Department of Health and Mental Hygiene

Family Health Administration

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CHILD DEATH REPORT
2006

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ACKNOWLEDGEMENTS

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DEFINITIONS AND EXPLANATORY NOTES

Infant Death: Death occurring to a person under one year of age.

Infant mortality rate: Number of infant deaths per 1,000 live births.

Neonatal death: Death occurring to an infant under 28 days of age.

Neonatal mortality rate: Number of neonatal deaths per 1,000 live births.

Postneonatal death: Death occurring to an infant between 28 days and one year of age.

Postneonatal death rate: Number of postneonatal deaths per 1,000 live births.

Child death: Death occurring to child between one year and up to varied upper age limits in adolescence. For the purpose of this report, the upper age limit is 17 years. It is important to note that sometimes childhood deaths are understood to also include death to infants.

***Child death rate*:** Number of child deaths per 100,000 population in specified group.

To overcome the problems associated with the statistical manipulation of small number of events, some of the information in this report is based on combined years of data (three years).

MAIN FINDINGS

- Of the 846 children under 18 years who died in 2005, 64.4 percent were infants and 35.6 percent were children aged 1-17 years.

- Infant mortality declined to 7.3 per 1,000 live births in 2005 from 8.5 per 1,000 live births in 2004.

- Among infants, the leading causes of death included (in rank order) disorders related to short gestation and low birth weight, congenital malformations, SIDS, and maternal complications.

- Child mortality (1-17 years) declined to 22.7 per 100,000 population in 2005 from 28.4 in 2004.

- Between 2003-2005, African-American children aged 1-17 years died at approximately 1.7 times the rate of White children (35.9 vs. 20.6 per 100,000).

- Among children aged 1-17 years, the leading causes of death for the period 2003-2005 were unintentional injuries, homicide, and malignant neoplasms. Of the unintentional injuries, motor vehicle crashes caused the most deaths to children.

- The oldest children (15-17 year olds) were impacted most by motor vehicle injury deaths and homicides.

- The risk of homicide was greater in infancy than for any childhood age until age 15 years.

- African-American children were at 5 times greater risk of homicide than White children.

- White children committed suicide at a higher rate than African-American children.

- Statistically significant declines in infant mortality occurred in Caroline, Cecil, and Harford counties between the two five-year periods in the past decade (1996-2000 and 2001-2005). There was a statistically significant increase in infant mortality in Allegany county between the two five-year periods.

- For children ages 1-17 years, the statewide child death rate declined by a statistically significant amount (9.8%) between 1996-2000 and 2001-2005. There were statistically significant declines in child mortality rates in Baltimore County and Baltimore City between the two five-year periods.

INTRODUCTION

Childhood deaths are a major public health problem and many of these are preventable fatalities.

Surveillance of childhood deaths is one of the most important components of child death prevention. It helps to determine the magnitude of child mortality, the leading causes of death, and the population groups most affected. In addition, this data is crucial for evaluating the effectiveness of program activities and for identifying trends and problems that need further investigation.

The report focuses on death to children aged 1-17 years. However, important aspects of death in infancy are also discussed.

Information is provided on all racial/ethnic categories. However, where the number of events is small, rates for such racial/ethnic categories are not calculated.

Injuries are the leading cause of death in children aged 1-17 years. Between 2003-2005, in Maryland, unintentional injuries comprised 33 percent of all deaths among children ages 1 to 17 years, followed by homicides, malignant neoplasms, diseases of the circulatory system, congenital malformations, and suicides. Overall, childhood death rates have declined during the past decade in Maryland and the U.S. This report is based on data from the Department's Vital Statistics Administration.

The ultimate goal is to prevent child deaths, morbidity and disability, which is vital for improving the well-being of all of Maryland's children.

DEMOGRAPHICS

Of Maryland's total population of 5.6 million in 2005, 1.4 million were children under 18 years, representing 25 percent of the population, which is comparable to national data. Whites comprised 60.0 percent of Maryland's child population. Minority children made up 40.0 percent of the population and included African Americans (34.8%), American Indians (0.4%), and Asian or Pacific Islanders (4.8%). Hispanics, who could be of any race, comprised 7.3 percent of the child population (Table 1). This distribution when compared with the total population of Maryland represents an increased representation of most minorities and Hispanics (Table 2).

Table 1. Population Distribution of Children (<18 years), Maryland, 2005

	Population (< 18 years)	% of Total
All Races/Ethnicities	1,402,961	
White	842,194	60.0%
African American	488,316	34.8%
American Indian	4,971	0.4%
Asian or Pacific Islander	67,480	4.8%
Hispanic (any race)	102,104	7.3%

Data Source: Vital Statistics Administration, DHMH

Table 2. Population Distribution of Maryland (All Ages), Maryland, 2005

	Total Population (All Ages)	% of Total
All Races/Ethnicities	5,600,388	
White	3,622,922	64.7%
African American	1,672,296	29.9%
American Indian	20,800	0.4%
Asian or Pacific Islander	284,370	5.1%
Hispanic (any race)	319,903	5.7%

Data Source: Vital Statistics Administration, DHMH

With a poverty rate of 9.2 percent for the overall population and 11.1 percent for children, Maryland has some of the lowest overall and child poverty rates in the nation. However, there are varying degrees of child poverty throughout the state, ranging from a low of 5.3 percent in Howard County to a high of 26.6 percent in Baltimore City. Nationally, 17.8 percent of children live in poverty.[1] In 2005, in Maryland, 90.9 percent of children were covered by health insurance compared with 88.8 percent nationally.[2]

[1] Source: U.S. Census Bureau (2004 estimates)
[2] Source: U.S. Census Bureau (2005 estimates)

OVERALL TRENDS IN CHILD DEATHS

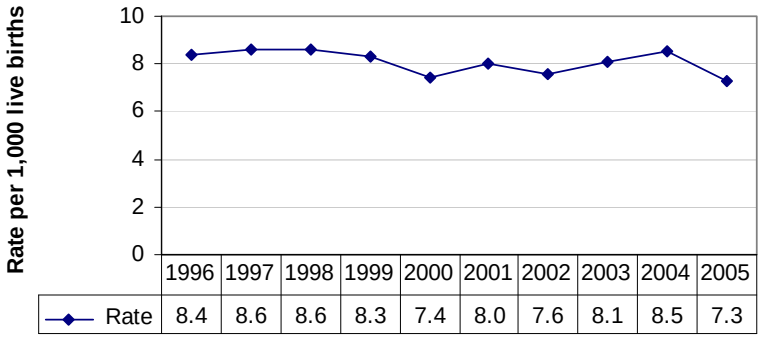
In 2005, there were 846 deaths of infants and children under the age of 18 years in Maryland. This age range was utilized for this report because it encompasses the ages for which the State Child Fatality Review Team has responsibility. The overall gradual decrease in infant mortality rate in the past decade, was interrupted by increases in 2003 and 2004; however, 2005 saw declines in both infant and child deaths. From a rate of 8.4 per 1,000 live births in 1996, the infant mortality rate declined by 13.1% to 7.3 per 1,000 live births in 2005 (Table 3 and Figure 1). There has also been an overall decline in the number and rate of child deaths in the state over the past decade. The child death rate decreased by 26.1% between 1996 and 2005 (Table 4 and Figure 2). It is important to note that many of these deaths in childhood could be prevented with appropriate interventions in both the public and private sectors.

Table 3. Infant Deaths: Number and Infant Mortality Rate, Maryland, 1996-2005

Year	Number	* Rate
1996	602	8.4
1997	606	8.6
1998	618	8.6
1999	596	8.3
2000	550	7.4
2001	587	8.0
2002	556	7.6
2003	610	8.1
2004	632	8.5
2005	545	7.3

Data Source: Vital Statistics Administration, DHMH
*Rate per 1,000 live births

Figure 1. Infant Mortality Rates, Maryland, 1996-2005



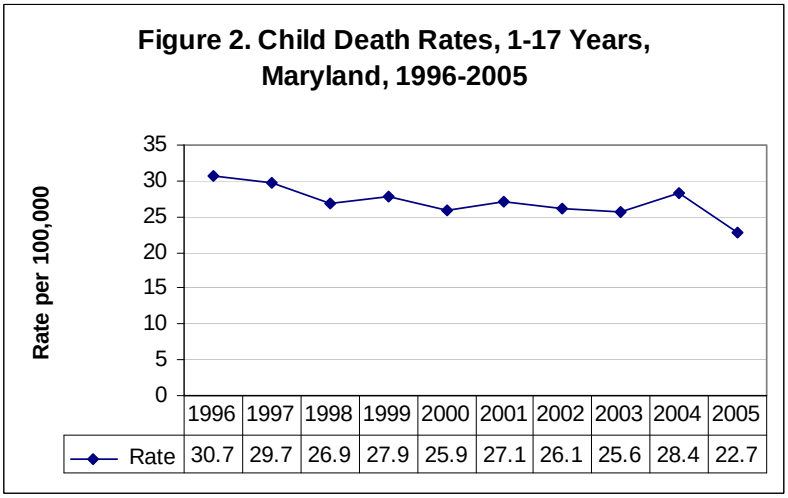
Data Source: Vital Statistics Administration, DHMH

Table 4. Child Deaths (1-17): Number and Rate, Maryland, 1996-2005

Year	Number	* Rate
1996	373	30.7
1997	356	29.7
1998	327	26.9
1999	346	27.9
2000	333	25.9
2001	351	27.1
2002	340	26.1
2003	334	25.6
2004	374	28.4
2005	301	22.7

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population

Figure 2. Child Death Rates, 1-17 Years, Maryland, 1996-2005



Data Source: Vital Statistics Administration, DHMH

The average infant mortality rate has increased by 3.8 percent between the three-year periods of 2000-2002 and 2003-2005. The neonatal mortality rate and the postneonatal mortality rate increased by 1.6 percent and 9.9 percent, respectively (Table 5). None of these increases were statistically significant. Overall, for children ages 1 through 17 years, the mortality rate fell by 3.1 percent, which was not statistically significant. There was a statistically significant increase of 58.3 percent in the mortality rate among Hispanic children between the two periods (Table 6).

Table 5. Number of Infant, Neonatal, and Postneonatal Deaths by Race/Ethnicity, Mortality Rates and Percent Change in Rates from 2000-2002 to 2003-2005, Maryland

	Number of deaths		Mortality rates*		Percent Change**	Rates Differ Significantly? ***
	2000-2002	2003-2005	2000-2002	2003-2005		
Infant mortality						
All races	1693	1787	7.7	8.0	3.8	no
White	688	698	5.2	5.2	1.0	no
African American	945	1022	13.1	14.0	7.3	no
Hispanic	101	122	6.2	5.2	-15.6	no
Neonatal mortality						
All races	1240	1281	5.6	5.7	1.6	no
White	513	487	3.8	3.6	-5.4	no
African American	685	743	9.5	10.2	7.6	no
Hispanic	69	78	4.2	3.4	-21.0	no
Postneonatal mortality						
All races	453	506	2.1	2.3	9.9	no
White	175	211	1.3	1.6	20.1	no
African American	260	279	3.6	3.8	6.4	no
Hispanic	32	44	2.0	1.9	-4.0	no

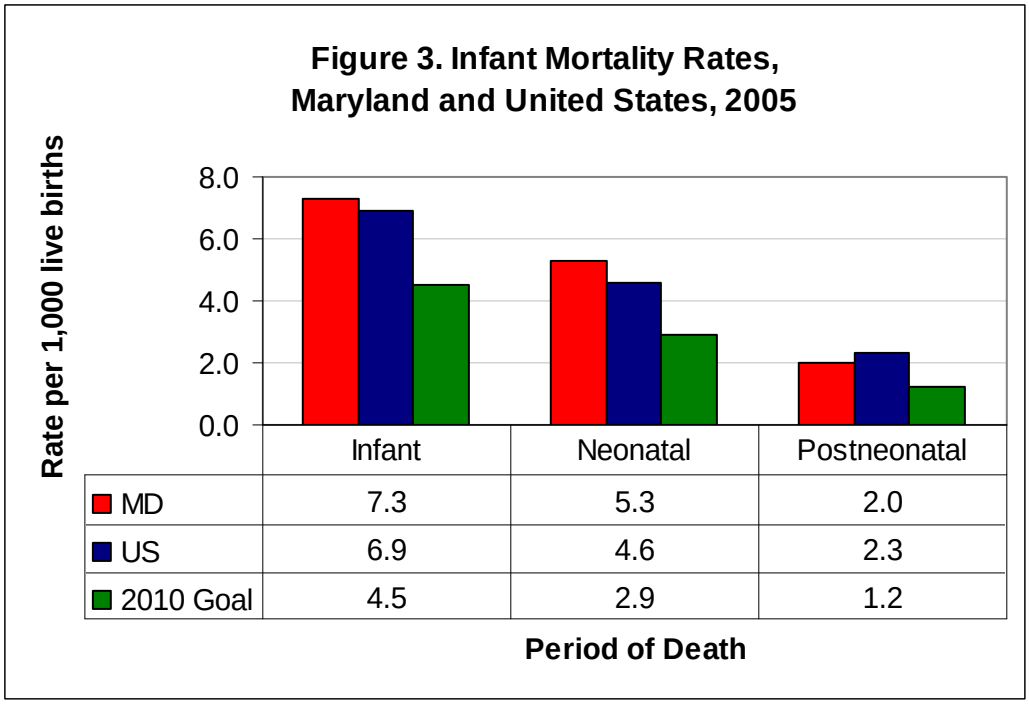
Data Source: Vital Statistics Administration, DHMH
*Rate per 1,000 live births
**Percent change is based on the exact rates and not the rounded rates represented here
*** Z Test, p<.05

Table 6. Number of Child (1-17 years) Deaths by Race/Ethnicity and Age, Mortality Rates and Percent Change in Rates from 2000-2002 to 2003-2005, Maryland

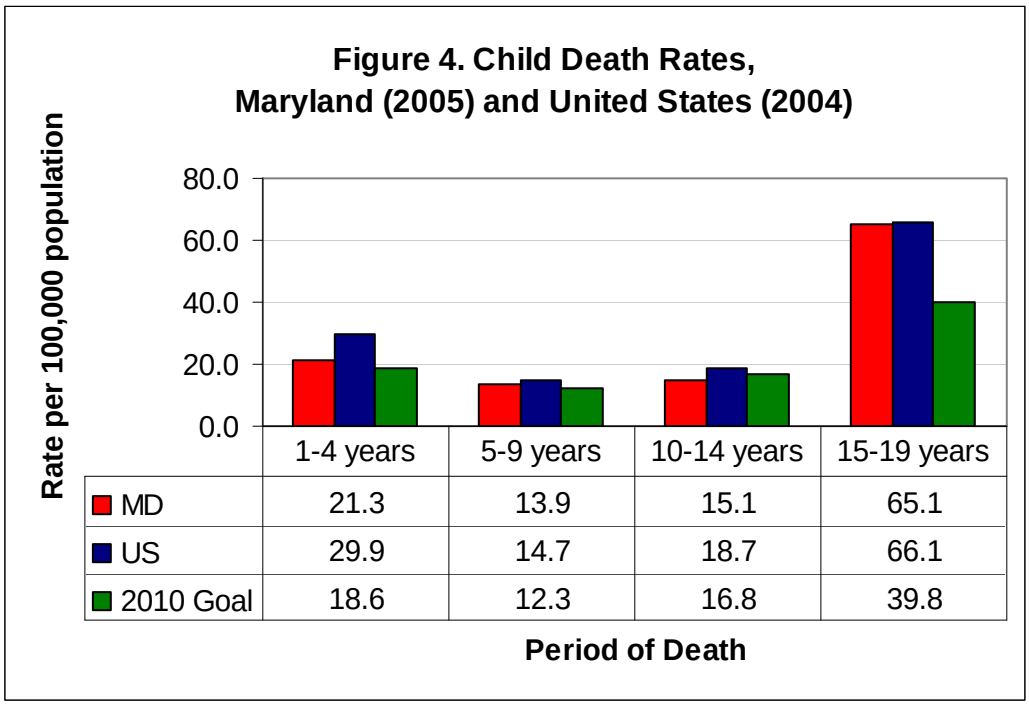
	Number of deaths		Mortality rates*		Percent Change**	Rates Differ Significantly? ***
	2000-2002	2003-2005	2000-2002	2003-2005		
1-17						
All races	1024	1009	26.4	25.5	-3.1	no
White	502	494	20.9	20.6	-1.6	no
African American	481	485	37.0	35.9	-3.0	no
Hispanic	28	54	13.3	21.1	58.3	yes
Age Group						
1-4	265	234	31.0	26.1	-15.6	no
5-9	174	157	15.2	14.2	-6.5	no
10-14	219	224	18.1	18.3	0.9	no
15-17	366	394	54.1	54.3	0.3	no

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population in specified group
**Percent change is based on the exact rates and not the rounded rates represented here
*** Z Test, p<.05

COMPARISION TO NATIONAL STATISTICS



Data Sources: Vital Statistics Administration, DHMH
National Vital Statistics System,
US Department of Health and Human Services, Healthy People 2010



Data Sources: Vital Statistics Administration, DHMH
National Vital Statistics System,
US Department of Health and Human Services, Healthy People 2010

The 2005 Maryland infant and neonatal mortality rates were higher than the 2004 national rates. The Maryland postneonatal mortality rate, however, was lower than the national rate (Figure 3). Among children ages 1-19 years, Maryland's age-specific mortality rates were slightly lower than the national rates (Figure 4).

National objectives for infant and child mortality have been established in the Healthy People 2010 project of the United States Department of Health and Human Services. While Maryland met the 2010 goal for lowering child death rates among 10-14 year olds, and is close to meeting several of the other objectives, other targets, especially those for infants and older adolescents, remain a challenge (Figures 3 and 4). It is anticipated that progress will be realized now that jurisdictions have Child Fatality Review infrastructure, along with improved surveillance that will identify areas for appropriate intervention.

CHILD DEATH DEMOGRAPHICS

In order to reduce preventable deaths in childhood, it is necessary to understand both the causes of death and which children are at particular risk. A breakdown of the age of death for children in Maryland in 2005 is presented in Table 7 and Figure 5.

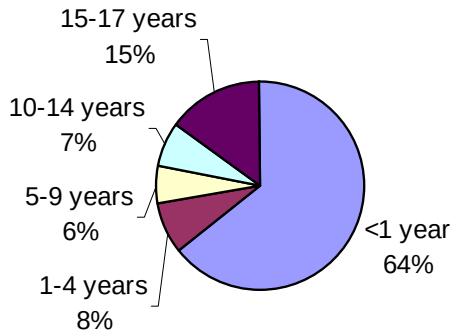
Table 7. Child Deaths (<18 Years), Maryland, 2005

Age Group	# of Deaths	% of Total
<1	545	64.4
1-4	65	7.7
5-9	51	6.0
10-14	61	7.2
15-17	124	14.7
Total	846	

Data Source: Vital Statistics Administration, DHMH

Of the 846 deaths, 64.4% percent occurred in the first year of life with 46.6 percent of the total occurring in the first month of life. Therefore, efforts to lower overall child fatalities must be coordinated with activities specifically aimed at addressing infant deaths. Although mortality rates fall after infancy, they rise again during adolescence. Teens have approximately two times the number of fatalities as seen in younger children. Increased efforts to reduce unintentional and intentional injury deaths in older children are necessary.

Figure 5. Percentage of Total Child Deaths By Age, Maryland, 2005



Data Source: Vital Statistics Administration, DHMH

There are large differences in the numbers and rates of deaths when gender and race are considered. In 2005, 56.7 percent of the infant deaths occurred in boys (Table 8). Of the 301 deaths among 1 to 17 year old children, 63.5 percent occurred in boys (Table 9).

Table 8. Infant Deaths by Gender, Maryland, 2005

Gender	# of Deaths	% of Total
Male	309	56.7
Female	236	43.3

Data Source: Vital Statistics Administration, DHMH

Table 9. Child (1-17 years) Deaths by Gender and Age Group, Maryland, 2005

	# of Deaths by Age Group					
Gender	**1-4**	**5-9**	**10-14**	**15-17**	**Total 1-17**	**% of Total**
Male	37	30	33	91	191	63.5
Female	28	21	28	33	110	36.5

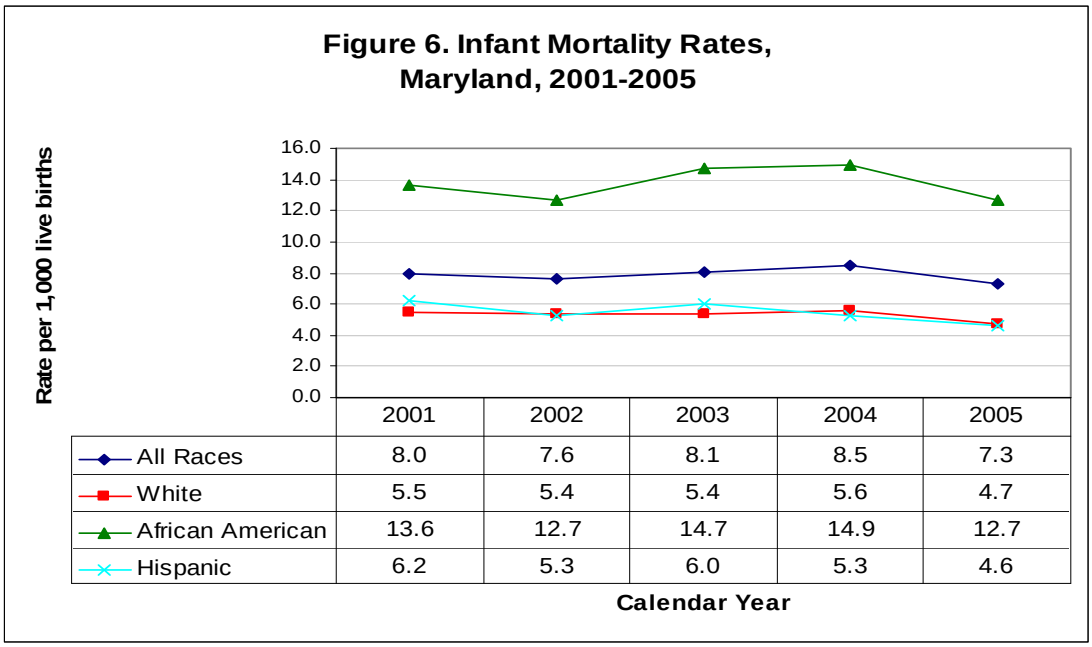
Data Source: Vital Statistics Administration, DHMH

African American children were at an increased risk of dying both in the first year of life and in later childhood. In 2005, African American infants died at 2.7 times the rate of White infants (Figure 6). The rate of African American deaths in children ages 1 through 17 years was 1.4 times higher than White children (Figure 7). The death rate among Hispanic children was slightly elevated, 1.2 times the rate of White children (any ethnicity) (Figure 7). Evidence-based strategies are needed to effectively address the racial disparities in infant and child mortality in Maryland.

Table 10. Infant Deaths by Race/Ethnicity, Maryland, 2005

Race/Ethnicity	# of Deaths
White	215
African American	309
Asian	18
Other	3
Hispanic	40

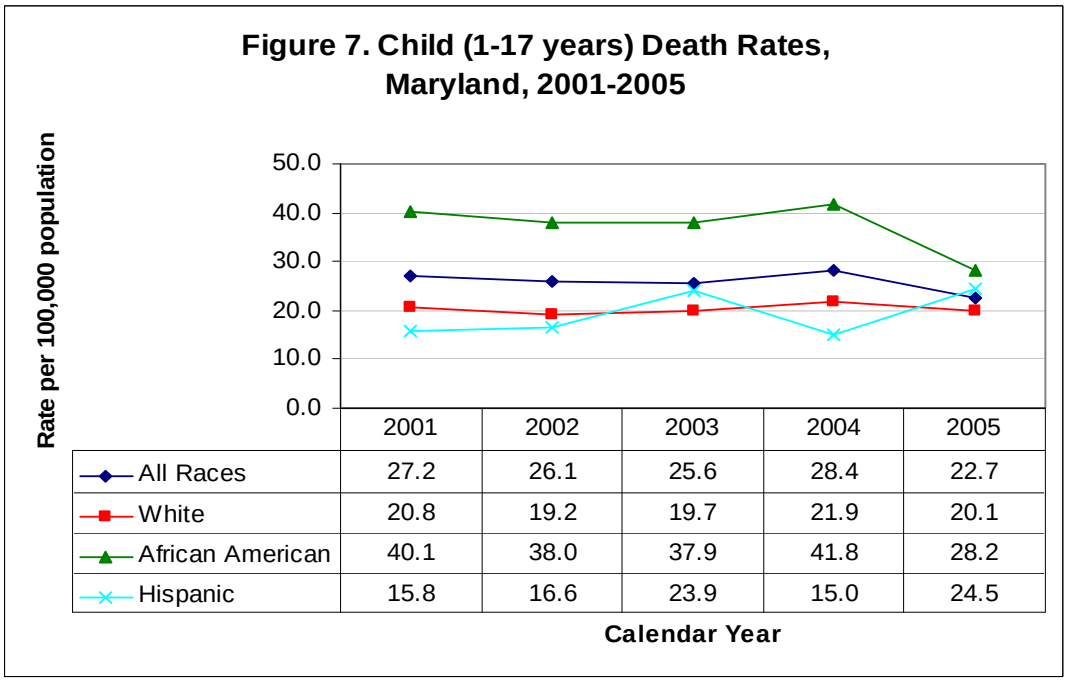
Data Source: Vital Statistics Administration, DHMH



Data Source: Vital Statistics Administration, DHMH

Table 11. Child (1-17) Deaths by Race/Ethnicity, Maryland, 2005	
Race/Ethnicity	**# of Deaths**
White	160
African American	130
Asian	10
Other	1
Hispanic	23

Data Source: Vital Statistics Administration, DHMH



Data Source: Vital Statistics Administration, DHMH

CAUSES OF INFANT DEATHS

Understanding the underlying cause of death in childhood is necessary in order to develop strategies to prevent these events when possible. Specific causative factors vary significantly depending on the age of the child. In the first year of life, the leading causes of mortality relate to prematurity and low birth weight. Excess numbers of preterm and low birth weight infants account for the higher infant mortality rate in Maryland. After the first month of life, Sudden Infant Death Syndrome (SIDS) and congenital anomalies are the leading causes of death in infancy. Table 12 presents the leading causes of infant mortality in 2005.

Table 12. Leading Causes of Infant Mortality, Maryland, 2005

Rank		Neonatal (394)	Postneonatal (151)	Infant (545)
1	**Cause of Death**	Short Gestation, LBW	SIDS	Short Gestation, LBW
	# of Deaths	128	50	132
	% of Deaths in Group	32.5%	33.1%	24.2%
2	**Cause of Death**	Congenital Abnormalities	Congenital Abnormalities	Congenital Abnormalities
	# of Deaths	59	21	80
	% of Deaths in Group	15.0%	13.9%	14.7%
3	**Cause of Death**	Maternal Complications	Diseases of Circulatory System	SIDS
	# of Deaths	46	8	55
	% of Deaths in Group	11.7%	5.3%	10.1%
4	**Cause of Death**	Respiratory Distress	Short Gestation, LBW	Maternal Complications
	# of Deaths	24	4	46
	% of Deaths in Group	6.1%	2.6%	8.4%
5	**Cause of Death**	Bacterial Sepsis	Necrotizing Enterocolitis	Respiratory Distress
	# of Deaths	18	3	24
	% of Deaths in Group	4.6%	2.0%	4.4%

Data Source: Vital Statistics Administration, DHMH

SUDDEN INFANT DEATH SYNDROME (SIDS)

SIDS is the sudden death of an infant under one year of age, which remains unexplained after a thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history. SIDS remains the leading cause of death in the first year of life beyond the neonatal period. SIDS is of particular public health concern because it can be reduced through safe sleeping practices for infants and education regarding cultural practices for specific infant care issues. In Maryland, the infant mortality rate due to SIDS remained nearly unchanged between the periods 2000-2002 (0.73 deaths per 1,000 live births) and 2003-2005 (0.77 deaths per 1,000 live births). In 2003-2005, there were 175 SIDS deaths. These deaths included other sudden infant deaths classified as Sudden Unexpected Deaths in Infancy (SUDI). SUDI includes cases where there is confirmation of bed-sharing and in which the possibility of asphyxia, due to unsafe sleeping surfaces, could not be ruled out.

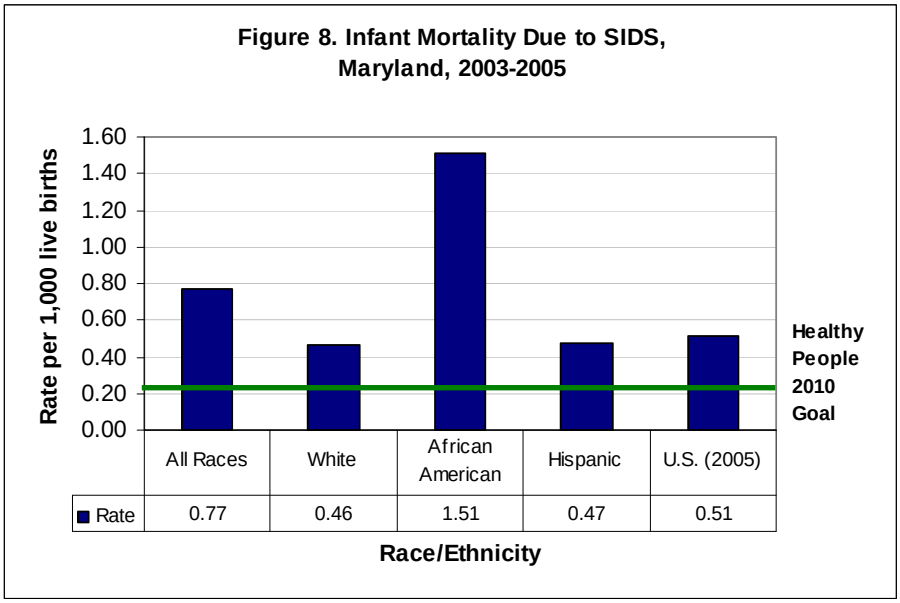
Risk factors for SIDS include: 1) a physiological defect; 2) critical development period (SIDS risk peaks between two and four months of age); and 3) environmental stressors such as oxygen depletion while sleeping face down, exposure to prenatal or second-hand smoke, and overheating while wrapped in heavy blankets. Additionally, the mother's health and behavior during pregnancy and the infant's health before birth are important factors in the occurrence of SIDS.

Of the 175 SIDS deaths between 2003 and 2005, 119 (68%) were boys and 56 (32%) were girls. Sixty-two White infants died from SIDS, a rate of 0.46 per 1,000 live births. Among African Americans, there were 110 SIDS deaths, representing a rate of 1.51 per 1,000 live births. Eleven Hispanic infants died from SIDS, a rate of 0.47 per 1,000 live births (Table 13 and Figure 8). African American infants died from SIDS at 3.3 times the rate for White infants. Maryland's average SIDS death rate (2003-2005) was higher than the 2005 national rate. The Healthy People 2010 goal calls for reducing death from SIDS to no more than 0.25 per 1,000 live births.

Table 13. Infant Deaths Due to SIDS, Maryland, 2003-2005

Race/Ethnicity	# of Deaths
All Races	175
White	62
African American	110
Asian	1
Other	2
Hispanic	11

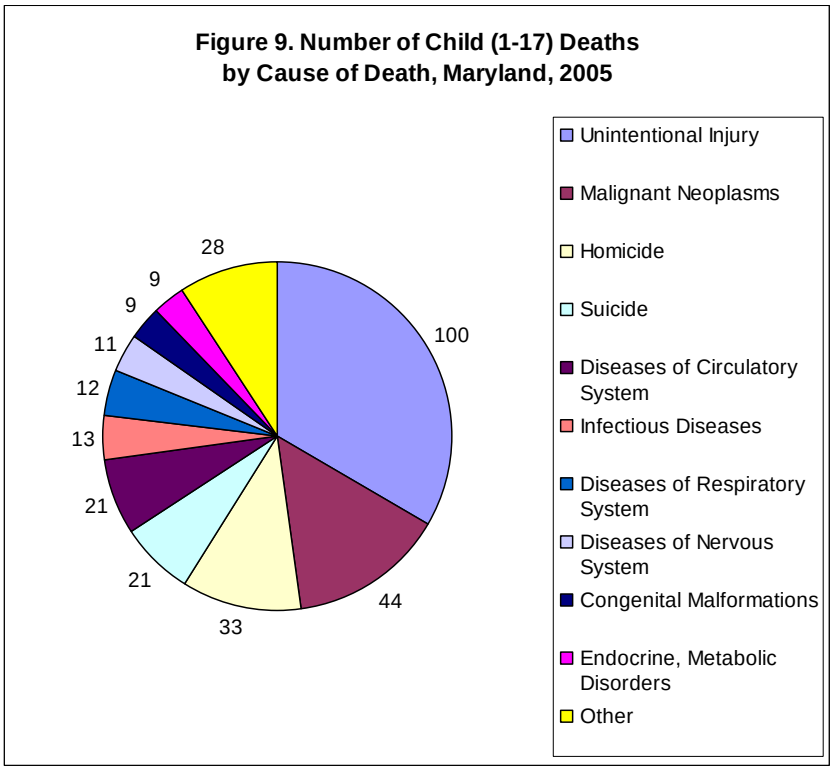
Data Source: Vital Statistics Administration, DHMH



Data Source: Vital Statistics Administration, DHMH

CAUSES OF DEATH AMONG OLDER CHILDREN

Table 14. Child (1-17 years) Deaths by Cause, Maryland, 2003-2005			
Cause of Death	**# of Deaths 2005**	**# of Deaths 2003-2005**	**% of Total Deaths 2003-2005**
Unintentional Injury	100	334	33.1
Malignant Neoplasms	44	118	11.7
Homicide	33	143	14.2
Suicide	21	48	4.8
Diseases of Circulatory System	21	60	5.9
Infectious Diseases	13	35	3.5
Diseases of Respiratory System	12	44	4.4
Diseases of Nervous System	11	47	4.7
Congenital Malformations	9	52	5.2
Endocrine, Metabolic Disorders	9	19	1.9
Other	28	109	10.8
Total	301	1009	
Data Source: Vital Statistics Administration, DHMH			



Data Source: Vital Statistics Administration, DHMH

Table 14 and Figure 9 show the causes of death by major category among children 1-17 years in 2005 and for the period 2003-2005. Over this period, injuries represented over 52% of childhood deaths. Unintentional injuries were the leading cause of death in all age groups, as shown in Table 15.

Table 15. Leading Causes of Death by Age Group, Maryland, 2003-2005					
Rank	**Age Group**				
		1-4 years	**5-9 years**	**10-14 years**	**15-17 years**
1	**Cause of Death**	Unintentional Injury	Unintentional Injury	Unintentional Injury	Unintentional Injury
	# of Deaths	54	59	67	154
	% of Deaths in Age Group	23.1%	37.6%	29.9%	39.1%
2	**Cause of Death**	Malignant Neoplasms	Malignant Neoplasms	Malignant Neoplasms	Homicide
	# of Deaths	28	29	37	103
	% of Deaths in Age Group	12.0%	18.5%	16.5%	26.1%
3	**Cause of Death**	Congenital Malformations	Diseases of the Respiratory System	Diseases of the Nervous System	Suicide
	# of Deaths	27	11	16	32
	% of Deaths in Age Group	11.5%	7.0%	7.1%	8.1%
4	**Cause of Death**	Homicide	Congenital Malformations	Suicide	Malignant Neoplasms
	# of Deaths	20	10	15	24
	% of Deaths in Age Group	8.6%	6.4%	6.7%	6.1%
5	**Cause of Death**	Diseases of the Circulatory System	Diseases of the Nervous System	Diseases of the Circulatory System	Diseases of the Circulatory System
	# of Deaths	19	10	15	19
	% of Deaths in Age Group	8.1%	6.4%	6.7%	4.8%

Data Source: Vital Statistics Administration, DHMH

NATURAL CAUSES OF DEATH

In addition to being classified according to cause of death, death is also classified by manner as natural, accident (unintentional), homicide, suicide, and undetermined. Deaths from natural causes constituted a substantial proportion of mortality among children under 18 years of age in Maryland during the period 2003-2005. A death due to a natural cause can result from one of many serious health conditions. Congenital anomalies, genetic disorders, cancers, heart and cerebral problems, serious infections and respiratory disorders, such as asthma, can be fatal to children. Many of these conditions are not believed to be preventable to the same extent to which unintentional injuries, homicides or suicides are preventable. However, there are some illnesses such as asthma, infectious diseases and some screenable genetic disorders, for which fatalities may be prevented.

INJURIES

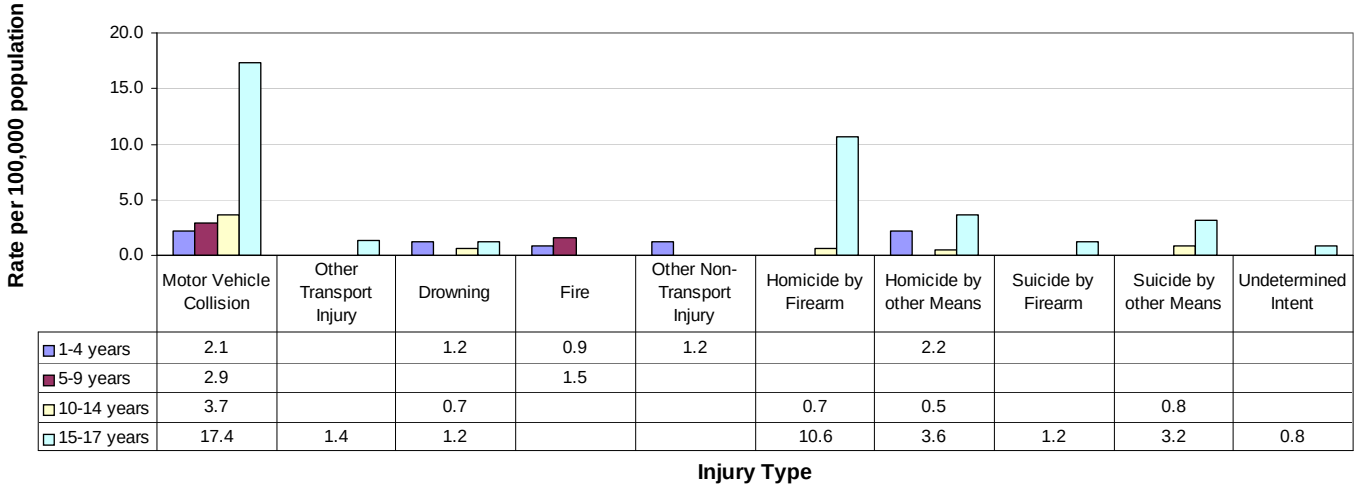
Injuries were the leading cause of death in children aged 1-17 years, with unintentional injuries accounting for most of the injury-related deaths in all childhood age groups (Table 15). Many of these injury deaths are preventable. Between 2003 and 2005, unintentional injuries constituted the leading cause of injury deaths (62.1%). Homicide and suicide (intentional injuries) represented 26.6 percent and 8.7 percent respectively of all fatal injuries (Table 16). Undetermined intent refers to cases where information is insufficient to enable a medical or legal authority to a make a distinction between an accident, self-harm, and assault.

Table 16. Child (1-17 years) Injury Related Deaths by Type of Injury and Gender, Maryland, 2003-2005

Type of Injury	Male	Female	Total Deaths	% of Total Injury Deaths
Motor Vehicle Collision	136	86	222	41.3%
Other Transport Injury	9	7	16	3.0%
Falls	1	2	3	0.6%
Drowning	26	6	32	5.9%
Fire	25	7	32	5.9%
Poisoning	4	5	9	1.7%
Other Non-Transport Injury	16	4	20	3.7%
Homicide by Firearm	76	11	87	16.2%
Homicide by other Means	35	21	56	10.4%
Suicide by Firearm	14	0	14	2.6%
Suicide by other Means	25	8	33	6.1%
Undetermined Intent	5	9	14	2.6%

Data Source: Vital Statistics Administration, DHMH

Figure 10. Child (1-17) Injury Death Rates by Injury Type and Age Group, Maryland, 2003-2005



	Motor Vehicle Collision	Other Transport Injury	Drowning	Fire	Other Non-Transport Injury	Homicide by Firearm	Homicide by other Means	Suicide by Firearm	Suicide by other Means	Undetermined Intent
1-4 years	2.1		1.2	0.9	1.2		2.2			
5-9 years	2.9			1.5						
10-14 years	3.7		0.7			0.7	0.5		0.8	
15-17 years	17.4	1.4	1.2			10.6	3.6	1.2	3.2	0.8

Data Source: Vital Statistics Administration, DHMH
* Note - Rates based on <5 events in the numerator are not displayed

The number of deaths among male children is substantially higher than among females for most injury types (Table 16). Figure 10 shows the injury death rates by age group. Adolescents between the ages of 15 and 17 years have the highest rates of injury deaths for nearly all types of injuries. Death rates for very young children (1-4 years) for drownings and homicides by means other than firearms are as high or nearly as high as rates for adolescents (15-17).

Table 17. Child (1-17 years) Injury Related Deaths by Type of Injury and Race, Maryland, 2003-2005

Type of Injury	White	African American	Other	Total Deaths	% of Total Injury Deaths
Motor Vehicle Collision	143	72	7	222	41.3%
Other Transport Injury	13	3	0	16	3.0%
Falls	1	1	1	3	0.6%
Drowning	16	15	1	32	5.9%
Fire	12	20	0	32	5.9%
Poisoning	4	5	0	9	1.7%
Other Non-Transport Injury	12	8	0	20	3.7%
Homicide by Firearm	13	74	0	87	16.2%
Homicide by other Means	19	36	1	56	10.4%
Suicide by Firearm	11	2	1	14	2.6%
Suicide by other Means	20	9	4	33	6.1%
Undetermined Intent	10	3	1	14	2.6%

Data Source: Vital Statistics Administration, DHMH

MOTOR VEHICLE COLLISIONS

Of the unintentional injuries, motor vehicle-related injuries were the leading cause of death to children. Between 2003 and 2005, 222 children ages 1-17 years were killed in motor vehicle crashes (Table 18). The motor vehicle-related injury mortality included deaths occurring to children who were drivers, passengers, pedestrians, or other types of victims.

Table 18. Number of Children (1-17) Killed in Motor Vehicle-Related Collisions, Maryland, 2003-2005

	# of Deaths	% of Total Motor Vehicle Deaths
Unspecified	76	34.2
Pedestrian	40	18.0
Passenger of Vehicle (car,truck,van)	37	16.7
Driver of Vehicle (car,truck,van)	22	9.9
Unspecified occupant of Vehicle	21	9.5
All Terrain Vehicle Rider	12	5.4
Pedal Cyclist	8	3.6
Motorcyclist	6	2.7
Total	222	

Data Source: Vital Statistics Administration, DHMH

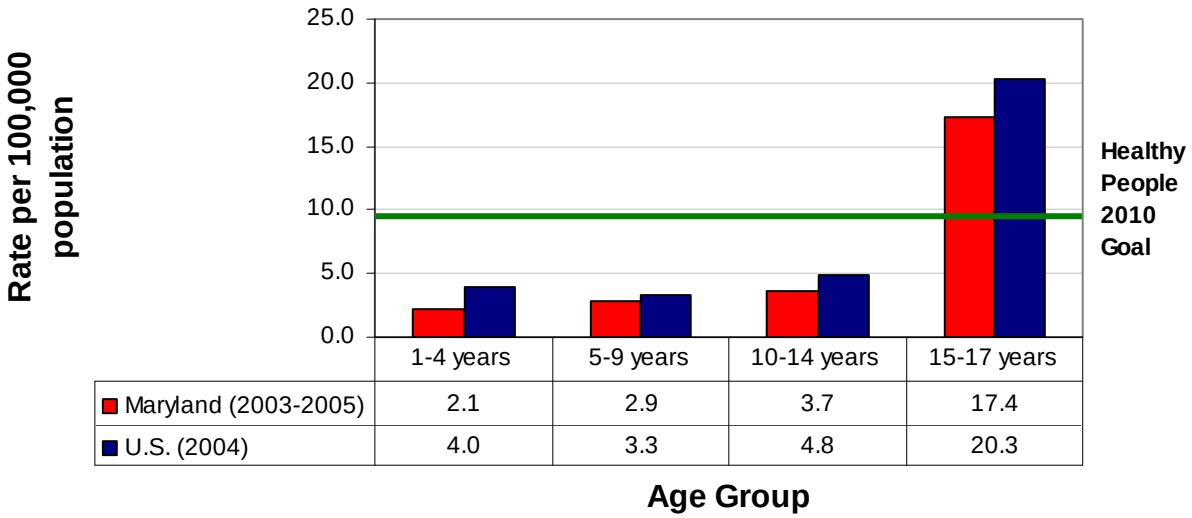
Of the 222 motor vehicle-related deaths between 2003 and 2005, 136 (61.3%) occurred among boys and 86 (38.7%) occurred among girls. One hundred and forty-three White youths died in motor vehicle crashes, a rate of 6.0 per 100,000 population. Among African American children, there were 72 motor vehicle-related deaths, representing a rate of 5.3 per 100,000 population (Table 19). Children ages 15-17 years had over 4 times the death rate of younger children, dying at the rate of 17.4 per 100, 000 population (Figure 11).

Table 19. Child (1-17) Deaths due to Motor Vehicle-Related Collisions by Race/Ethnicity, Maryland, 2003-2005

Race/Ethnicity	# of Deaths	Death Rate*
White	143	6.0
African American	72	5.3
Other	7	3.5
Hispanic	11	4.3

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population

Figure 11. Children's (1-17 years) Motor Vehicle-Related Death Rates, Maryland and U.S., 2003-2005



Data Sources: MD - Vital Statistics Administration, DHMH,
US – CDC National National Center for Injury Prevention and Control - WISQARS,
US Department of Health and Human Services, Healthy People 2010

Comparison to National Statistics: Motor Vehicle Collisions

In all childhood age groups, Maryland's mortality rates from motor vehicle collisions were lower than national rates (Figure 11; 2004, the most current year for which national data is available). The objective of the Healthy People 2010 goal is to reduce the mortality rate from motor vehicle crashes to no more than 9.2 per 100,000 in the general population (all races, gender, and ages). In 2004, Maryland's total mortality rate from motor vehicle collisions (all ages) was 12.1 per 100,000 population. [1]

[1] Source: CDC National National Center for Injury Prevention and Control - WISQARS

VIOLENCE-RELATED DEATHS

Violence is a part of many children's lives in the U.S. It originates in many places; it could be inflicted by self, family members, peers or other members of the community. Violence affects children and youth at every age, even the newborn. Sometimes children are themselves perpetrators of violence.

HOMICIDES

There were 164 homicides in the period 2003-2005 among infants and children aged 0 to 17 years. The numbers of homicide deaths among African-American and White children were 121 and 42 respectively, representing rates of 8.5 per 100,000 for African-American children and 1.7 per 100,000 for White children (Table 20, Figure 12). The greatest number of homicides occurred in the oldest children and most often involved the use of firearms; 77 of the firearm-related deaths were in adolescents aged 15-17 years, representing a rate of 10.6 per 100,000 in this age group (Table 21 and Figure 12). The homicide rate for infants (under one year of age) was higher than for any age group up until age 15-17 years; 21 infants were victims of homicide, representing a rate of 9.3 per 100,000. Of the 87 firearm-related deaths, 76 (87.4%) were among males and 11 (12.6%) among females (Table 22).

Table 20. Child (0-17) Deaths Due to Homicide by Race/Ethnicity, Maryland, 2003-2005

	By Firearm		By Other Means		Total	
Race/Ethnicity	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***
White	13	0.5	29	1.1	42	1.7
African American	74	5.2	47	3.3	121	8.5
Other	0		1		1	
Hispanic	4		11	4.0	15	5.4

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population
Note - Rates based on <5 events in the numerator are not displayed

Table 21. Child (0-17) Deaths Due to Homicide by Age Group, Maryland, 2003-2005

	By Firearm		By Other Means		Total	
Age Group	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***
<1	0		21	9.3	21	9.3
1-4	0		20	2.2	20	2.2
5-9	2		4		6	0.5
10-14	8	0.7	6	0.5	14	1.1
15-17	77	10.6	26	3.6	103	14.2
Total	87	2.1	77	1.8	164	3.9

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population
Note - Rates based on <5 events in the numerator are not displayed

Table 22. Child (0-17) Deaths Due to Homicide by Gender, Maryland, 2003-2005						
	By Firearm		By Other Means		Total	
Gender	# of Deaths	Rate*	# of Deaths	Rate*	# of Deaths	Rate*
Male	76	3.6	46	2.2	122	5.7
Female	11	0.5	31	1.5	42	2.1

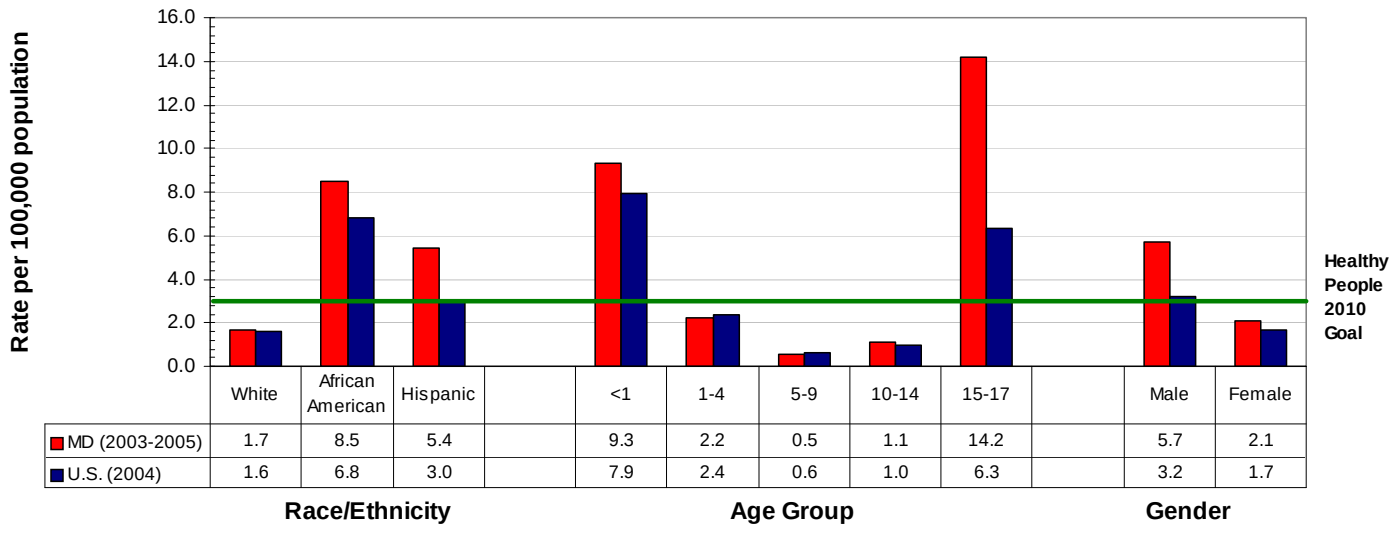
Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population
Note - Rates based on <5 events in the numerator are not displayed

Child deaths due to homicides are not distributed evenly throughout the state. For the period 2003-2005, 75% of the homicides among children aged 0-17 years were for residents of three jurisdictions: Baltimore City (44.5%), Prince George's County (18.3%), and Baltimore County (12.2%).

Comparison to National Statistics: Homicides

While Maryland's homicide rates in 2003-2005 for children under 15 years were slightly higher than the 2004 national rate, the rate for the older children was substantially higher than the national rate (Figure 12; 2004, the most current year for which national data is available). The Healthy People 2010 goal calls for reducing the homicide rate to no more than 3.0 per 100,000 population (all races, gender, ages). In 2004, Maryland's total mortality rate from homicide (all ages) was 9.7 per 100,000 population.

Figure 12. Child (0-17) Deaths Due to Homicide, Maryland, 2003-2005, U.S., 2004



Data Sources: MD - Vital Statistics Administration, DHMH,
US – CDC National National Center for Injury Prevention and Control - WISQARS,
US Department of Health and Human Services, Healthy People 2010

SUICIDE

Suicide among young people is a significant public health problem in the U.S., and it is the fourth leading cause of death among youth, ages 10-17, in Maryland. Suicide is generally a complication of mental health problems, but a mental health disorder is often not the lone cause and it may result from additional risk factors.

Table 23. Child (10-17) Deaths Due to Suicide by Gender, Maryland, 2003-2005

	By Firearm		By Other Means		Total	
Gender	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***
Male	14	1.4	25	2.5	39	3.9
Female	0		8	0.8	8	0.8

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population
Note - Rates based on <5 events in the numerator are not displayed

Table 24. Child (10-17) Deaths Due to Suicide by Race/Ethnicity, Maryland, 2003-2005

	By Firearm		By Other Means		Total	
Race/Ethnicity	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***
White	11	0.9	20	1.7	31	2.6
African American	2		9	1.3	11	1.6
Asian	1		4		5	5.9
Hispanic	0		0		0	

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population
Note - Rates based on <5 events in the numerator are not displayed

Of the 47 children aged 10-17 years who committed suicide between 2003 and 2005, 39 were males and 8 were females, representing rates of 3.9 and 0.8 per 100,000 population respectively (Table 23). Asian children had the highest rate of suicide, 5.9 per 100,000 population, which was over twice as high as the rate among Whites (although this rate is based on a small number of events). Eleven African American children committed suicide, a rate of 1.6 per 100,000 population. Among White children, 31 committed suicide, representing a rate of 2.6 per 100,000 population (Table 24). Older children (15-17 years) committed suicide at a much higher rate (4.4 per 100,000) than younger children (Table 25).

Table 25. Child (10-17) Deaths Due to Suicide by Age Group, Maryland, 2003-2005

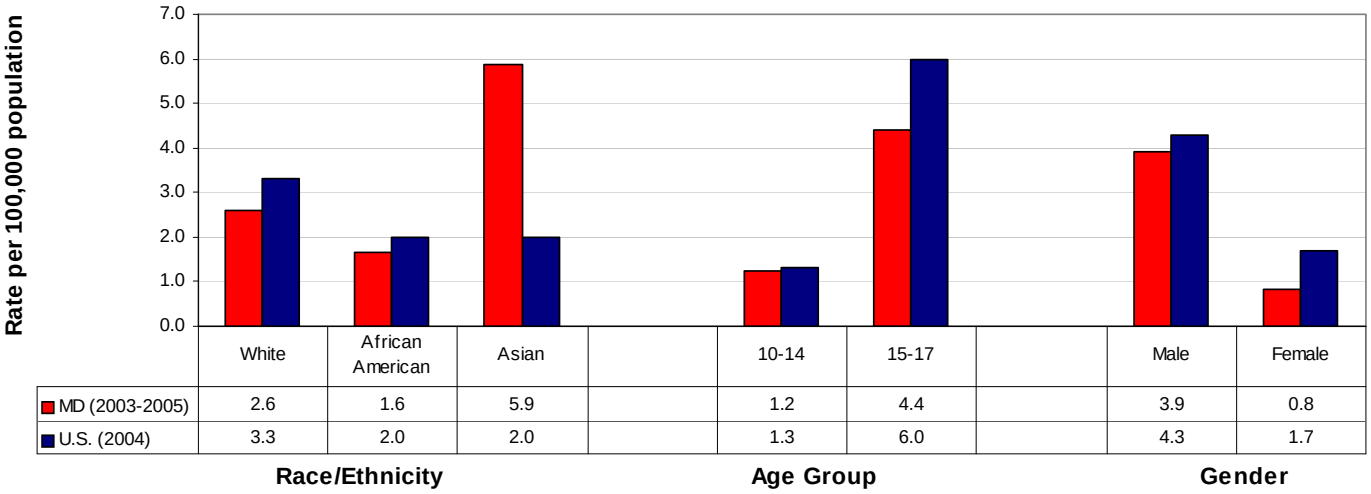
	By Firearm		By Other Means		Total	
Age Group	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***	**# of Deaths**	**Rate***
10-14	5	0.4	10	0.8	15	1.2
15-17	9	1.2	23	3.2	32	4.4
Total (10-17)	14	0.7	33	1.7	47	2.4

Data Source: Vital Statistics Administration, DHMH
*Rate per 100,000 population

Comparison to National Statistics: Suicides

For the period 2003-2005, Maryland's suicide rates among children were lower than the national rates for 2004, with the exception of suicides among Asians (note that this rate may be unstable due to the small number of deaths in this racial category). (Figure 13, 2004, the most current year for which national data is available).

Figure 13. Child (10-17) Deaths Due to Suicide, Maryland, 2003-2005, U.S., 2004



	White	African American	Asian		10-14	15-17		Male	Female
MD (2003-2005)	2.6	1.6	5.9		1.2	4.4		3.9	0.8
U.S. (2004)	3.3	2.0	2.0		1.3	6.0		4.3	1.7
	Race/Ethnicity				**Age Group**			**Gender**	

Data Source: MD - Vital Statistics Administration, DHMH,
US – CDC National National Center for Injury Prevention and Control - WISQARS

CHILD DEATHS IN MARYLAND JURISDICTIONS

Measures to reduce child deaths often originate in local areas through public health and public policy interventions. Specific causes of death may vary in different geographic locations. Data showing the occurrence of infant and child deaths by jurisdiction is included in the following pages. In these tables and maps, an average rate over five years is used for comparison because a small number of deaths in a jurisdiction in a single year may result in considerable variation, which may not indicate an actual significant change. The tables also include an analysis of the change in the rate in jurisdictions over a ten-year period.

Maryland's average infant mortality rate declined by 4.4 percent between 1996-2000 and 2001-2005 (Table 26). This decline included statistically significant declines in the following jurisdictions: Harford, Caroline, and Cecil.

A statistically significant increase in infant mortality occurred between these two time periods in Allegany County.

For children ages 1-17 years, the average mortality rate declined by a statistically significant 9.8 percent between 1996-2000 and 2001-2005 (Table 27). There were statistically significant declines in Baltimore County and Baltimore City over this time period.

The numbers of infant deaths by jurisdiction by year (2001 through 2005) are shown in Appendix A. The numbers of childhood deaths by jurisdiction over these same years are shown in Appendix B.

Figure 14 shows a map of the 5 year average infant mortality rates by jurisdiction (2001-2005). Figure 15 shows a map of the 5 year average child death rates by jurisdiction (2001-2005).

Table 26. Infant Mortality by Jurisdiction, Maryland, 1996-2005

Region	Jurisdiction	# Deaths-1996-2000	# Deaths-2001-2005	Mortality Rate* 1996-2000	Mortality Rate* 2001-2005	Rate % Change**	Rates Differ Significantly?***
Northwest Area	Allegany	17	32	4.5	9.5	112.5	yes
	Frederick	67	80	5.0	5.3	7.7	no
	Garrett	13	16	7.4	10.0	35.5	no
	Washington	40	43	5.0	5.1	1.3	no
Baltimore Metro Area	Anne Arundel	218	229	6.6	6.7	1.4	no
	Baltimore	349	373	7.7	8.0	4.5	no
	Carroll	53	38	5.6	3.9	-30.3	no
	Harford	95	65	6.4	4.4	-30.9	yes
	Howard	91	112	5.3	6.4	20.4	no
	Baltimore City	607	542	12.6	11.9	-5.9	no
National Capital Area	Montgomery	380	405	6.2	6.1	-2.3	no
	Prince George's	689	678	11.3	10.9	-3.6	no
Southern Area	Calvert	26	26	5.5	5.2	-5.4	no
	Charles	64	71	7.6	7.8	2.6	no
	St. Mary's	50	50	8.2	7.4	-10.1	no
Eastern Shore	Caroline	31	9	16.7	4.3	-74.2	yes
	Cecil	48	33	8.6	5.5	-36.1	yes
	Dorchester	14	15	8.5	8.9	4.7	no
	Kent	7	10	7.1	11.6	63.1	no
	Queen Anne's	20	14	8.5	5.5	-34.9	no
	Somerset	11	18	8.7	13.9	59.8	no
	Talbot	9	7	5.3	3.9	-26.3	no
	Wicomico	50	48	9.1	8.2	-9.5	no
	Worcester	23	16	9.3	6.7	-28.0	no
Maryland - Total		2972	2930	8.3	7.9	-4.4	no

Data Source: Vital Statistics Administration, DHMH

* Rate per 1,000 live births

**Percent change is based on the exact rates and not the rounded rates presented here

*** Z Test, p<.05

Table 27. Child (1-17 years) Deaths by Jurisdiction, Maryland, 1996-2005

		# Deaths-1996-2000	# Deaths-2001-2005	Death Rate* 1996-2000	Death Rate* 2001-2005	Rate % Change**	Rates Differ Significantly?***
Region	**Jurisdiction**						
Northwest Area	**Allegany**	24	19	37.6	26.9	-28.5	no
	Frederick	48	50	19.9	18.4	-7.9	no
	Garrett	10	8	27.3	23.6	-13.4	no
	Washington	32	46	22.7	30.6	34.8	no
Baltimore Metro Area	**Anne Arundel**	125	123	22.4	20.4	-8.7	no
	Baltimore	202	177	25.4	20.5	-19.2	yes
	Carroll	50	43	26.3	21.2	-19.5	no
	Harford	62	71	22.3	23.9	7.1	no
	Howard	53	70	17.6	20.3	15.5	no
	Baltimore City	436	352	55.2	46.3	-16.2	yes
National Capital Area	**Montgomery**	153	172	15.7	15.6	-0.8	no
	Prince George's	300	333	32.9	31.3	-4.8	no
Southern Area	**Calvert**	30	32	30.3	29.2	-3.6	no
	Charles	42	41	25.7	23.4	-9.0	no
	St. Mary's	35	26	29.9	21.9	-26.9	no
Eastern Shore	**Caroline**	6	12	16.3	31.7	95.3	no
	Cecil	30	37	27.5	31.7	15.2	no
	Dorchester	12	9	35.5	27.1	-23.6	no
	Kent	2	3				
	Queen Anne's	10	16	21.6	30.6	41.6	no
	Somerset	9	6	39.5	27.0	-31.6	no
	Talbot	8	6	23.8	17.3	-27.5	no
	Wicomico	40	32	41.0	31.7	-22.6	no
	Worcester	16	16	36.1	34.4	-4.9	no
Maryland - Total		1735	1700	28.4	25.7	-9.8	yes

Data Source: Vital Statistics Administration, DHMH

* Rate per 100,000 population

**Percent change is based on the exact rates and not the rounded rates presented here

*** Z Test, p<.05

Rates with <5 events in the numerator are not displayed

Figure 14

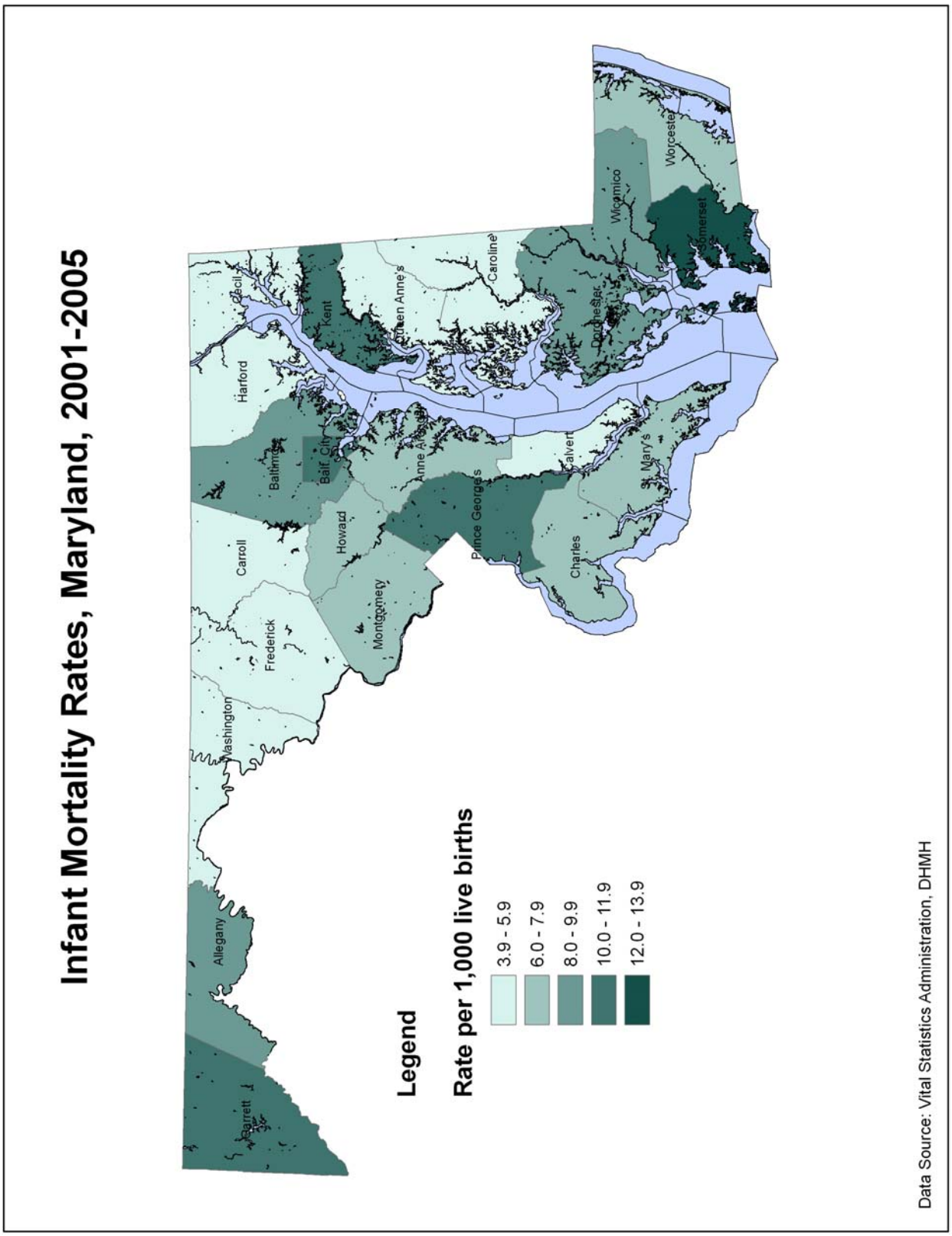
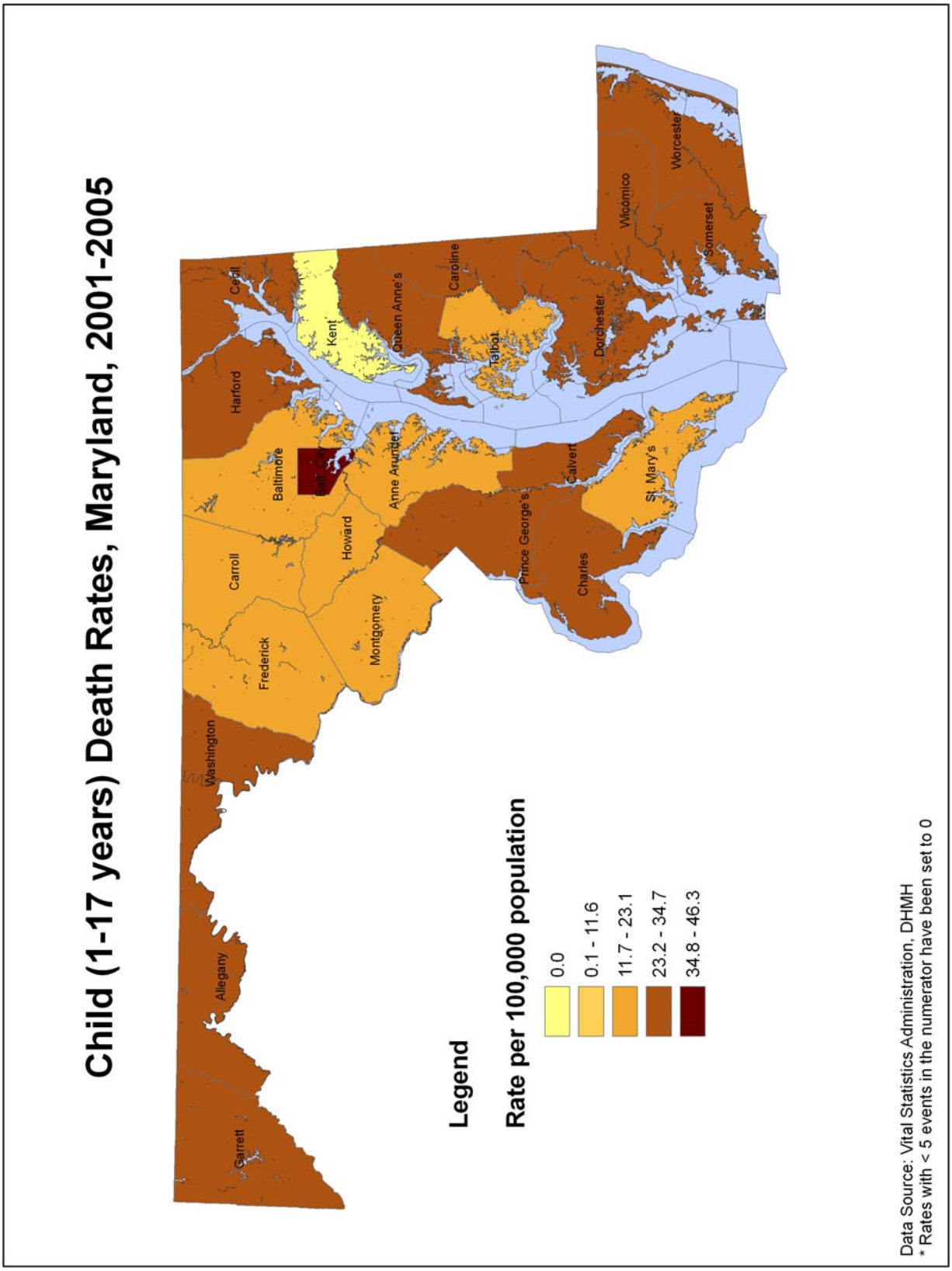

Infant Mortality Rates, Maryland, 2001-2005
Legend
Rate per 1,000 live births
3.9 - 5.9
6.0 - 7.9
8.0 - 9.9
10.0 - 11.9
12.0 - 13.9
Allegany
Garrett
Washington
Frederick
Carroll
Howard
Montgomery
Prince George's
Charles
St. Mary's
Calvert
Anne Arundel
Balt. City
Baltimore
Harford
Cecil
Kent
Queen Anne's
Caroline
Dorchester
Wicomico
Somerset
Worcester
Data Source: Vital Statistics Administration, DHMH

Figure 15


Child (1-17 years) Death Rates, Maryland, 2001-2005
Garrett
Allegany
Washington
Frederick
Carroll
Howard
Montgomery
Baltimore
Harford
Cecil
Kent
Queen Anne's
Caroline
Talbot
Anne Arundel
Prince George's
Calvert
Charles
St. Mary's
Dorchester
Wicomico
Somerset
Worcester
Legend
Rate per 100,000 population
0.0
0.1 - 11.6
11.7 - 23.1
23.2 - 34.7
34.8 - 46.3
Data Source: Vital Statistics Administration, DHMH
* Rates with < 5 events in the numerator have been set to 0

CONCLUSION

Although child deaths and death rates are declining in Maryland, they still exceed most Healthy People 2010 goals. The most common causes of death in children and adolescents are frequently related to preventable factors. Provision of data that describes the extent, distribution and risk factors of childhood deaths is vital to policy makers, health professionals and communities to enable them to make decisions about allocation of resources and institution of effective strategies to prevent future child fatalities, and to monitor progress. The data presented here supplements the review process of local Child Fatality Review teams (CFR) to gain an understanding of the circumstances surrounding the death of children in their jurisdictions. Because CFR teams are multi-disciplinary and multi-agency, they are uniquely qualified to understand what no single agency or group working alone can: how and why children are dying in their communities. In many cases, this review provides important information, which can direct appropriate prevention initiatives by local authorities. In addition, state and federal initiatives are important in reducing preventable deaths in children.

Appendix A

Table 28. Number of Infant (<1 year) Deaths by Jurisdiction and Year, Maryland, 2001-2005

		Year					
		2001	2002	2003	2004	2005	Total - 2001-2005
Region	***Jurisdiction***						
Northwest Area	**Allegany**	13	3	6	6	4	32
	Frederick	14	21	10	15	20	80
	Garrett	5	5	3	2	1	16
	Washington	8	9	13	5	8	43
Baltimore Metro Area	**Anne Arundel**	44	40	56	52	37	229
	Baltimore	75	71	74	67	86	373
	Carroll	9	9	8	6	6	38
	Harford	8	12	17	17	11	65
	Howard	20	24	17	30	21	112
	Baltimore City	108	93	120	117	104	542
National Capital Area	**Montgomery**	84	72	69	98	82	405
	Prince George's	133	141	154	142	108	678
Southern Area	**Calvert**	6	5	4	4	7	26
	Charles	11	11	14	18	17	71
	St. Mary's	8	11	10	12	9	50
Eastern Shore	**Caroline**	4	0	2	1	2	9
	Cecil	9	8	9	4	3	33
	Dorchester	5	2	2	5	1	15
	Kent	2	5	1	0	2	10
	Queen Anne's	2	2	1	4	5	14
	Somerset	4	2	3	9	0	18
	Talbot	1	1	4	1	0	7
	Wicomico	10	7	9	15	7	48
	Worcester	4	2	4	2	4	16
Maryland - Total		587	556	610	632	545	2930

Data Source: Vital Statistics Administration, DHMH

Appendix B

Table 29. Number of Child (1-17 years) Deaths by Jurisdiction and Year, Maryland, 2001-2005

		Year					
		2001	2002	2003	2004	2005	Total - 2001-2005
Region	***Jurisdiction***						
Northwest Area	**Allegany**	5	2	6	4	2	19
	Frederick	7	10	12	11	10	50
	Garrett	3	0	2	2	1	8
	Washington	10	6	12	9	9	46
Baltimore Metro Area	**Anne Arundel**	26	23	24	27	23	123
	Baltimore	38	31	31	34	43	177
	Carroll	7	7	8	11	10	43
	Harford	18	17	12	13	11	71
	Howard	16	12	15	16	11	70
	Baltimore City	60	93	76	75	48	352
National Capital Area	**Montgomery**	35	27	32	41	37	172
	Prince George's	73	63	60	75	62	333
Southern Area	**Calvert**	5	2	8	11	6	32
	Charles	6	13	9	9	4	41
	St. Mary's	4	3	7	9	3	26
Eastern Shore	**Caroline**	1	4	1	2	4	12
	Cecil	11	9	4	7	6	37
	Dorchester	3	2	1	1	2	9
	Kent	0	1	0	2	0	3
	Queen Anne's	5	2	3	5	1	16
	Somerset	3	1	0	1	1	6
	Talbot	1	1	2	0	2	6
	Wicomico	9	8	5	6	4	32
	Worcester	5	3	4	3	1	16
Maryland - Total		351	340	334	374	301	1700

Data Source: Vital Statistics Administration, DHMH