appear to be most at risk for these types of accidents. Furthermore, a review of data from the Center for Disease Control's (CDC) Wide-ranging Online Data for Epidemiologic Research (WONDER) site indicates that three other land transport accident types—motor or non-motor vehicle accidents where the type of vehicle was unspecified, traffic accidents where the victim's mode of transport was unknown, and all-terrain vehicles—may be the most common forms of these accidents with the majority being motor or non-motor vehicle accidents where the type of vehicle was unspecified followed by traffic accidents where the victim's mode of transport was unknown. No

accidental deaths were documented for the remaining other land transport types.

Thus, it appears that efforts to prevent other land transport accidents could target specific types of these accidents.<sup>20</sup> And, though these accidents are relatively few in number compared to other accident types and have declined precipitously from 1999-2001 to 2002-2004 (21 versus 5), they remain the third leading cause of accidental death among persons 15-17 years old in Indiana—and are the fourth leading cause of accidental death in the United States for this age group and present in the top ten for two other youth age groups (5-9 and 10-14) in Indiana.

### *Accidents as leading causes of deaths by youth age group*

For infants under the age of one, accidents are the fourth leading cause of death. The most common (79 percent for Indiana and 69 percent for the United States) type of accident for this age group is suffocation and most of these deaths are suffocations (and stranglings) that are related to a child's sleeping arrangements. These death counts do not include the third leading cause of death for infants in the United States and Indiana—Sudden Infant Death Syndrome (SIDS). SIDS is a stand-alone cause of death category and only applies to infants ages 0-1.

In 2004, for those Indiana children ages 1-4, accidents are the leading cause of death with motor vehicle accidents (33 percent) as the most common type, followed by fires/burns (29 percent). The

<sup>17</sup>Modes other than vehicles include animal transport, train, streetcar, special vehicles mainly used on industrial premises, special vehicles mainly used in agriculture, special construction vehicles, and all-terrain vehicles.

<sup>18</sup>A *traffic accident* is any vehicle accident occurring on the public highway (i.e. originating on, terminating on, or involving a vehicle partially on the highway). A vehicle accident is assumed to have occurred on the public highway unless another place is specified, except in the case of accidents involving only off-road motor vehicles, which are classified as non-traffic accidents unless the contrary is stated. A *nontraffic accident* is any vehicle accident that occurs entirely in any place other than a public highway (World Health Organization; Definitions related to transport accidents).

<sup>19</sup>"Unspecified" may be used when the type of vehicle is unclear; A *motor vehicle* or *vehicle* may refer to various transport vehicles. The local usage of the terms should be established to determine the appropriate code. If the terms are used ambiguously, use the code for "unspecified" (World Health Organization; Definitions related to transport accidents).

<sup>20</sup>Other land transport accidents should be investigated by the Indiana State Department of Health to determine how these deaths are being coded with specific attention given to reviewing how "unspecified" vehicles and "unknown" modes of transport are being identified given their prevalence among other land transport accidental deaths.

**Table 8:** Other land transport accident by gender/race for 15-17 ages, Indiana, 1990-2004 (three-year intervals)

Years	Males	Females	Ratio	White	Black	Ratio
1999-2001	18	3	6:1	18	3	6:1
2002-2004	4	1	4:1	5	0	N/A
<b>Total</b>	<b>22</b>	<b>4</b>	<b>5.5:1</b>	<b>23</b>	<b>3</b>	<b>7.7:1</b>



most common national deaths for this age group are motor vehicle accidents and drownings. Accidents are also the leading cause of death for children in Indiana and the United States, ages 5-9, and more than half of the accidents are motor vehicle accidents, followed by fire/burn deaths (27.3 percent). Children ages 10-14 also have accidents as their leading cause of death. Their accidents are most likely motor vehicle accidents (63 percent), followed by a nearly equal likelihood of all sorts of other accident types. Accidents are the leading cause of death for those Hoosiers ages 15-17 and 85 percent are motor vehicle accidents followed by a nearly equal, relatively small likelihood of many other types of accidents.

There appears to be very low levels of accidental poisonings or overdoses of any

kind for Hoosiers ages 0-14. Recent research has highlighted the increasing rate of accidental overdoses and poisonings in Indiana and across the United States and while most of those increases appear to be in middle-aged adult categories, there are also increasing concerns about drug risks for the young. A recent *New York Times* article noted the dramatic increase in the number of persons admitted to emergency rooms due to illicit drug use, most specifically, heroin use.<sup>21</sup> This same article features the deaths of teenagers from heroin overdoses and notes that the purity of heroin has doubled in the last four years, heroin is relatively inexpensive, can be snorted (which may increase its attractiveness) and the rate of use among high school seniors has increased.<sup>22</sup>

<sup>21</sup>Jones, R. (January 13, 2008). Heroin's hold on the young. *New York Times*. Retrieved January 14, 2008, from [www.nytimes.com](http://www.nytimes.com)

<sup>22</sup>Jones 2008.

**Table 9: Suicides by gender for 10-14 and 15-17 ages, Indiana, 1990-2004 (three-year intervals)**

Years	10-14			15-17		
	Males	Females	Ratio	Males	Females	Ratio
1990-1992	9	3	3:1	62	16	3.9:1
1993-1995	14	4	3.5:1	63	15	4.2:1
1996-1998	11	6	1.4:1	45	12	3.8:1
1999-2001	20	3	6.7:1	43	9	4.8:1
2002-2004	8	6	1.3:1	39	7	5.6:1
<b>Total</b>	<b>62</b>	<b>22</b>	<b>2.8:1</b>	<b>252</b>	<b>59</b>	<b>4.3:1</b>

We will focus on the older youth groups since other than one white male suicide in the 5-9 year old age category during 2002-2004, there are no suicides for Hoosiers ages 0-9 from 1990-2004.

The overall (adult and juvenile combined) ratio of male to female suicides is typically about 4:1 and males account for 80 percent of all completed Indiana suicides.<sup>23</sup> A closer inspection of Table 9—finds that this gender ratio varies over time and for the most recent year grouping (2002-2004) the gender ratio has narrowed for 10-14 year olds and widened for 15-17 year olds. Comparing the earliest year groups (1990-1992) to the latest (2002-2004) we can see that the number of suicides for 10-14 year-old Indiana females doubled from 3 to 6 and the number of suicides for 10-14 year old Indiana males declined from 9 to 8, after fairly significant increases for this group from 1993-1995 (n=14) and again in 1999-2001 (n=20).

For the 15-17 year old category, for both females and males we observe significant declines in the number of suicides over time. The number of female suicides for ages 15-17 has declined by 57 percent from the earliest time period and there was a 38 percent decline in the number of 15-17 year old male suicides. Similar declines are observed nationally.

Unfortunately, there are varying definitions of *teenage* in the literature so

comparisons can be difficult. Using the standard age categories for causes of death and population distributions (from the Census Bureau) we find that 15-19 year olds in Indiana represent 7.5 percent of our total population and they account for 5 percent of all suicides, so, they are underrepresented as suicide victims regarding their proportion of the population. Using a broader definition of teenager (ages 13-19) finds that teenage suicides from 1990-2004 in Indiana have ranged from a high rate of nearly 12 in 1991, generally declining with a few spikes until 1997, increasing again each year thereafter through 2000 and declining to an all-time low for this age group, just under 5, by 2003. Unfortunately, 2004 saw a significant increase in the rate of Indiana teenage suicides, just over 7—an increase of 50 percent in one year. A recent study by the Indiana Youth Institute found that suicide has now surpassed homicide as the second leading cause of death for teenagers ages 15-19.<sup>24</sup> Thus, the three top causes of death for Indiana teens are the three external causes of death categories—accidents, suicide, and homicide. National teenage suicide rates increased 9 percent from 2003 to 2004, not nearly the increase of the Indiana rate.

As noted previously, the Indiana risk for teenage suicide for those teens 15-17 is nearly identical to the risk for homicide for this group and the risk of both homi-

<sup>23</sup>Quinet and Newby, 2007.

<sup>24</sup>Indiana Youth Institute. (Spring 2007). Suicide surpassed homicide as #2 cause of death among Hoosier teens. Issue Alert.



cide and suicide for this group of teens has declined from much higher levels seen in the 1990-1992 period and 1993-1995 time period. The decline in suicide rates (and homicide rates) for the 15-17 age group is mirrored at the national level.

For the 2002-2004 time period, suicide is the second leading cause of death for those ages 15-17. Frankly, over time, there is nearly an equal likelihood of suicide and homicide for this age group, and thus, dramatic proclamations and announcements about year-to-year shifts in the leading causes of death ranking of homicide and suicide for teens seem short-sighted. Longer term analysis is more appropriate for relatively rare events. Information for 2005 deaths was posted as this report was going to press, and in 2005 there were exactly the same number of suicides for this age group—15—as there were homicides.

Whether or not suicide is increasing depends upon which age group we study. A recent report by the CDC alerted us to significant increases in suicide among those aged 10-24 years in the United States from 2003 to 2004.<sup>25</sup> While suicide declined for this group over the time period 1990-2003, there was a significant jump from 2003 to 2004 and the report suggested that these trends be examined at the state level. We analyzed the number and rate of suicides for Indiana's youth and young adults aged 10-24 from 2003 to 2004 to see if such patterns existed here. In fact, the suicide rate had increased for this group, the 2003 rate was 5.91 (generated by 80 suicides) and by 2004 it jumped to 7.34 (a result of 99 suicides). Was this increase across all age categories or specific to a few? We also analyzed the number of suicides in each of the individual age

**Table 10:** Ages from 10-24 with any increase in number of suicides from 2003-2004, Indiana

Age	2003	2004
13	0	4
14	1	5
15	0	2
16	3	9
18	7	9
21	10	12
24	9	24

categories (e.g., age 10, age 11) and found increases only for certain ages. It should also be noted that some of the increases appear to be large from a percentage increase point but are still a function of relatively low base numbers. Table 10 shows the ages for which there was any increase in the number of suicides in Indiana from 2003-2004.

As you can see from Table 10, there were increases in suicides for 7 of the 15 age categories (for the other ages four remain unchanged and four declined). For Indiana at least, the increases were specifically due to increases for those ages 13-16, 18, 21, and 24. The 13-16 year old increase has significant implications for possible school-based (middle school and high school) suicide prevention.

Focusing on race and age shows that suicide is more common among white than black youth (Table 11). Youth in the oldest group, ages 15-17, are far more likely to commit suicide than their 10-14 year old peers for both whites and blacks. In Indiana, whites for both age groups have historically had higher rates (and numbers) of suicide compared to blacks and 15-17 year old Indiana whites have had higher rates than their U.S. counterparts—though these rates have converged more recently and the U.S. rate now exceeds Indiana's rate.

<sup>25</sup>Centers for Disease Control and Prevention. (September 7, 2007). Suicide trends among youth and young adults aged 10-24 years-United States, 1990-2004. *Morbidity and Mortality Weekly*, 56(35): 905-908.



**Table 11:** Suicide deaths and rates by race for 10-14 and 15-17 ages, Indiana and United States, 1990-2004 (three-year intervals, per 100,000 population)

Years	Indiana								United States							
	White				Black				White				Black			
	10-14		15-17		10-14		15-17		10-14		15-17		10-14		15-17	
Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	
1990-1992	12	1.1	73	11.5	< 1	< 1	5	6.9	712	1.7	2,330	9.6	93	1.1	282	6.0
1993-1995	17	1.5	77	11.5	1	< 1	1	1.3	811	1.8	2,404	9.3	108	1.2	330	6.5
1996-1998	16	1.4	53	7.5	1	< 1	3	3.6	765	1.6	2,246	8.0	105	1.1	249	4.5
1999-2001	23	2.0	48	6.8	< 1	< 1	3	3.7	665	1.4	1,954	6.9	108	1.1	200	3.6
2002-2004	12	1.0	41	5.9	2	1.3	4	4.6	616	1.3	1,832	6.3	125	1.2	161	2.7
<b>Total</b>	<b>80</b>		<b>292</b>		<b>4</b>		<b>16</b>		<b>3,569</b>		<b>10,766</b>		<b>539</b>		<b>1,222</b>	

Recent research has identified problems, specifically the problem of under-reporting suicides as a cause of death.<sup>26</sup> Suicides may be underreported for a number of reasons including a lack of definitive evidence that the death is a suicide (i.e., no suicide note) and in those cases the death may be ruled as “circumstances undetermined.” Suicides may also be underreported for issues of stigma, religious beliefs, or insurance. Research on the misclassification of suicides also suggest that particularly female, ethnic minority, and black suicides may be

underreported and when adjusted would decrease the differences in the comparative levels of black and white youth suicides. Some accidents, particularly those involving single-driver motor vehicle accidents and overdoses may in fact be suicides. As these misclassifications are corrected over time through better death investigations, we may see suicide rates increase for certain groups reflecting suicides that were always part of that group but had been previously misclassified.<sup>27</sup>

<sup>26</sup>Mohler, B. & Earls, F. (January 2001). Trends in adolescent suicide: Misclassification Bias? *American Journal of Public Health*, 91(1): 150-153.

<sup>27</sup>Mohler and Earls, 2001.





# YOUTH HOMICIDES

Homicide does not officially rank as one of the ten leading causes of death for infants in Indiana, but some research suggests that there are likely hidden homicides for infants (0-1) in the unintentional injury category and that *injury* homicides would be 20 percent higher if some proportion of *undetermined cause* deaths were included.<sup>28</sup> One study found that as many as 85 percent of United States child deaths that were likely homicides were not included as homicides in CDC data and that these deaths appeared as either accidental deaths or SIDS.<sup>29</sup> Over time, as we become better at identifying homicides of children through child fatality review teams and death investigation training, our child homicide numbers may increase as a result of due diligence rather than any real increase.

Homicide ranks as the third leading cause of death for ages 1-4 and analysis of the specifics of the method of homicide for the 12 deaths in this age category in 2004 finds the most common source to be unspecified (42 percent). One can speculate that some of these cases are shaken baby syndrome or some other hidden form of injury and these results are not available until after a death certificate is issued. There is greater specificity of the type of homicide for other external death categories, but this pattern of a lack of specificity is also a national trend. The second most likely source of homicide for toddlers is *other* (8 percent). Thus, we can

say relatively little about the exact method of the homicides in this age group, at least from the coding on death certificates that is incorporated into the CDC system. A study of the detail on the actual death certificates might shed further light on the exact nature of the *other* category. Information from the Indiana Child Fatality Review Team of the nature of deaths for those Hoosiers ages 5 and under find the most likely homicide deaths to be blunt force trauma (formerly shaken baby syndrome), other blunt force trauma (e.g., belly and other body areas), and fire and burn deaths.

Homicide is the seventh leading cause of death for ages 5-9. It should be noted that there were two homicides in this group in 2004. One was the result of a fire and the other was unspecified. Homicide becomes more common for those ages 10-14 where it is the fourth leading cause of death. Of the eight homicides in 2004 for this group, six were a result of gun homicides and two were suffocation/stranglings. For the age group 15-17, homicide is the third leading cause of death and 81 percent of those homicides were by gun followed by 7 percent as strangling/suffocation/hanging (typically these are strangling but the category collapses all three so it is not possible to disaggregate any further).

An analysis of the homicides for youths finds very different results than

**Table 12:** Youth (0-17) homicides by gender and age group, Indiana, 1990-2004 (three-year intervals, per 100,000 population)

Years	Females					Males				
	<1	1-4	5-9	10-14	15-17	<1	1-4	5-9	10-14	15-17
1990-1992	8	12	4	5	15	14	14	3	10	31
1993-1995	7	14	9	8	24	14	16	3	12	62
1996-1998	10	8	5	9	11	11	14	4	9	47
1999-2001	11	17	8	7	5	25	19	8	15	38
2002-2004	10	18	4	6	8	19	24	4	11	34
<b>Total</b>	<b>46</b>	<b>69</b>	<b>30</b>	<b>35</b>	<b>63</b>	<b>83</b>	<b>87</b>	<b>22</b>	<b>57</b>	<b>212</b>

<sup>28</sup>Overpeck, M., Brenner, R. A., Trumble, A. C., Smith, G. S., MacDorman, M. F., & Berendes, H. W. (1999). Infant injury deaths with unknown intent: What else do we know? *Injury Prevention* 1999, 5:272-275.

<sup>29</sup>McLain, P. W., Sacks, J. J., Froehlike, R. G., & Ewigman, B. G. (February 1993). Estimates of fatal child abuse and neglect, United States, 1979-1988. *Pediatrics*, 91(2):338-343.



those for suicide. As noted previously, with only one exception in 15 years, there were no suicides in Indiana of those ages 0-9. This is not the case for homicide.

According to the CDC, using cause of death as it appears on death certificates, 129 Indiana infants, less than one year of age, were homicide victims from 1990-2004. This number may vary from other estimates of infant homicides. CDC records are based on a medical definition of homicide (was the death caused by the intentional action of another) and police-based estimates of homicide use a legal definition (and that definition would not include some intentional homicides if they were justified—such as self-defense and police action shootings although this issue should not be a factor in an analysis of child homicides). There are also other figures as generated by a specific investigation of child abuse and neglect fatalities (see sections below). A child drowning as a result of neglect may not be ruled a homicide on a death certificate or by police but may be counted in a study of neglect and abuse. Recent news coverage has noted the difficulty in deciding whether or not some child deaths are horrible accidents or manslaughter. Several children have died after being left in hot cars and some parents are not charged at all while others were charged with felony involuntary manslaughter, in part, depending on

whether or not the parent knew the child was in the car or forgot.<sup>30</sup>

The homicides of infants in Indiana peaked during 1999-2001 at 36 and by 2002-2004 had declined to 29 but this figure was still higher than the other time periods (Table 13). Half (18) of 1999-2001 homicides among persons less than one year old were classified as assault by unspecified means, six were hanging/strangulation/suffocation homicides (most likely suffocation), four other specified means, and the remaining eight were spread across six different homicide types. During the 2002-2004 interval, the number of homicides from assaults by unspecified means dropped to 8 (55 percent decrease), hanging/strangulation/suffocation homicides rose one to seven, three types each had three homicides, and five types each had one homicide. Thus, when looking at specific types of infant homicide, as indicated by this data, assault by unspecified means is the most common type followed by hanging/strangulation/suffocation.

The homicides of those ages 1-4 totals 156 across the 15-year period of study and the number of homicides for this age group also appears to be trending upwards with a total of 26 during the 1990-1992 interval, falling to 22 in 1996-1998, and then increasing to 42 deaths for this

**Table 13:** Youth (0-17) homicides by age group, Indiana, 1990-2004 (three-year intervals, per 100,000 population)

Years	<1		1-4		5-9		10-14		15-17	
	Counts	Rates	Counts	Rates	Counts	Rates	Counts	Rates	Counts	Rates
1990-1992	22	8.9	26	2.7	7	< 1	15	1.2	46	6.4
1993-1995	21	8.6	30	3.0	12	< 1	20	1.6	86	11.4
1996-1998	21	8.5	22	2.2	9	< 1	18	1.4	58	7.2
1999-2001	36	14.1	36	3.6	16	1.2	22	1.7	43	5.4
2002-2004	29	11.3	42	4.1	8	< 1	17	1.3	42	5.3
<b>Total</b>	<b>129</b>		<b>156</b>		<b>52</b>		<b>92</b>		<b>275</b>	

<sup>30</sup>Kohler, J. (September 10, 2007). Prosecution or persecution? *St. Louis Post Dispatch*. Retrieved September 10, 2007, from www.stltoday.com.



group from 2002-2004. The trend for ages 5-9 is not the same as the younger two groups. The homicides for these children totaled 7 during 1990-1992, peaked at 16 from 1999-2001 and declined to 8 from 2002-2004. A similar trend is seen for the homicides of those ages 10-14 with 15 homicides at the beginning of the time series, a peak in 1999-2001 at 22, declining to 17 during the 2002-2004 time period.

As can be observed in Table 13, there are significantly more homicides for the 15-17 year-old group and the time period 1993-1995 was the peak by nearly double the other time periods at 86 homicides, up from 46 in the previous period of 1990-1992 and by 2002-2004, had declined to 42 for this age group over the three-year period. Similar trends are observed nationally when rates peaked during 1993-1995 and had declined to less than half of the 1993-1995 rate by 2002-2004.

When looking at youth homicides by race in Indiana, blacks are shown to have higher rates for all age groups than their white counterparts. And, though the rates are often unreliable, similar rate differences are found at the national level lending support to these rate differences in Indiana. Homicide age groups that stand out among blacks and whites are for those less than one year old and 15-17 years of

age (Table 14)—all other age groups generally have single digit rates. Consistent with discrepancies at the national level, Indiana blacks less than one year old during the 2002 interval were one and a half times more likely to be homicide victims than whites of the same age (10.5 versus 15.5)—a difference that has decreased since 1990. Turning to 15-17 year olds this rate difference becomes much larger as blacks experience a rate more than 15 times that of whites (32.3 versus 2).

Various theories have been offered as explanations for why blacks are more likely to commit homicide such as: a lack of attachment to institutions that act as social controls on [deviant] behavior; social discrimination that leads to deprivation which engenders frustration that creates tendencies towards violence, and; violence as a rational response to an environment with limited opportunities.<sup>31</sup> Notably, these theories are centered on homicide offenders whereas our data shows *victims* of homicides. Nevertheless, these theories (and others) as well as situational and victim specific factors should be explored in the context of Indiana homicides to determine generally why blacks are more often homicide victims and specifically how to respond to homicides among blacks 15-17.

<sup>31</sup>Philips, J. (1997). Variation in African-American homicide rates: An assessment of potential explanations. *Criminology*, 35:527-560.

**Table 14:** Homicide deaths and rates by race for persons less than one and 15-17, Indiana and United States, 1990-2004 (three-year intervals, per 100,000 population)

Years	Indiana								United States								
	White				Black				White				Black				
	<1		15-17		<1		15-17		<1		15-17		<1		15-17		
Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
1990-1992	15	6.8	24	3.8	7	26.5	22	30.5	577	6.1	1,734	7.13	428	22.4	2,445	52.1	
1993-1995	17	7.9	32	4.8	4	14.8	54	70.6	552	6.1	1,924	7.44	380	20.6	2,738	53.8	
1996-1998	17	7.9	14	2.0	4	14.8	44	53.4	578	6.5	1,444	5.17	354	20.3	1,760	32.0	
1999-2001	30	13.6	16	2.3	6	19.3	27	32.9	593	6.5	1,054	3.7	381	20.2	1,198	21.4	
2002-2004	23	10.5	14	2.0	5	15.5	28	32.3	594	6.3	967	3.33	326	16.6	1,179	20.0	
<b>Total</b>	<b>102</b>		<b>100</b>		<b>26</b>		<b>175</b>		<b>2,894</b>		<b>7,123</b>		<b>1,869</b>		<b>9,320</b>		



**INDIANA CHILD  
FATALITY  
REVIEW TEAM  
FINDINGS<sup>32</sup>**

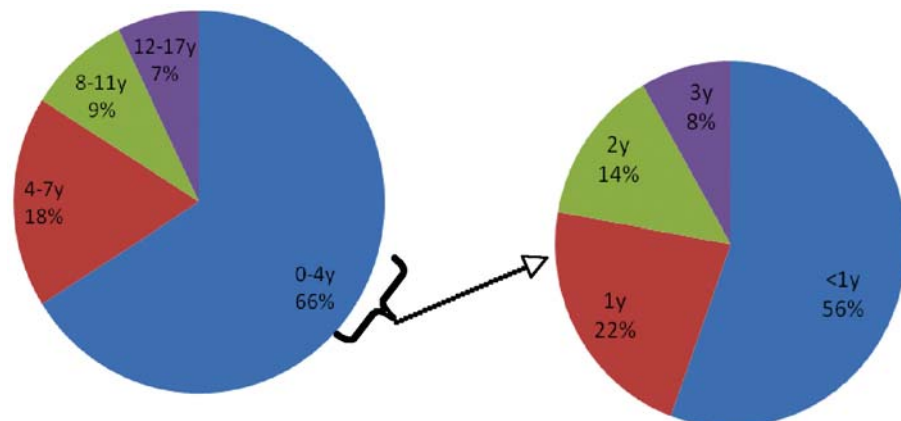
The Indiana State Child Fatality Review Team (INCFRT) analyzes substantiated child abuse and neglect deaths of children who were killed at the hands of a caregiver, or neglected to the point of death, and these deaths were reported to a Department of Child Services (DCS), and DCS chose to substantiate the case as an abuse or neglect death. In the event that death investigators do not recognize evidence of abuse or neglect or the investigating agency does not notify DCS or DCS chooses not to substantiate the case or after initial substantiation, overturns the decision and unsubstantiates the death, those deaths will not be included. INCFRT reviewed 56 substantiated abuse and neglect cases for fiscal year 2006 (July 1, 2005-June 30, 2006). CDC data on child death use a calendar year definition so complete comparison is not possible but, comparing INCFRT data for fiscal year 2006 to CDC data for 2005 finds 28 child homicides (56 total abuse and neglect deaths) for INCFRT in 2006 (there were 57 in SFY 2005) and 56 Indiana homicides according to the CDC for 0-17 in 2005. Thus, according to the CDC, there were two times as many homicides as those reviewed by the INCFRT. Both sources are

missing some amount of accidental, natural, and undetermined deaths of Indiana children that are actually homicides.

Of the Indiana children who died from abuse and neglect in FY 2006, 24 were male (43 percent) and 32 were female (57 percent). Although 9 percent of Indiana’s population is black, 16 percent (n=9) of the child abuse and neglect cases were black children, and 78 percent (n=44) were white. The deaths were of children who ranged from 1 day old to 17 years old and the mean age of death was 44 months. The majority of deaths were for those ages 0-4 (66 percent) followed by 4-7 (18 percent), 8-11 (9 percent) and 12-17 (7 percent). Of the child abuse and neglect deaths that occurred for those ages 0-4, more than half (54 percent) were of children less than 1 year of age.

Forty-one of Indiana’s 92 counties had no substantiated child abuse or neglect fatalities. Only a few counties had more than one—Marion (14), Allen (7), Lake (5), LaPorte (2), and Parke (2). Of the circumstances of child deaths, 28 were ruled as homicide, 20 were accidental, 6 were undetermined and 2 were natural. The nature of the substantiated homicides, in

**Figure 2: Age distribution of substantiated fatalities, Indiana, SFY 2006**



Source: January 28, 2008, letter from Antoinette Laskey, chair of the Indiana Child Fatality Review Team

<sup>32</sup>Indiana State Child Fatality Review Team Annual report for fiscal review 2006. Dr. Antoinette Laskey, Chair. Results released February 7, 2008. All statistics in this section come from the published report and findings of the Chair.

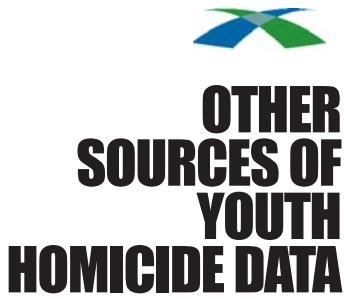


descending order, included blunt force trauma/shaken baby syndrome (10), blunt force to other than head (8), asphyxia (4), gunshot wounds (3), and 1 stabbing, 1 malnutrition/dehydration, and 1 medication overdose. The accidental deaths (albeit still neglect deaths) included 7 drownings, 6 motor vehicle crashes, 5 unsafe sleeping environments (e.g., bed sharing), 1 gunshot wound, and 1 medication overdose.

Thirty-nine of the 56 deaths occurred in the child's home, 6 occurred on high-

ways, 5 in other homes, 5 in bodies of water or pools and 1 occurred in a hospital. The perpetrators of the child abuse and neglect deaths, were most likely mothers (25) and fathers (24) or other parent figures (in this case, 6 were mother's boyfriend), 3 were babysitters, 2 were grandparents, and 4 perpetrators were others.<sup>33</sup> Looking just at the 28 homicides, the perpetrators were fathers (11), mothers (9), step-parents (6), babysitters (3), mothers' boyfriends (3), and 2 unknown.

<sup>33</sup>Each death may involve more than one perpetrator.



**OTHER  
SOURCES OF  
YOUTH  
HOMICIDE DATA**

The U.S. Department of Justice’s Bureau of Justice Statistics (BJS) tracks homicide trends in the United States since 1976.<sup>34</sup> While this data source differs somewhat from the causes of death data used throughout this study, the BJS data provides an indicator of the level of legal homicides (as opposed to medically-defined with coroner data) against children. BJS defines infanticide as the homicide of those 4 years of age or younger. In 1990, there were 675 children in the United States age 4 and under who were murdered, by 2000 the number had declined to 603 and as of 2005 there were 575 U.S. homicides of those under five years of age. Looking at the trends from 1976-2005, finds that approximately one-third were killed by fathers, one-third were killed by mothers, 23 percent by other male acquaintances, 7 percent by other relatives, and 3 percent of children were murdered by strangers.<sup>35</sup> The younger the child the more likely they are to be murdered—in the 0-4 category, children less than 1 year of age are most likely to be murder victims, followed by those who are one, then two, and so forth.

According to the Bureau of Justice Statistics police-generated data, the murder of black infants (ages 0-4) is 3-4 times as likely as the murder of white children ages 0-4. As of 2005, the rate of homicide for black infants is 6.6 and the rate for whites is 2.2. Over time white rates have been much more stable than black rates and the recent declines in the murder of children ages 0-4 in the United States have been primarily for black children (the rate for black infants was as high as 11.5 in 1986).<sup>36</sup>

Finally, as we saw with the Indiana Child Fatality Review Team findings, the homicides of youth are typically NOT occurring at school. A recent report analyzed school homicides from 1992-2006 and found that school homicides reflect only approximately one percent of the homicides that occur for school-aged children (K-12).<sup>37</sup> The vast majority of homicides of children occur at home.

The January 28, 2008, INCFRT report includes a number of recommendations to prevent the unnecessary deaths of children and to improve the detection and reporting of child abuse and neglect deaths.

**Table 15: Percent of external causes of death for youth by age group, Indiana, 1990-2004**

Cause of Death	<1	1-4	5-9	10-14	15-17	Total
Accident - Motor vehicle traffic	4.0%	22.9%	42.9%	48.4%	61.1%	39.7%
Accident - Fire Burn	4.7%	15.3%	13.1%	4.0%	0.9%	6.1%
Accident - Drowning	2.7%	15.3%	9.5%	2.4%	3.1%	6.0%
Accident - Suffocation	67.8%	6.5%	3.6%	4.0%	0.9%	14.5%
Accident - Other land transport	0.0%	0.0%	6.0%	1.6%	1.6%	1.4%
Accident - Other	1.3%	15.3%	14.3%	14.5%	5.0%	8.7%
Suicide Injury	0.0%	0.0%	1.2%	11.3%	14.3%	7.2%
Homicide Injury	19.5%	24.7%	9.5%	13.7%	13.1%	16.3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Notes:**

1. Total includes accidents (ICD-10 Codes: V01-X59 ,Y40-Y86, Y88), homicides (ICD-10 Codes: X85-Y09, Y87.1,\*U01-\*U02), and suicides (ICD-10 Codes: X60-X84, Y87.0,\*U03).
2. "Other" accidents consists of all external accidental causes of death other than the five listed and was derived by subtracting the sum of the five specific accidental causes of death from all accidents.

<sup>34</sup>U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, Homicide Trends in the U.S., Infanticide. Retrieved January 16, 2008, [www.ojp.usdoj.gov/bjs/homicide/children.htm](http://www.ojp.usdoj.gov/bjs/homicide/children.htm). These data are reported by police to the FBI and then supplemented by Supplementary Homicide Reports (SHR) with additional details.

<sup>35</sup>BJS, 2008.

<sup>36</sup>BJS, 2008.

<sup>37</sup>Centers for Disease Control and Prevention. (January 18, 2008). Morbidity and mortality weekly report, School-Associated Student Homicides—United States 1992-2006, 57 (02):33-36.



- Sudden Unexplained Infant Death Investigation (SUIDI) for law enforcement, coroners, and child services has been completed in several Indiana counties and will occur in Marion County during Spring 2008.
- The first statewide Child Fatality Review Conference will occur in September 2008. This conference will share information with participants across the state on topics of child fatality reviews, child death prevention, and the improvement child fatality review teams. This conference is essential to the goals of communication, training, and support among all child fatality review teams in Indiana. The goal is obviously the prevention of and child deaths as a result of abuse or neglect. At a minimum, a central reporting system should be developed.
- Legislation to mandate safety features for above ground pools has been introduced.
- Increased awareness of the dangers of care giving while under the influence of drugs or alcohol. Mandatory drug and alcohol testing for caregivers of children who die in abuse and neglect cases should be mandated.
- Increased vigilance by Department of Child Services staff to report and follow any concerns of abuse or neglect.
- Teaching parents and others who may care for children the basic parenting skills (e.g., do not shake a crying baby).
- The supervision of children and a policy of the “verbal hand-off” so that caregivers are absolutely certain who is watching a child.
- Using seat belts and age-appropriate car seats for children.
- Teaching safe sleeping positions for infants.
- The use of caution when medicating small children.

As shown in Table 15, the external causes of death vary for the different youth age categories. Now that we have established a baseline of the proportionate risk for these groups, continued surveillance can monitor change and progress in reducing the deaths of children in Indiana. Increased funding and coordination and a closer surveillance of all child deaths in Indiana can be the tool for preventing future deaths.