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Child Death Report 2011



Center for Maternal and Child Health
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Acknowledgements

The Child Death Report 2011 was produced by The Center for Maternal and Child Health, Maryland Department of Health and Mental Hygiene. It presents information on the distribution and causes of child deaths in Maryland. The data presented in this report are the most recent available, representing deaths occurring in 2009.

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The report can be found at: http://fha.maryland.gov/mch/cfr_home.cfm

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Definitions

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 a 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 numbers of events, some of the information in this report is based on combined years of data (three or five years).

Main Findings

- Of the 794 children under 18 years who died in 2009, 68% were infants and 32% were children aged 1-17 years.
- Infant mortality decreased in 2009 by 10%, from 8.0 per 1,000 live births in 2008 to 7.2 per 1,000 live births in 2009. This change was not statistically significant.
- The leading causes of infant death (in rank order) were disorders related to short gestation and low birth weight, congenital malformations, Sudden Infant Death Syndrome (SIDS), and maternal complications.
- Child mortality (1-17 years) decreased in 2009 by 19%, from 24.3 per 100,000 population in 2008 to 19.8 per 100,000 in 2009. This change was not statistically significant.
- Among children aged 1-17 years, the leading causes of death for the period 2007-2009 were unintentional injuries, homicide, and malignant neoplasms. Of the unintentional injuries, motor vehicle collisions caused 34% of deaths to children.
- Children aged 15-17 years were impacted more by motor vehicle injury deaths and homicides than younger children.
- The rate of homicide deaths was greater in infancy (5.7 per 100,000) than for any childhood age group until age 15-17 years (11.6 per 100,000).
- Black non-Hispanic children were at nearly five times greater risk of homicide than White non-Hispanic children.
- In 2009, Black non-Hispanic infants died at 3.2 times the rate of White non-Hispanic infants (14.0 vs. 4.4 per 1,000 live births). Similarly, Black non-Hispanic children (1-17 years) died at 1.4 times the rate of White-non Hispanic children (25.3 vs. 18.5 per 100,000).
- A statistically significant decline in infant mortality occurred in Prince George's county (12.8%) between the two five-year periods in the past decade (2000-2004 and 2005-2009). The statewide decline of 3.1% over this same time period was not statistically significant.
- For children aged 1-17 years, the statewide child death rate decreased by 11.2% between 2000-2004 and 2005-2009, which was statistically significant. There was a statistically significant decrease in the child mortality rate in Prince George's County (17.9%) and Baltimore City (19.6%) between the two five-year periods.

Population Demographics

Table 1. Population Distribution of Children (<18 years) by Race/Ethnicity, Maryland, 2009

	Population (<18 years)	% of Total
All Races/Ethnicities	1,351,935	
White non-Hispanic	671,381	49.7
Black non-Hispanic	423,875	31.4
Hispanic	141,459	10.5
Asian non-Hispanic	68,350	5.1
Other non-Hispanic	43,375	3.2
Native American non-Hispanic	3,495	0.3

Data Source: MD Dept of Planning

Of Maryland's total population of 5.7 million in 2009, 1.4 million were children under 18 years, representing 24% of the population, which is comparable to national data. Minority children made up 50% of the child population.

With a poverty rate of 9.1% for the overall population and 11.6% 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 5.6% in Howard County to a high of 29.8% in Somerset County. Nationally, 20% of children live in poverty. In 2008, in Maryland, 92% of children were covered by health insurance compared with 90 nationally (U.S. Census Bureau 2009 estimates).

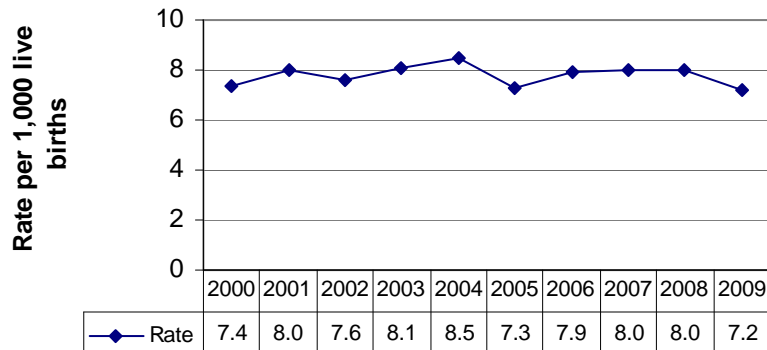
Table 2. Population Distribution of Children (<18 years) by Age, Maryland, 2009

	Number of Children	% of Total
Total (<18 years)	1,351,935	
< 1 year	76,511	5.7
1-4 years	304,095	22.5
5-9 years	370,292	27.4
10-14 years	364,967	27.0
15-17 years	236,070	17.5

Data Source: MD Dept of Planning

Overall Trends in Child Deaths

Figure 1. Infant Mortality Rates, Maryland, 2000-2009

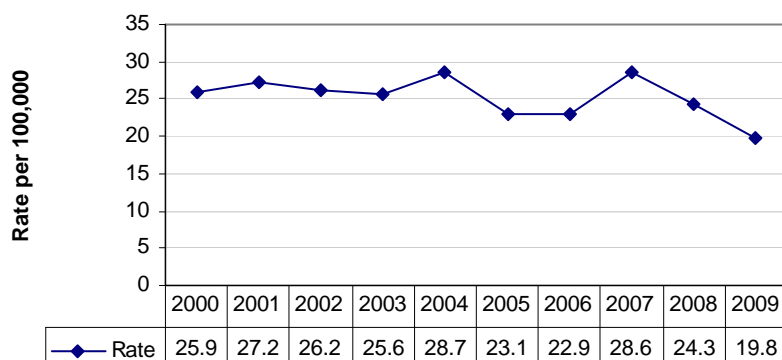


Data Source: MD DHMH, Vital Statistics Administration

In 2009, there were 794 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 infant mortality rate decreased from 7.4 per 1,000 live births in 2000 to 7.2 per 1,000 live births in 2009 (Table 3 and Figure 1). Between the years 2000 and 2009 Maryland's child death rate declined by 24% (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.

Figure 2. Child (1-17 years) Death Rates, Maryland, 2000-2009



Data Source: MD DHMH, Vital Statistics Administration

Table 3. Infant Deaths: Number and Infant Mortality Rate, Maryland, 2000-2009

	Number of Deaths	Rate per 1,000 live births
2000	550	7.4
2001	587	8.0
2002	556	7.6
2003	610	8.1
2004	632	8.5
2005	545	7.3
2006	615	7.9
2007	622	8.0
2008	617	8.0
2009	541	7.2

Data Source: MD DHMH, Vital Statistics Administration

Table 4. Child Deaths (1-17 years): Number and Rate, Maryland, 2000-2009

	Number of Deaths	Rate per 100,000 population
2000	333	25.9
2001	351	27.2
2002	340	26.2
2003	334	25.6
2004	374	28.7
2005	301	23.1
2006	296	22.9
2007	366	28.6
2008	307	24.3
2009	253	19.8

Data Source: MD DHMH, Vital Statistics Administration

Trends in Infant Mortality

Table 5. Number of Infant, Neonatal, and Postneonatal Deaths by Race/Ethnicity, Mortality Rates and Percent Change in Rates from 2004-2006 to 2007-2009, Maryland

	Number of Deaths		Mortality Rates*		% Change**	Rates Differ Significantly***
	2004-2006	2007-2009	2004-2006	2007-2009		
Infant Mortality						
All Races/Ethnicities	1792	1780	7.9	7.7	-2.2	no
White non-Hispanic	633	540	5.7	5.1	-9.7	no
Black non-Hispanic	988	1052	13.4	13.7	1.9	no
Asian non-Hispanic	53	67	3.9	4.2	10.1	no
Hispanic	110	103	4.2	3.5	-16.6	no
Neonatal Mortality						
All Races/Ethnicities	1292	1289	5.7	5.6	-1.8	no
White non-Hispanic	451	380	4.0	3.6	-10.8	no
Black non-Hispanic	721	762	9.8	9.9	1.1	no
Asian non-Hispanic	42	54	3.1	3.4	11.9	no
Hispanic	73	81	2.8	2.7	-1.2	no
Postneonatal Mortality						
All Races/Ethnicities	500	491	2.2	2.1	-3.3	no
White non-Hispanic	182	160	1.6	1.5	-7.0	no
Black non-Hispanic	267	290	3.6	3.8	3.9	no
Asian non-Hispanic	11	13	0.8	0.8	2.9	no
Hispanic	37	22	1.4	0.7	-47.0	yes
Data Source: MD DHMH, Vital Statistics Administration						
*Rate per 1,000 live births						
** Percent change is based on the exact rates and not the rounded rates presented here						
*** Z Test, p<0.05						

The average infant mortality rate decreased by 2.2% between the three-year periods of 2004-2006 and 2007-2009. The neonatal mortality rate and the postneonatal mortality rate decreased by 1.8% and 3.3%, respectively (Table 5). None of these decreases were statistically significant.

The postneonatal mortality rate among Hispanics decreased significantly by 47% between the two periods.

Trends in Child Deaths

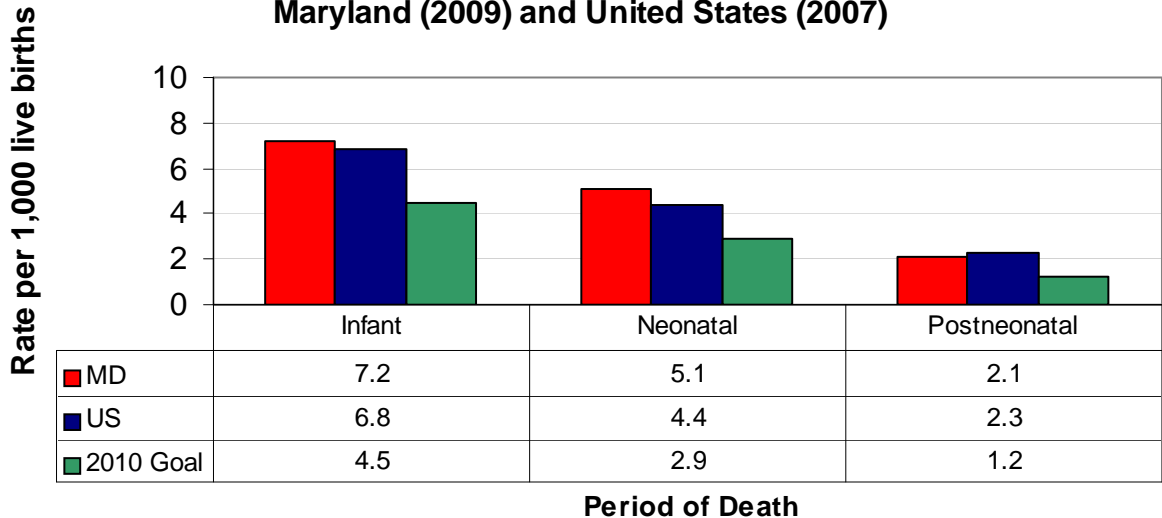
Table 6. Number of Child Deaths by Race/Ethnicity and Age, Mortality Rates and Percent Change in Rates from 2004-2006 to 2007-2009, Maryland

	Number of Deaths		Mortality Rates*		% Change**	Rates Differ Significantly***
	2004-2006	2007-2009	2004-2006	2007-2009		
1-17 years						
All Races/Ethnicities	971	926	24.9	24.2	-2.7	no
White non-Hispanic	441	428	21.2	21.9	3.5	no
Black non-Hispanic	450	392	36.2	32.6	-9.8	no
Asian non-Hispanic	25	32	15.2	17.9	17.3	no
Hispanic	50	69	17.4	19.2	10.4	no
Age Group						
1-4 years	237	252	26.7	28.1	5.3	no
5-9 years	146	137	13.4	12.6	-6.5	no
10-14 years	212	196	17.8	17.7	-0.7	no
15-17 years	376	341	51.4	47.1	-8.5	no
Data Sources: Deaths: MD DHMH, Vital Statistics Administration, Population: MD Dept of Planning						
*Rate per 100,000 population in specified group						
**Percent change is based on the exact rates and not the rounded rates presented here						
*** Z Test, $p < 0.05$						

Overall, for children ages 1 through 17 years, the mortality rate fell by 2.7%, which was not statistically significant. Among racial/ethnic groups, there was a decrease in mortality rates among Black non-Hispanic children. However, this was not statistically significant (Table 6).

Comparison to National Statistics

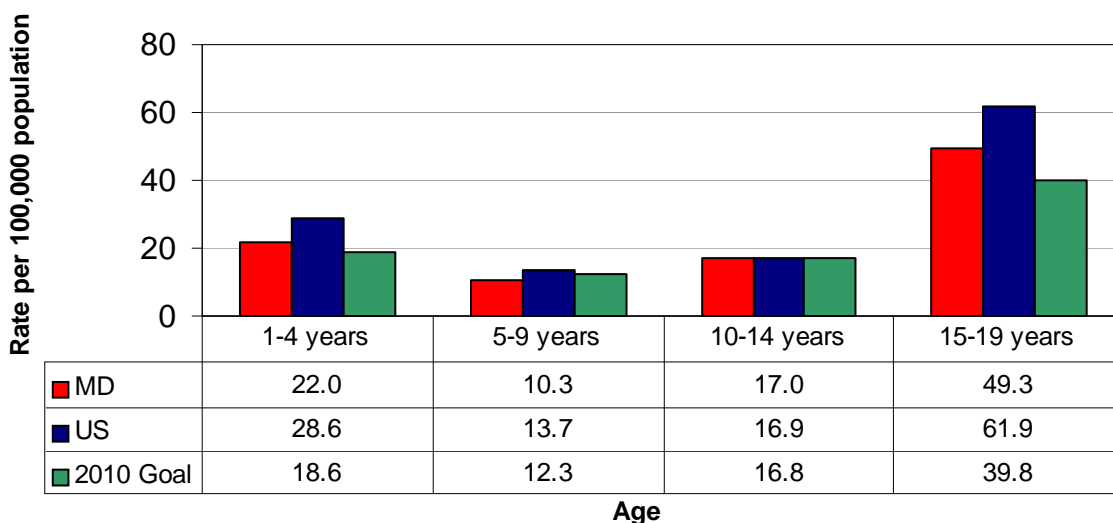
Figure 3. Infant Mortality Rates, Maryland (2009) and United States (2007)



Data Sources: MD DHMH, Vital Statistics Administration, National Center for Health Statistics, Healthy People 2010

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. In Maryland and nationally, infant mortality rates exceeded the 2010 goals for all age groups. Similarly, the Nation's child death rates exceeded the Healthy People 2010 goals for all age groups. In Maryland in 2009, the child death rates exceeded the Healthy People 2010 goals in all age groups except for children between 5-9 years of age.

Figure 4. Child (1-19 years) Death Rates, Maryland (2009) and United States (2007)



Data Sources: MD DHMH, Vital Statistics Administration, National Vital Statistics System, Healthy People 2010

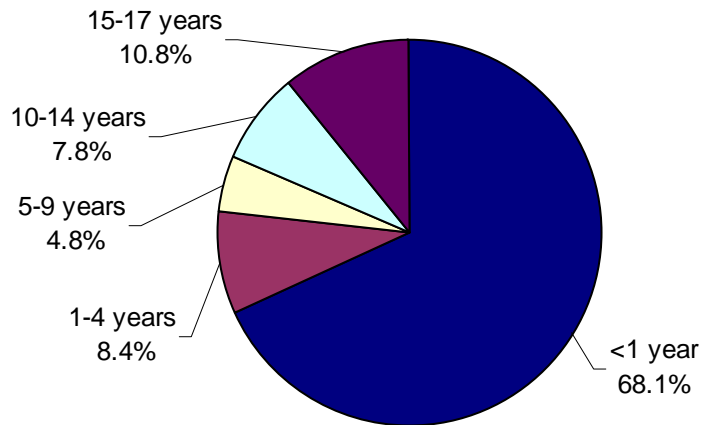
Child Death Demographics

Table 7. Child Deaths (<18 years), Maryland, 2009

Age Group	# of Deaths	% of Total
<1 year	541	68.1
1-4 years	67	8.4
5-9 years	38	4.8
10-14 years	62	7.8
15-17 years	86	10.8

Data Source: MD DHMH, Vital Statistics Administration

Figure 5. Percentage of Child Deaths By Age, Maryland, 2009



Data Source: MD DHMH, Vital Statistics Administration

Of the 794 child deaths, 68.1% occurred in the first year 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. Increased efforts to reduce unintentional and intentional injury deaths in older children are necessary.

Table 8. Infant Deaths by Sex, Maryland, 2009

Sex	# of Deaths	% of Total
Male	316	58.4
Female	225	41.6

Data Source: MD DHMH, Vital Statistics Administration

In 2009, 58.4% of the infant deaths occurred in boys (Table 8). Of the 253 deaths among 1 to 17 year old children, 61.7% occurred in boys (Table 9).

Table 9. Child (1-17 years) Deaths by Sex and Age Group, Maryland, 2009

Sex	# of Deaths by Age Group				Total 1-17	% of Total
	1-4	5-9	10-14	15-17		
Male	36	21	38	61	156	61.7
Female	31	17	24	25	97	38.3

Data Source: MD DHMH, Vital Statistics Administration

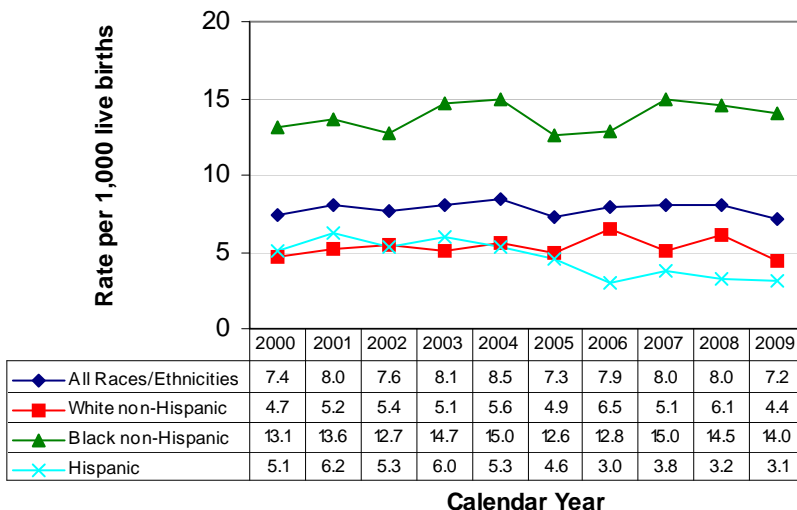
Child Death Demographics

Table 10. Infant Deaths by Race/Ethnicity, Maryland, 2009

Race/Ethnicity	# of Deaths	% of Total
All Races/Ethnicities	541	
White non-Hispanic	151	27.9
Black non-Hispanic	340	62.9
Asian non-Hispanic	19	3.5
Other non-Hispanic	2	0.4
Hispanic	29	5.4

Data Source: MD DHMH, Vital Statistics Administration

Figure 6. Infant Mortality Rates by Race/Ethnicity, Maryland, 2000-2009



Data Source: MDDHMH, Vital Statistics Administration

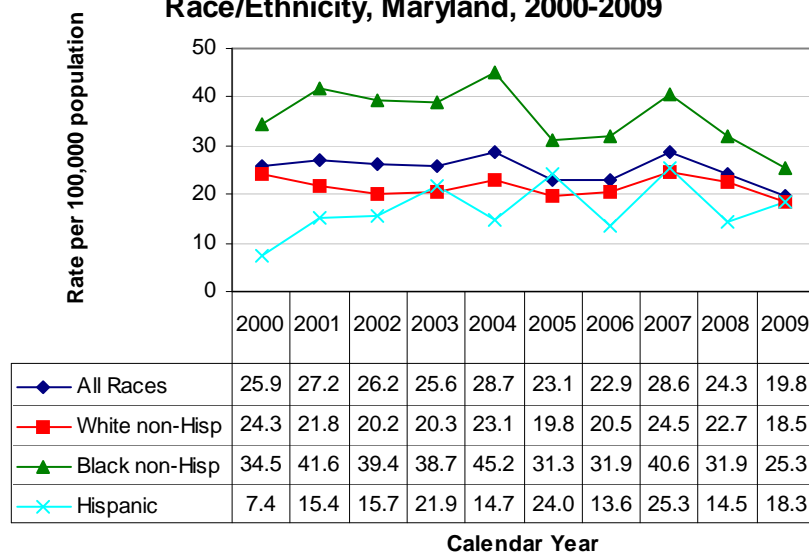
Black non-Hispanic children were at an increased risk of dying both in the first year of life and in later childhood. In 2009, Black infants died at 3.2 times the rate of White infants (Figure 6). The rate of Black deaths in children ages 1 through 17 years was 1.4 times higher than White non-Hispanic children (Figure 7). Evidence-based strategies are needed to effectively address the racial disparities in infant and child mortality in Maryland.

Table 11. Child (1-17 years) Deaths by Race/Ethnicity, Maryland, 2009

Race/Ethnicity	# of Deaths	% of Total
All Races/Ethnicities	253	
White non-Hispanic	118	46.6
Black non-Hispanic	101	39.9
Asian non-Hispanic	10	4.0
Other non-Hispanic	0	0.0
Hispanic	24	9.5

Data Source: MD DHMH, Vital Statistics Administration

Figure 7. Child (1-17 years) Death Rates by Race/Ethnicity, Maryland, 2000-2009



Data Sources: Vital Statistics Administration: death data, Maryland Department of Planning: population data

Causes of Infant Death

Table 12. Leading Causes of Infant Mortality, Maryland, 2009

Rank	Cause of Death	# of Deaths	% of Total
1	Short gestation, Low birth weight	135	25.0%
2	Congenital abnormalities	86	15.9%
3	SIDS	61	11.3%
4	Maternal complications	41	7.6%
5	Complications of placenta, cord, and membranes	28	5.2%
	All other causes	190	35.0%

Data Source: MD DHMH, Vital Statistics Administration

Table 13. Leading Causes of Neonatal Mortality, Maryland, 2009

Rank	Cause of Death	# of Deaths	% of Total
1	Short gestation, Low birth weight	133	34.5%
2	Congenital abnormalities	62	16.1%
3	Maternal complications	40	10.4%
4	Complications of placenta, cord, and membranes	28	7.3%
5	Necrotizing enterocolitis	15	3.9%
5	Bacterial sepsis of newborn	15	3.9%
	All other causes	93	24.1%

Data Source: MD DHMH, Vital Statistics Administration

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 (Table 12). Nationally, the leading cause of infant death is congenital abnormalities. 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 14).

Table 14. Leading Causes of Postneonatal Mortality, Maryland, 2009

Rank	Cause of Death	# of Deaths	% of Total
1	SIDS	55	35.5%
2	Congenital abnormalities	24	15.5%
3	Accidents	9	5.8%
4	Necrotizing enterocolitis	2	1.3%
4	Short gestation, Low birth weight	2	1.3%
5	Bacterial sepsis of newborn	1	0.6%
5	Newborn affected by maternal complications of pregnancy	1	0.6%
	All other causes	61	39.4%

Data Source: MD DHMH, Vital Statistics Administration

Sudden Infant Death Syndrome (SIDS)

Table 15. Infant Deaths Due to SIDS by Race/Ethnicity, Maryland, 2007-2009

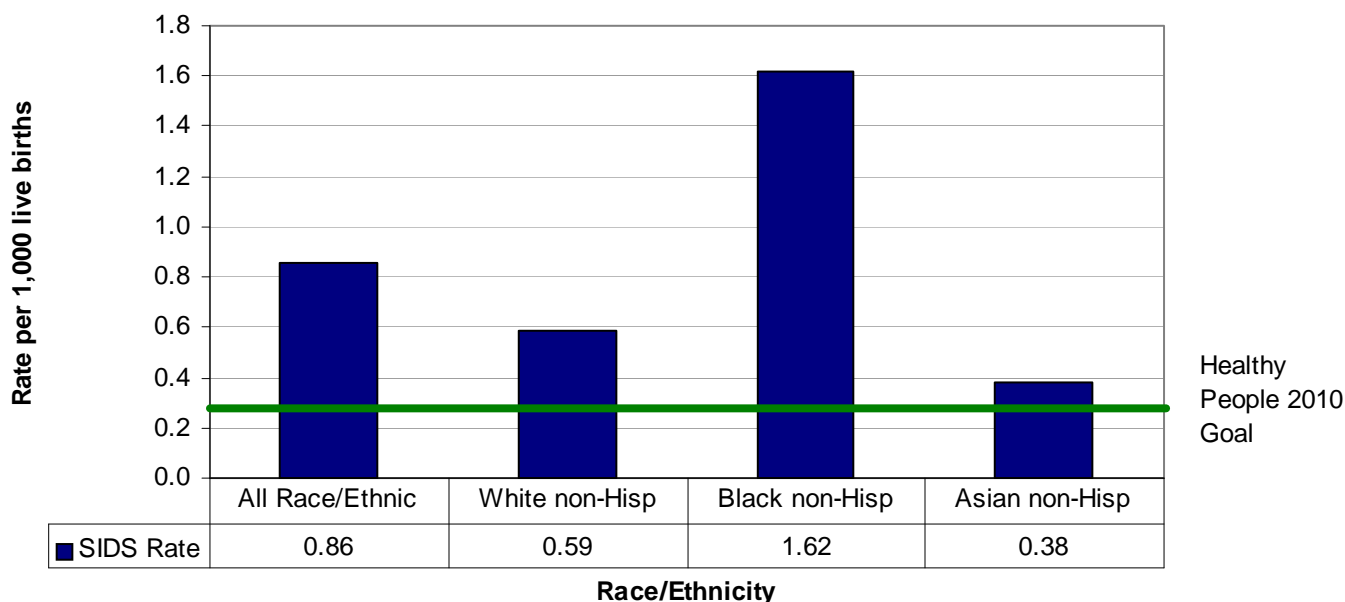
Race/Ethnicity	# of Deaths
All Races/Ethnicities	197
White non-Hispanic	62
Black non-Hispanic	124
Asian non-Hispanic	6
Other non-Hispanic	2
Hispanic	3

Data Source: MD DHMH, Vital Statistics Administration

SIDS is the sudden death of an infant under one year of age, which cannot be explained after a thorough investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history. SIDS is the third leading cause of overall infant mortality and 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. In Maryland, the infant mortality rate due to SIDS increased by 4.9% between the periods 2004-2006 (0.82 deaths per 1,000 live births) and 2007-2009 (0.86 deaths per 1,000 live births).

In 2007-2009, there were 197 SIDS deaths. Of the 197 SIDS deaths between 2007 and 2009, 127 (64%) were boys and 70 (36%) were girls. Black non-Hispanic infants died from SIDS at 2.7 times the rate for White non-Hispanic infants. Maryland's average SIDS death rate (2007-2009) was higher than the 2007 national rate, 0.57 per 1,000 live births. The Healthy People 2010 goal calls for reducing death from SIDS to no more than 0.25 per 1,000 live births.

Figure 8. Infant Mortality Rate Due to SIDS, Maryland, 2007-2009



Data Source: MD DHMH, Vital Statistics Administration, U.S. Department of Health and Human Services, Healthy People 2010

Sudden Unexpected Infant Deaths (SUID)

SUIDs are an expanded category of sudden infant deaths which include deaths due to SIDS, as well as deaths due to accidental suffocation or strangulation, and deaths of unknown cause. These causes of death are grouped together to help identify sleep-related deaths, including those where co-sleeping may have occurred. As a result of more thorough death scene investigations, some deaths which were previously attributed to SIDS are now being attributed to accidental suffocation.

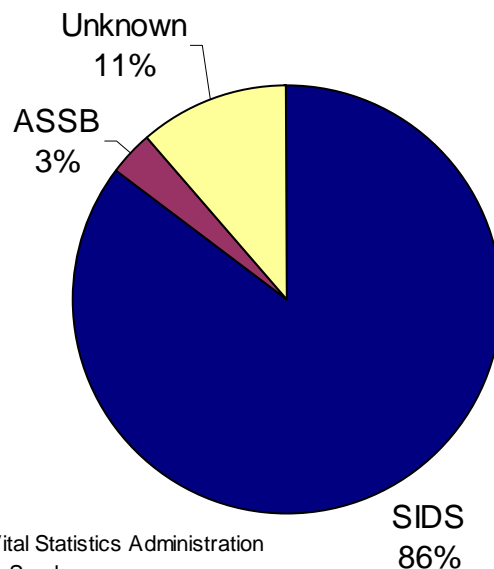
Table 16. SUIDs by Race/Ethnicity, Maryland, 2007-2009

Race/Ethnicity	# of Deaths	Rate per 1,000 live births
All Races/Ethnicities	231	1.00
White non-Hispanic	78	0.74
Black non-Hispanic	139	1.81
Asian non-Hispanic	8	0.51
Other non-Hispanic	2	
Hispanic	4	

Data Source: MD DHMH, Vital Statistics Administration

Several jurisdictions in Maryland have implemented interventions to reduce sleep related infant deaths. Baltimore City's "ABC's of Safe Sleep" Initiative is aimed at teaching caregivers to always place infants down to sleep, Alone, on their Back, in a Crib. The City also distributes cribs to those in need.

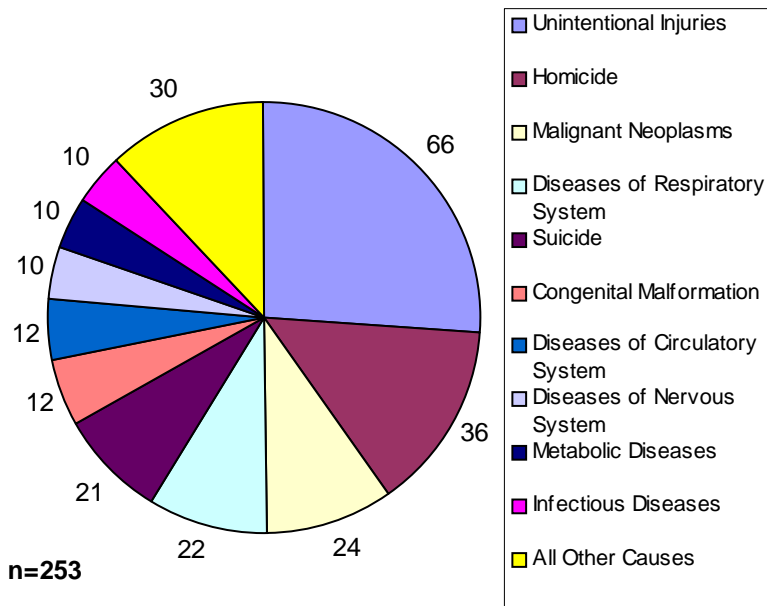
Figure 9. Percent of Total SUIDs by Cause of Death, Maryland, 2007-2009



Data Source: MD DHMH, Vital Statistics Administration
 SIDS: Sudden Infant Death Syndrome
 ASSB: Accidental Suffocation or Strangulation in Bed

Causes of Death among Older Children

Figure 10. Number of Child (1-17 years) Deaths by Cause of Death, Maryland, 2009



Data Source: MD DHMH, Vital Statistics Administration

Table 17. Leading Causes of Death among Children aged 1-17 years, Maryland, 2007-2009

Rank	Cause of Death	# of Deaths	% of Total
1	Unintentional Injury	262	28.3%
2	Homicide	141	15.2%
3	Malignant Neoplasms	74	8.0%
4	Diseases of Respiratory System	62	6.7%
5	Congenital Malformations	57	6.2%
6	Diseases of Circulatory System	52	5.6%
7	Diseases of Nervous System	49	5.3%
8	Suicide	49	5.3%
9	Infectious Diseases	37	4.0%
	All other causes	143	15.4%
	Total	926	

Data Source: MD DHMH, Vital Statistics Administration

Figure 10 and Table 17 show the causes of death by major category among children 1-17 years in 2009 and for the period 2007-2009, respectively. Over this period, injuries represented over 48% of childhood deaths (ages 1-17 years). Unintentional injuries were the leading cause of death in all age groups, as shown in Table 17.

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 2007-2009. 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.

Causes of Death among Older Children

Table 18. Leading Causes of Death among Children by Age Group, Maryland, 2007-2009

Rank	Cause of Death	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	59	42	52	109
	% of Deaths in Age Group	23.4%	30.7%	26.5%	32.0%
2	Cause of Death	Homicide	Diseases of Respiratory system	Malignant Neoplasms	Homicide
	# of Deaths	31	13	24	84
	% of Deaths in Age Group	12.3%	9.5%	12.2%	24.6%
3	Cause of Death	Congenital Malformations	Malignant Neoplasms	Homicide	Suicide
	# of Deaths	31	12	19	38
	% of Deaths in Age Group	12.3%	8.8%	9.7%	11.1%
4	Cause of Death	Diseases of Respiratory System	Diseases of the Nervous System	Diseases of the Respiratory System	Malignant Neoplasms
	# of Deaths	21	11	16	22
	% of Deaths in Age Group	8.3%	8.0%	8.2%	6.5%
5	Cause of Death	Infectious Diseases	Diseases of Circulatory	Diseases of the Nervous System	Diseases of Circulatory System
	# of Deaths	18	10	15	20
	% of Deaths in Age Group	7.1%	7.3%	7.7%	5.9%

Data Source: MD DHMH, Vital Statistics Administration

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 18). Many of these injury-related deaths are preventable.

Injury Related Deaths

Figure 11. Percent of Child (1-17 yrs) Injury Deaths by Type of Injury, Maryland, 2007-2009

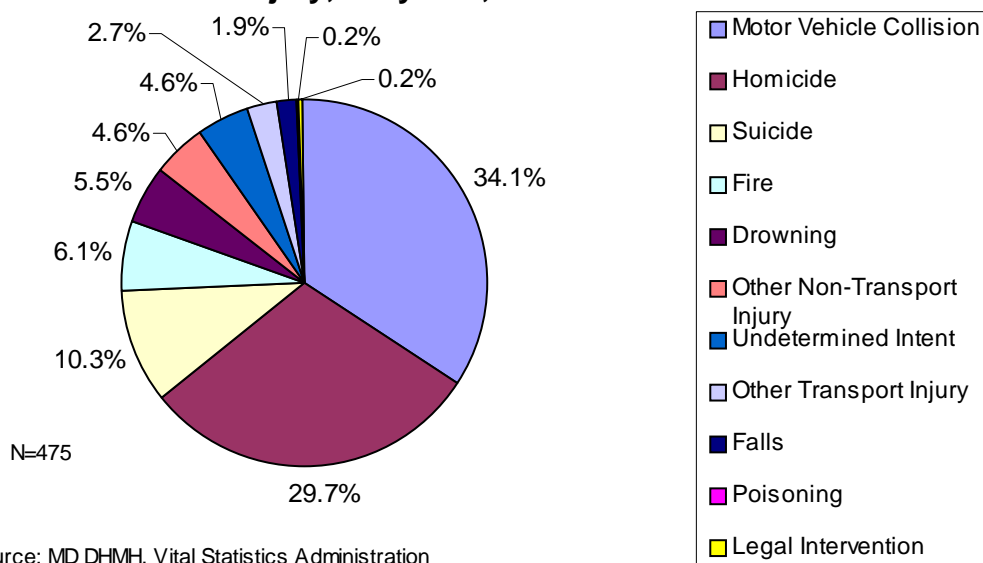


Table 19. Child (1-17 years) Injury Related Deaths by Type of Injury and Race/Ethnicity, Maryland, 2007-2009

Type of Injury	White non-Hispanic	Black non-Hispanic	Hispanic	Other	Total Deaths	% of Total Injury Deaths
Motor Vehicle Collision	92	51	11	8	162	34.1%
Homicide by Firearm	16	67	3	1	87	18.3%
Homicide by other Means	15	28	11	0	54	11.4%
Suicide by other Means	19	11	2	2	34	7.2%
Fire	7	20	2	0	29	6.1%
Drowning	16	8	1	1	26	5.5%
Other Non-Transport Injury	11	9	2	0	22	4.6%
Undetermined Intent	15	5	2	0	22	4.6%
Suicide by Firearm	14	1	0	0	15	3.2%
Other Transport Injury	9	4	0	0	13	2.7%
Falls	1	4	2	2	9	1.9%
Poisoning	1	0	0	0	1	0.2%
Legal Intervention	0	0	0	1	1	0.2%
Total	216	208	36	15	475	

Data Source: MD DHMH, Vital Statistics Administration

Injury Related Deaths

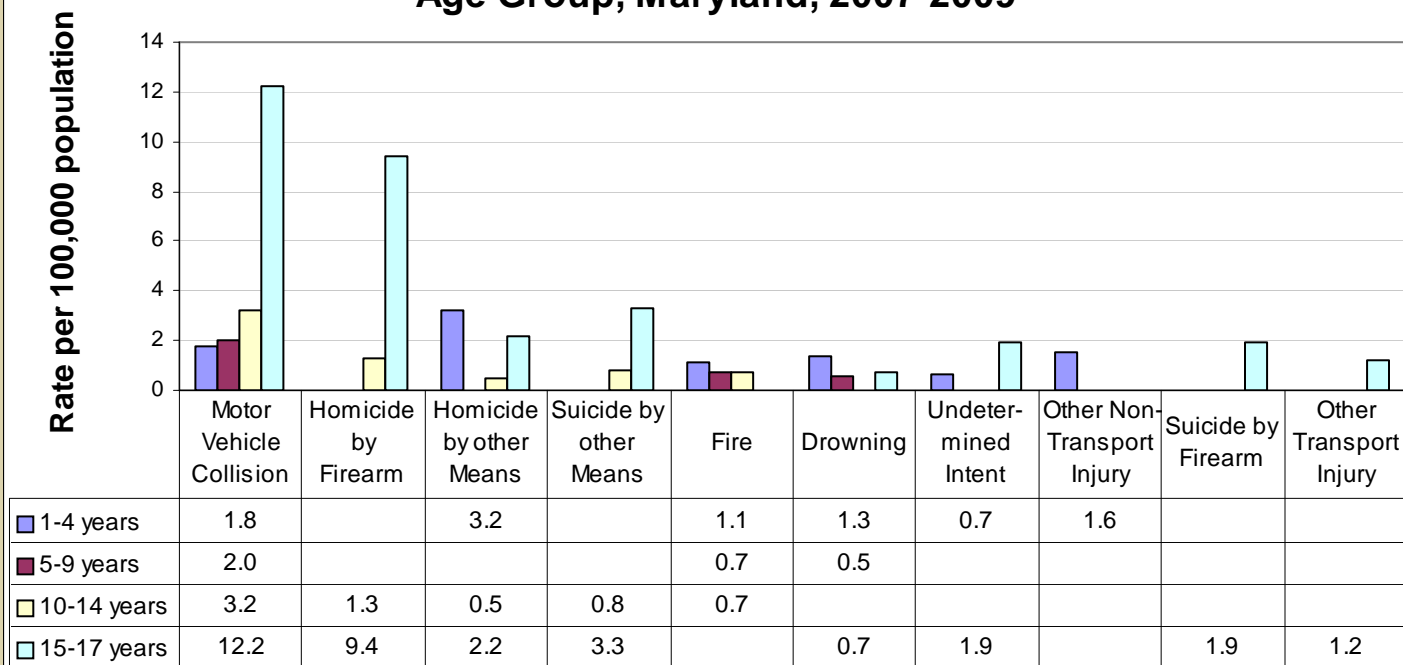
Between 2007 and 2009, unintentional injuries constituted the leading cause of injury deaths (55.4%) among children between the ages of 1 and 17 years. Homicide and suicide (intentional injuries) represented 40.0% of all fatal injuries. Undetermined intent refers to cases where information is insufficient to enable a medical or legal authority to make a distinction between an accident, self-harm, and assault. These injuries constituted 4.6% of the injuries over this time period.

The number of deaths among male children is substantially higher than among females for most injury types, and is over twice as high overall (Table 20).

Type of Injury	Male	Female	Total Deaths	% of Total Injury Deaths
Motor Vehicle Collision	103	59	162	34.1%
Homicide by Firearm	74	13	87	18.3%
Homicide by other Means	35	19	54	11.4%
Suicide by other Means	22	12	34	7.2%
Fire	19	10	29	6.1%
Drowning	21	5	26	5.5%
Other Non-Transport Injury	14	8	22	4.6%
Undetermined Intent	17	5	22	4.6%
Suicide by Firearm	12	3	15	3.2%
Other Transport Injury	9	4	13	2.7%
Falls	6	3	9	1.9%
Poisoning	0	1	1	0.2%
Legal Intervention	1	0	1	0.2%
Total	333	142	475	
Data Source: MD DHMH, Vital Statistics Administration				

Injury Related Deaths

Figure 12. Child (1-17) Injury Death Rates by Injury Type and Age Group, Maryland, 2007-2009



Data Source: MD DHMH, Vital Statistics Administration

* Note: Rates based on <5 events in the numerator are not displayed.

Figure 12 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 most types of injuries. Death rates for very young children (1-4 years) for drownings, fire, non-transport injuries, and homicides by means other than firearms are higher than rates for adolescents (15-17). Of the unintentional injuries, transportation injuries were the leading cause of death to children.

The rate of deaths due to injury among children (1-17 years) declined to 12.4 per 100,000 for the period 2007-2009 compared to 13.4 per 100,000 for the previous three year period, however this change was not statistically significant.

Transportation Related Deaths

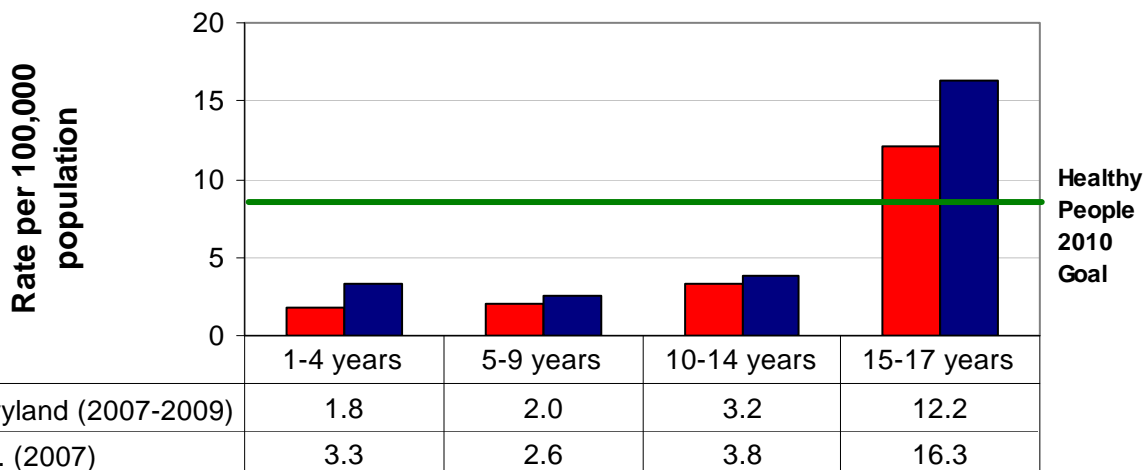
Table 21. Child (1-17 years) Deaths Due to Transportation Collisions, Maryland, 2007-2009

Type of Injury	# of Deaths	% of Total Transportation Injury Deaths
Passenger of Vehicle (car, truck, van)	46	26.3%
Unspecified Transport Accident	40	22.9%
Pedestrian (collision with car, truck, van)	35	20.0%
Driver of Vehicle (car, truck, van)	24	13.7%
Pedal Cyclist	9	5.1%
All Terrain Vehicle Rider	7	4.0%
Motor Cyclist	6	3.4%
Pedestrian (collision with train)	5	2.9%
Aircraft Accident	2	1.1%
Watercraft Accident	1	0.6%
Total	175	

Data Source: MD DHMH, Vital Statistics Administration

Between 2007 and 2009, 175 children ages 1-17 years were killed in vehicle crashes (Table 21). Of the 162 motor vehicle related deaths, 103 (64%) occurred among boys and 59 (36%) occurred among girls (Table 20). Ninety-two White non-Hispanic youths died in motor vehicle crashes, a rate of 4.6 per 100,000 population. Among Black children, there were 51 motor vehicle-related deaths, representing a rate of 4.1 per 100,000 population (Table 19). Children ages 15-17 years had the highest death rate due to motor vehicle collisions, dying at a rate of 12.2 per 100,000 population (Figure 13).

Figure 13. Child (1-17 years) Motor Vehicle-Related Death Rates, Maryland, 2007-2009, and U.S., 2007



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

Homicides

Table 22. Child (0-17 years) Deaths Due to Homicide by Race/Ethnicity, Maryland, 2007-2009

Race/Ethnicity	By Firearm		By Other Means		Total	
	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000
White non-Hispanic	16	0.8	18	0.9	34	1.7
Black non-Hispanic	68	5.3	36	2.8	104	8.1
Hispanic	3		12	3.1	15	3.9
All Races/Ethnicities	88	2.2	66	1.6	154	3.8

Data Source: MD DHMH, Vital Statistics Administration

Rates based on <5 events in the numerator are not displayed

There were 154 homicides in the period 2007-2009 among infants and children aged 0 to 17 years. The homicide rate among Black non-Hispanic children was nearly five times higher than the rate among White non-Hispanic children (Table 22; Figure 14). The rate among Hispanic children was over twice as high as the rate among White non-Hispanic children.

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 9.4 per 100,000 in this age group (Table 24). The homicide rate for infants (under one year of age) was higher than for any age group up until age 15-17 years; 13 infants were victims of homicide, representing a rate of 5.7 per 100,000. Of the 88 firearm-related deaths, 75 (85.2%) were among males and 13 (14.8%) among females (Table 23).

Child deaths due to homicide are not distributed evenly throughout the state. Between the years 2007 and 2009, Baltimore City (41.6%), Prince George's County (20.1%) and Baltimore County (9.7%) had the highest percentage of homicides among children aged 0-17 years.

Table 23. Child (0-17 years) Deaths Due to Homicide, by Sex, Maryland, 2007-2009

Sex	By Firearm		By Other Means		Total	
	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000
Male	75	3.6	41	2.0	116	5.6
Female	13	0.7	25	1.3	38	1.9

Data Source: MD DHMH, Vital Statistics Administration

Homicides

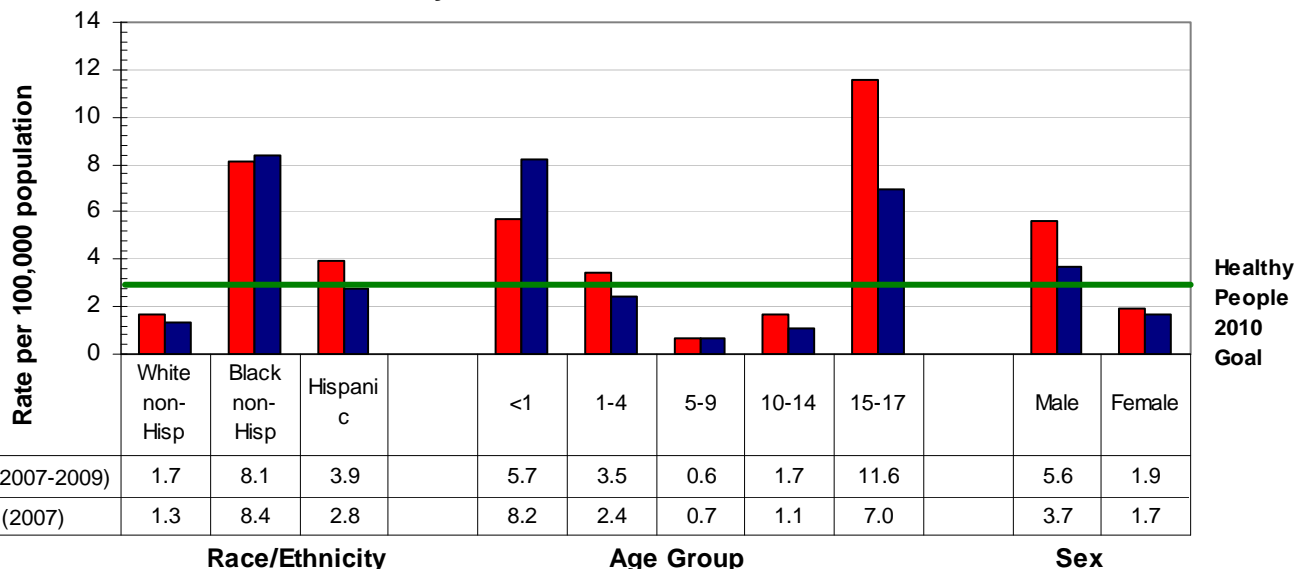
Table 24. Child (0-17 years) Deaths Due to Homicide by Age Group, Maryland, 2007-2009

Age Group	By Firearm		By Other Means		Total	
	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000
<1 year	1		12	5.3	13	5.7
1-4 years	2		29	3.2	31	3.5
5-9 years	3		4		7	0.6
10-14 years	14	1.3	5	0.5	19	1.7
15-17 years	68	9.4	16	2.2	84	11.6

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

Maryland's homicide rate in 2007-2009 for children over 15 years was substantially higher than the national rate (Figure 14). 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 2009, Maryland's total mortality rate from homicide (all ages) was 7.8 per 100,000 population.

Figure 14. Child (0-17) Death Rates Due to Homicide, Maryland, 2007-2009, U.S., 2007



Data Sources: MD DHMH, Vital Statistics Administration, CDC National Center for Injury Prevention and Control, U.S. Department of Health and Human Services, Healthy People 2010

Suicides

Table 25. Child (10-17 years) Deaths Due to Suicide by Sex, Maryland, 2007-2009

Sex	By Firearm		By Other Means		Total	
	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000
Male	12	1.3	21	2.2	33	3.5
Female	3		12	1.3	15	1.7
Total	15	0.8	33	1.8	48	2.6

Data Source: MD DHMH, Vital Statistics Administration
Rates with <5 events in the numerator are not displayed

Suicide among young people is a significant public health problem in the U.S., and it is the third leading cause of death among youth, ages 15-17, in Maryland. The National Institute of Mental Health reports that risk factors that are associated with suicide include mental illness, substance abuse, family violence, and incarceration.

Of the 48 children aged 10-17 years who committed suicide between 2007 and 2009, 33 were males and 15 were females, representing rates of 3.5 and 1.7 per 100,000 population respectively (Table 25). White non-Hispanic children were nearly twice as likely to commit suicide than Black non-Hispanic children (Table 26). Older children (15-17 years) were over five times as likely to commit suicide as children ages 10-14 years (Table 27).

Table 26. Child (10-17 years) Deaths Due to Suicide by Race/Ethnicity, Maryland, 2007-2009

Race/Ethnicity	By Firearm		By Other Means		Total	
	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000
White non-Hispanic	14	1.4	19	2.0	33	3.4
Black non-Hispanic	1		10	1.7	11	1.8
Asian non-Hispanic	0		2		2	
Hispanic	0		2		2	

Data Source: MD DHMH, Vital Statistics Administration
Rates with <5 events in the numerator are not displayed

Suicides

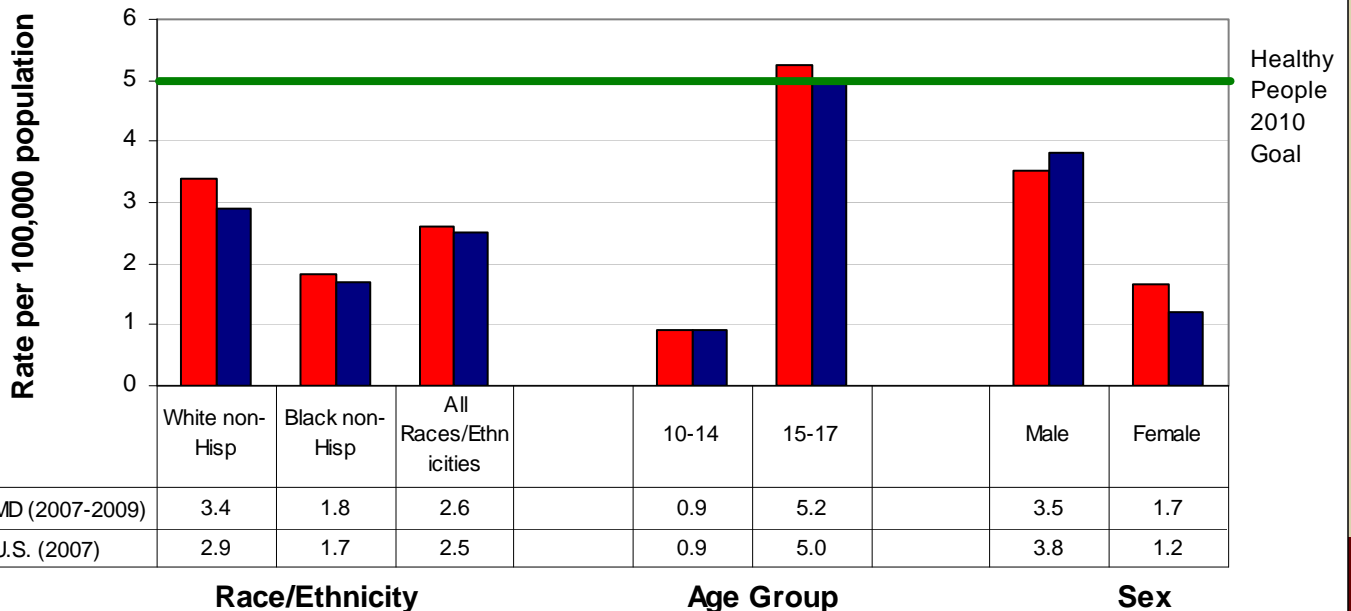
Table 27. Child (10-17 years) Deaths Due to Suicide by Age Group, Maryland, 2007-2009						
Age Group	By Firearm		By Other Means		Total	
	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000	# of Deaths	Rate per 100,000
10-14 years	1		9	0.8	10	0.9
15-17 years	14	1.9	24	3.3	38	5.2

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

For the period 2007-2009, Maryland's suicide rates among children were higher overall than the national rates for 2007. However, the rate of suicide among males was lower than the corresponding rate for U.S. males (Figure 15).

The Healthy People 2010 goal calls for reducing the adolescent suicide rate to no more than 5.0 per 100,000 population. Maryland's rates are below this goal among all groups except adolescents aged 15-17 years.

Figure 15. Child (10-17) Death Rates Due to Suicide, Maryland, 2007-2009, U.S., 2007



Data Source: MD DHMH, Vital Statistics Administration, CDC National Center for Injury Prevention and Control, U.S. Department of Health and Human Services, Healthy People 2010

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 are 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 did not change significantly between 2000-2004 and 2005-2009 (Table 28). There was a significant decline in infant mortality of 12.8% in Prince George's County between these two time frames.

For children ages 1-17 years, Statewide there was a significant change in the average child mortality rate between 2000-2004 and 2005-2009, declining by 11.2% from 26.7 per 100,000 to 23.7 per 100,000 over these respective time periods (Table 29). Over this time period, there were statistically significant decreases in the average child death rates in Baltimore City (19.6%) and Prince George's County (17.9%)

The numbers of infant deaths by jurisdiction by year (2005 through 2009) are shown in Appendix A. The numbers of childhood deaths by jurisdiction over these same years are shown in Appendix B.

Figure 16 shows a map of the five-year average infant mortality rates by jurisdiction (2005-2009). Figure 17 shows a map of the five-year average child death rates by jurisdiction (2005-2009).

Table 28. Infant Mortality by Jurisdiction, Maryland, 2000-2004, 2005-2009

Region	Jurisdiction	# Deaths- 2000- 2004	# Deaths- 2005- 2009	Mortality Rate* - 2000- 2004	Mortality Rate* - 2005- 2009	Rate - % Change **	Rates Differ Signifi- cantly? ***
Northwest Area	Allegany	32	22	9.1	6.3	-30.5	No
	Frederick	68	82	4.6	5.4	18.8	No
	Garrett	17	4	10.5			
	Washington	44	57	5.3	6.2	16.8	No
Baltimore Metro Area	Anne Arundel	235	235	6.9	6.7	-3.1	No
	Baltimore	347	378	7.5	7.6	0.9	No
	Carroll	39	36	4.1	4.0	-1.2	No
	Harford	70	79	4.8	5.3	11.5	No
	Howard	117	91	6.6	5.4	-18.6	No
	Baltimore City	551	585	12.0	12.1	1.3	No
National Capital Area	Montgomery	380	412	5.7	6.0	5.4	No
	Prince George's	692	613	11.2	9.8	-12.8	Yes
Southern Area	Calvert	24	30	4.8	6.2	29.6	No
	Charles	70	82	7.8	8.6	10.1	No
	St. Mary's	53	52	8.0	7.1	-10.8	No
Eastern Shore	Caroline	16	17	7.7	7.3	-5.3	No
	Cecil	40	28	6.8	4.4	-35.0	No
	Dorchester	17	33	10.1	16.5	63.1	No
	Kent	9	7	10.2	7.3	-28.0	No
	Queen Anne's	11	14	4.4	5.3	21.7	No
	Somerset	20	12	15.4	9.1	-40.8	No
	Talbot	10	7	5.6	3.8	-31.5	No
	Wicomico	57	52	9.8	7.9	-19.1	No
Worcester	16	12	6.7	5.0	-25.3	No	
Maryland - Total		2935	2940	7.9	7.7	-3.1	No

Data Source: MD DHMH, Vital Statistics Administration

*Rate per 1,000 live births, Rates with <5 events in the numerator are not displayed

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

*** Z Test, p<0.05

Table 29. Child (1-17) Deaths by Jurisdiction, Maryland, 2000-2004, 2005-2009

Region	Jurisdiction	# Deaths- 2000- 2004	# Deaths- 2005- 2009	Death Rate* - 2000- 2004	Death Rate* - 2005- 2009	Rate - % Change **	Rates Differ Signifi- cantly? ***
Northwest Area	Allegany	21	16	29.6	24.8	-16.2	No
	Frederick	48	61	17.7	22.3	25.6	No
	Garrett	12	12	35.3	38.4	8.9	No
	Washington	44	38	29.4	24.6	-16.3	No
Baltimore Metro Area	Anne Arundel	125	104	20.8	17.8	-14.3	No
	Baltimore	171	197	19.9	23.6	18.8	No
	Carroll	42	46	20.7	23.3	12.5	No
	Harford	73	52	24.7	18.1	-26.6	No
	Howard	75	62	21.8	18.4	-15.7	No
	Baltimore City	373	286	49.4	39.7	-19.6	Yes
National Capital Area	Montgomery	173	174	15.8	16.0	1.3	No
	Prince George's	329	254	31.1	25.5	-17.9	Yes
Southern Area	Calvert	31	29	28.3	27.2	-4.1	No
	Charles	41	44	23.5	24.8	5.5	No
	St. Mary's	34	25	28.8	20.6	-28.5	No
Eastern Shore	Caroline	10	13	26.5	34.3	29.3	No
	Cecil	41	38	35.3	32.6	-7.6	No
	Dorchester	9	11	27.1	34.1	25.6	No
	Kent	3	2				
	Queen Anne's	16	12	30.2	23.1	-23.7	No
	Somerset	5	7	22.6	31.8	40.8	No
	Talbot	5	8	14.4	23.7	65.0	No
	Wicomico	34	20	33.9	19.7	-41.9	No
	Worcester	17	12	36.2	27.4	-24.4	No
Maryland - Total		1732	1523	26.7	23.7	-11.2	Yes

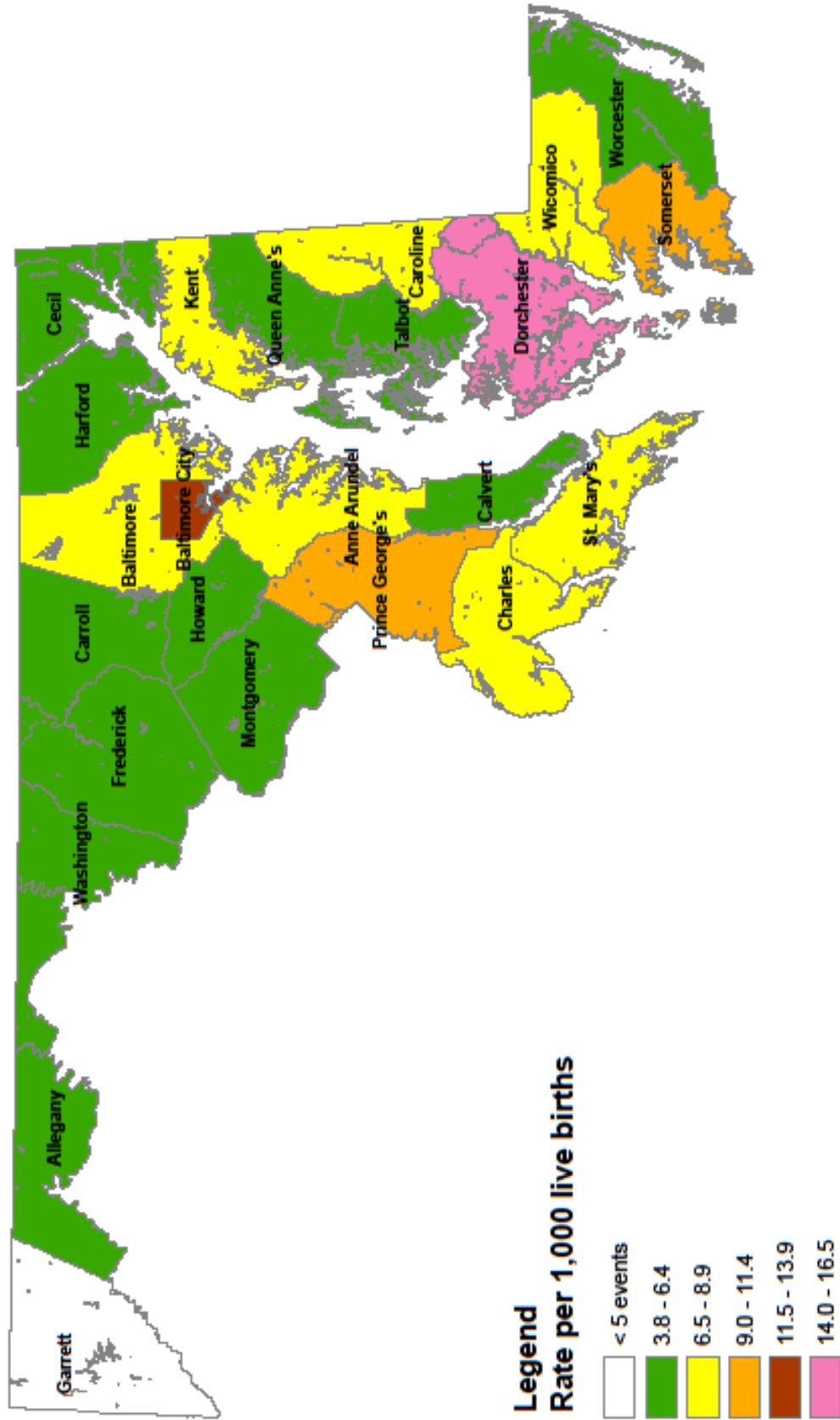
Data Source: MD DHMH, Vital Statistics Administration

*Rate per 100,000 population, Rates with <5 events in the numerator are not displayed

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

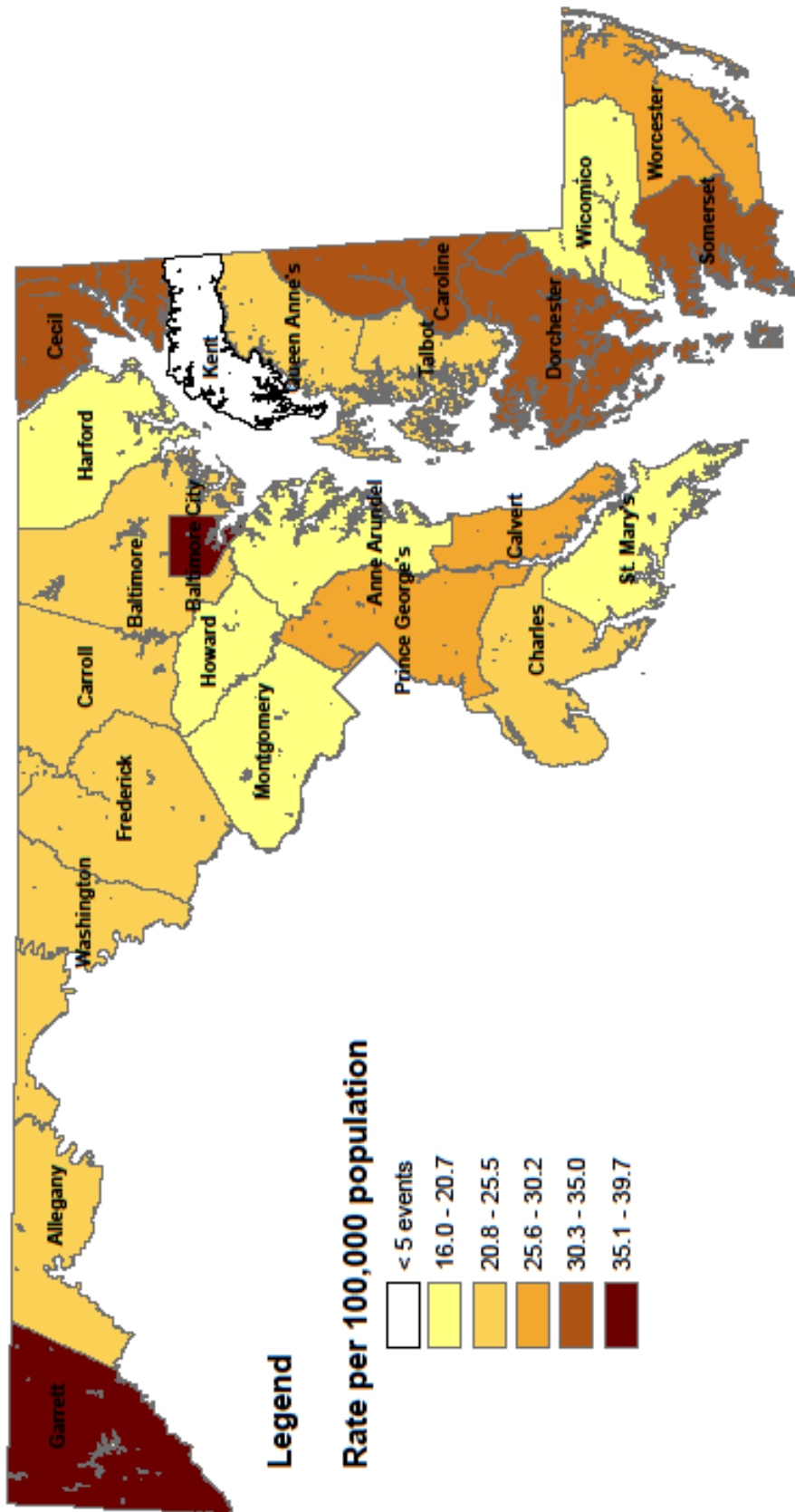
*** Z Test, p<0.05

Infant Mortality Rates by Jurisdiction, Maryland, 2005-2009



Data Source: MD DHMH, Vital Statistics Administration

Child (1-17 years) Death Rates, Maryland, 2005-2009



Data Source: MD DHMH, Vital Statistics Administration

Conclusion

Child (1-17 years) death rates in Maryland have declined significantly over the last decade, however, 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 serve to inform the prevention efforts and policy recommendations made by the State Child Fatality Review Team and supplement the review process of local Child Fatality Review (CFR) Teams, enhancing their ability to understand the circumstances surrounding the deaths 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. Number of Infant (<1 year) Deaths by Jurisdiction and Year, Maryland, 2005-2009

		Year					Total - 2005-2009
		2005	2006	2007	2008	2009	
Region	<i>Jurisdiction</i>						
Northwest Area	Allegany	4	4	7	6	1	22
	Frederick	20	14	12	25	11	82
	Garrett	1	0	0	3	0	4
	Washington	8	15	11	10	13	57
Baltimore Metro Area	Anne Arundel	37	55	46	62	35	235
	Baltimore	86	70	76	73	73	378
	Carroll	6	8	9	6	7	36
	Harford	11	18	25	16	9	79
	Howard	21	18	16	13	23	91
	Baltimore City	104	121	112	120	128	585
National Capital Area	Montgomery	82	98	82	76	74	412
	Prince George's	108	112	150	137	106	613
Southern Area	Calvert	7	8	4	7	4	30
	Charles	17	23	15	15	12	82
	St. Mary's	9	4	16	15	8	52
Eastern Shore	Caroline	2	4	2	6	3	17
	Cecil	3	13	4	4	4	28
	Dorchester	1	8	7	8	9	33
	Kent	2	1	1	1	2	7
	Queen Anne's	5	0	4	2	3	14
	Somerset	0	1	6	2	3	12
	Talbot	0	5	0	1	1	7
	Wicomico	7	13	12	8	12	52
	Worcester	4	2	5	1	0	12
Maryland - Total		545	615	622	617	514	2940

Data Source: MD DHMH, Vital Statistics Administration

Appendix B. Number of Child (1-17 years) Deaths by Jurisdiction and Year, Maryland, 2005-2009

		Year					Total - 2005-2009
		2005	2006	2007	2008	2009	
Region	<i>Jurisdiction</i>						
Northwest Area	Allegheny	2	3	2	4	5	16
	Frederick	10	18	11	9	13	61
	Garrett	1	3	4	2	2	12
	Washington	9	9	10	7	3	38
Baltimore Metro Area	Anne Arundel	23	25	22	21	13	104
	Baltimore	43	33	40	52	29	197
	Carroll	10	8	8	13	7	46
	Harford	11	12	17	4	8	52
	Howard	11	14	10	15	12	62
	Baltimore City	48	62	78	56	42	286
National Capital Area	Montgomery	37	29	41	38	29	174
	Prince George's	62	42	58	46	46	254
Southern Area	Calvert	6	7	9	2	5	29
	Charles	4	12	15	7	6	44
	St. Mary's	3	3	7	5	7	25
Eastern Shore	Caroline	4	0	1	5	3	13
	Cecil	6	8	9	5	10	38
	Dorchester	2	1	5	3	0	11
	Kent	0	0	0	2	0	2
	Queen Anne's	1	1	6	3	1	12
	Somerset	1	1	1	1	3	7
	Talbot	2	0	2	1	3	8
	Wicomico	4	2	7	3	4	20
	Worcester	1	3	3	3	2	12
Maryland - Total		301	296	366	307	253	1523

Data Source: MD DHMH, Vital Statistics Administration



Maryland Department of Health & Mental Hygiene
Martin O'Malley, Governor; Anthony G. Brown, Lt. Governor;
Joshua M. Sharfstein, Secretary

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Center for Maternal and Child Health
Family Health Administration