

2007 INFANT MORTALITY RATE
FOR THE
DISTRICT OF COLUMBIA

Prepared by

**The State Center for Health Statistics
Department of Health**

**Government of the District of Columbia
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**May 13, 2009
Final**



ACKNOWLEDGMENTS

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May 13, 2009
Final

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2007 INFANT MORTALITY RATE

Executive Summary

There has been an overall declining trend in the infant mortality rate over the past ten years from 1998 to 2007. During this ten-year period, the number of infant deaths increased from 96 in 1998 to 116 in 2007 resulting in an overall increase in the District's infant mortality rate of 4.8 percent between 1998 and 2007. There were 20 more infant deaths in 2007 compared to 1998 and there were 1,192 more live births in 2007 compared to 1998. Table 1 and Figure 1 present a ten-year summary of these statistics.

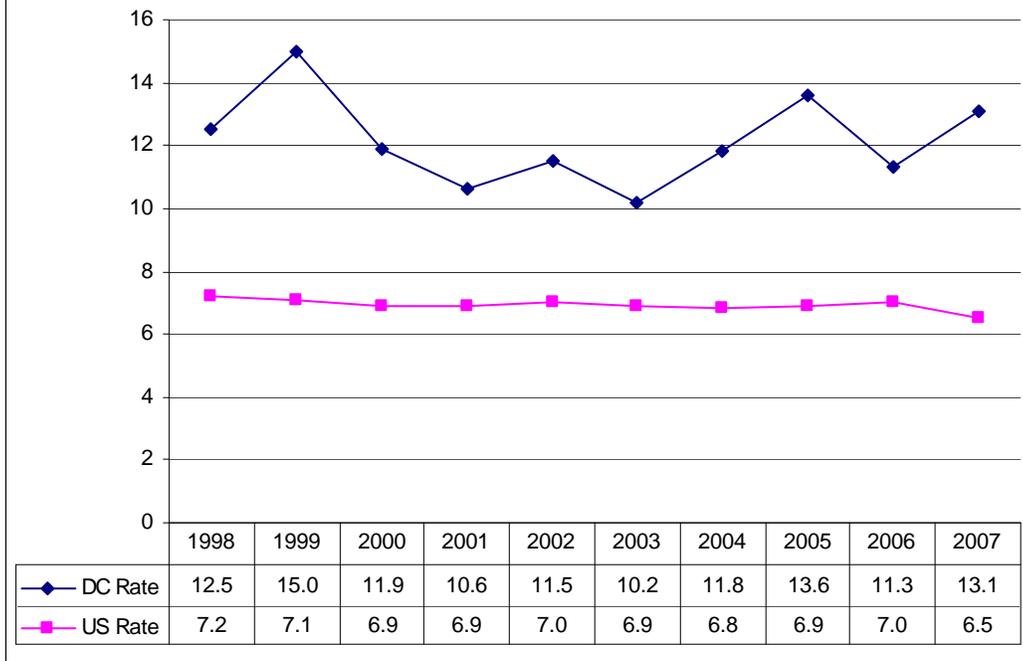
Table 1: Ten-Year Infant Mortality Trends District of Columbia Residents, 1998-2007			
Year	Births	Infant Deaths	Infant Mortality Rate*
1998	7,678	96	12.5
1999	7,513	113	15.0
2000	7,666	91	11.9
2001	7,621	81	10.6
2002	7,494	86	11.5
2003	7,616	78	10.2
2004	7,937	94	11.8
2005	7,940	108	13.6
2006	8,522	96	11.3
2007	8,870	116	13.1

* Per 1,000 live births

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

As there continues to be significant variation in the infant mortality rates for the District of Columbia in recent years after a period of decline in the 1990s, the rate has not continued to have a stable downward trend, increasing from 10.2 to 13.1 over the past four years. Due to this lack of continued improvements, the District of Columbia Department of Health (DOH) released the Infant Mortality Action Plan in December 2007, which is a comprehensive road map on the efforts to reduce the infant mortality rate in the District. There are three major foci of effort: (1) to increase the capacity of home visitation for pregnant women; (2) to enhance collaboration within DOH and between other agencies; and (3) to increase coordination between the government and community organizations.

Figure 1. District of Columbia and National Infant Mortality Rate, 1998-2007



Note: Infant Mortality Rate (IMR) per 1,000 live births.

Sources: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.
National Center for Health Statistics (NCHS).

2006 to 2007 Comparison Highlights

- The number of infant deaths increased from 96 in 2006 to 116 in 2007, an increase of 20.8 percent.
- The overall infant mortality rate for the District increased by 15.9 percent from a rate of 11.3 in 2006 per 1,000 live births to 13.1 per 1,000 live births in 2007. The 2007 national infant mortality rate of 6.5 remained unchanged from 2006.
- The infant mortality rates decreased in Wards 2, 3, 5, 6 and 8 but increased in Wards 1, 4 and 7.
- Death to infants younger than 28 days increased from a rate of 6.9 per 1,000 live births in 2006 to 9.6 per 1,000 live births in 2007, an increase of 39.1 percent. (85 neonatal deaths in 2007 and 59 in 2006.)
- The postneonatal death rate (deaths occurring from 28 days to under one year of age) declined from 4.3 per 1,000 live births in 2006 to 3.5 in 2007, a decrease of 18.6 percent. (31 postneonatal deaths in 2007 and 37 in 2006.)
- The infant death rate to non-Hispanic black mothers decreased from 17.4 per 1,000 live births in 2006 to 17.2 per 1,000 live births in 2007 (Table 2), a decrease of 1.4 percent. (84 infant deaths in 2007 to District residents).
- The infant death rate to non-Hispanic white mothers was 2.9 per 1,000 live births in 2006 and 3.6 for 2007, an increase of 24.1 percent (Table 2). (8 infant deaths in 2007 in to District residents).
- The infant death rate to Hispanic mothers increased by 213.3 percent from 3.0 per 1,000 live births in 2006 (Table 2) to 9.4 per 1,000 live births in 2007. (14 infant deaths in 2007 to District residents).
- The number of infant deaths that resulted from multiple births increased from 12 in 2006 to 22 in 2007.
- There were no maternal deaths in 2007 compared to three maternal deaths in 2006.
- Births to teen mothers (15-19 years of age) increased slightly (0.9 percent) from 11.7 percent of the total births in 2006 to 11.8 percent of the total births in 2007.

Statistical Overview

In 2007, there were 8,870 live births and 116 infant deaths to District of Columbia residents (Table 1). This resulted in an infant mortality rate of 13.1 deaths for every 1,000 live births. In 2006, there were 8,522 live births and 96 infant deaths. The infant mortality rate for 2006 was 11.3 deaths per 1,000 live births. There was a 15.9 percent increase in the infant mortality rate from 11.3 per 1,000 live births in 2006 to 13.1 in 2007. There were 20 more infant deaths in 2007 than in 2006 and 348 more births to District women in 2007 as compared to 2006. Ward 3 had the lowest infant mortality rate at 1.3 deaths per 1,000 live births and Ward 7 had the highest infant mortality rate at 19.0 deaths per 1,000 live births (Table 10). 2007 births (8,870) increased by 4.1 percent over 2006 births (8,522), the fifth consecutive year births have increased since 2002.

Of the 116 infant deaths that occurred in 2007, 85 (or 73.3 percent) occurred during the neonatal period (under 28 days of life). The neonatal death rate increased by 39.1 percent from 6.9 per 1,000 live births in 2006 to 9.6 per 1,000 live births in 2007. The neonatal period is important relative to efforts to reduce infant mortality. Many of the causes of infant deaths during this period could have been mitigated or prevented with preconception and prenatal care. Figure 2 shows the infant mortality rate (IMR) by race and Hispanic origin of mother for the District of Columbia compared to the U.S.

**Table 2: Live Births, Infant Deaths and Infant Mortality
by Race/Hispanic Origin
District of Columbia Residents, 2006 & 2007**

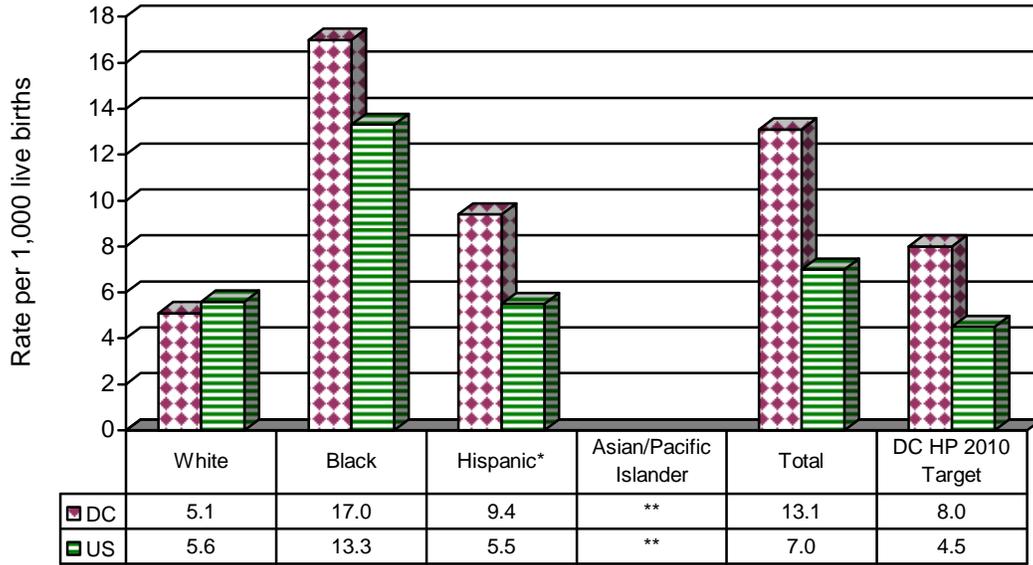
Race/Ethnicity	Live Births		Infant Deaths		Infant Mortality Rate ¹	
	2006	2007	2006	2007	2006	2007
Total	8,522	8,870	96	116	11.3	13.1
Black	4,847	4,926	84	84	17.3	17.0
White	2,311	2,370	6	12	2.6	5.1
Asian/Other	1,346	1,545	6	13	4.5	8.4
Total	8,522	8,870	96	116	11.3	13.1
Non-Hispanic Black	4,814	4,890	84	84	17.4	17.2
Non-Hispanic White	2,103	2,203	6	8	2.9	3.6
Hispanic ²	1,344	1,487	4	14	3.0	9.4

Notes: ¹ per 1,000 live births

² Hispanics include persons of all Hispanic origin of any race.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

**Figure 2: Infant Mortality Rates for the District of Columbia, 2007
and the United States 2006**



*Hispanics include persons of all Hispanic origin of any race.

**Rates not computed due to small number of infant deaths and, therefore, are likely to be unstable.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

National Center for Health Statistics: <http://www.cdc.gov/nchs/products/nvsr.htm#vol57>

Factors Contributing to Infant Mortality

Vital statistics over the years have indicated that factors such as low birth weight, lack of adequate prenatal care, and prematurity are associated with infant mortality. Other factors such as race/ethnicity, age, and marital status may also be associated with infant mortality.

Low Birth Weight

In 2007, the percentage of low birth weight infants (those weighing under 2,500 grams or 5.5 pounds) in the District was 11.1 compared to 11.6 percent in 2006 (Tables 3 and 8). This represents a slight decrease of 4.3 percent. About one in eleven low birth weight infant died before their first birthday.

Very Low Birth Weight

An increase was seen among very low (under 1,500 grams) but a decrease in moderately low birth weight (1,500–2,499 grams) newborns between 2006 and 2007; **very low birth weight** rose from 2.6 to 2.9 percent, and **moderately low birth weight** decreased from 9.0 to 8.2 percent (data not shown). Birth weight is an important predictor of early death and long-term disability^{1,2,3} the lower the birth weight, the greater the risk of poor birth outcome. In 2007, nearly seven out of ten of all very low birth weight infants compared with less than 20 percent (or one in five) of normal weight infants (2,500 and more grams) did not survive their first year of life.

The rate of very low birth weight increased for non-Hispanic black infants for 2006 to 2007 (from 3.4 to 4.1 percent); very low birth weight decrease for non-Hispanic white (from 1.4 to 1.1 percent); and very low birth weight decreased for Hispanic from 2.8 to 1.6 percent.

Low Birth Weight and Race and Hispanic Origin of Mother

The percentage of low birth weight babies that was born to all black mothers in 2007 remained unchanged from 14.6 in 2006 (Table 3). Conversely, there was a decrease in low birth weight babies born to all white mothers, from 7.3 in 2006 to 6.2 in 2007. Likewise, the percentage of low birth weight babies born to Asian and Pacific Islander mothers decreased from 8.6 in 2006 to 8.0 in 2007. Figure 3 shows the distribution of total births by infant birth weight and race and Hispanic origin of mother.

Low birth weight levels decreased for the current year among each of the largest racial/ethnic groups, except for non-Hispanic black; non-Hispanic white (from 7.1 to 6.0 percent for 2006–2007) and Hispanic (from 7.9 to 7.3 percent). Non-Hispanic black increased slightly from 14.6 to 14.7 percent for 2006-2007.

**Table 3: Percent Distribution of Low Birth Weight Babies
by Race and Hispanic Origin of Mother
District of Columbia Residents, 2006 and 2007**

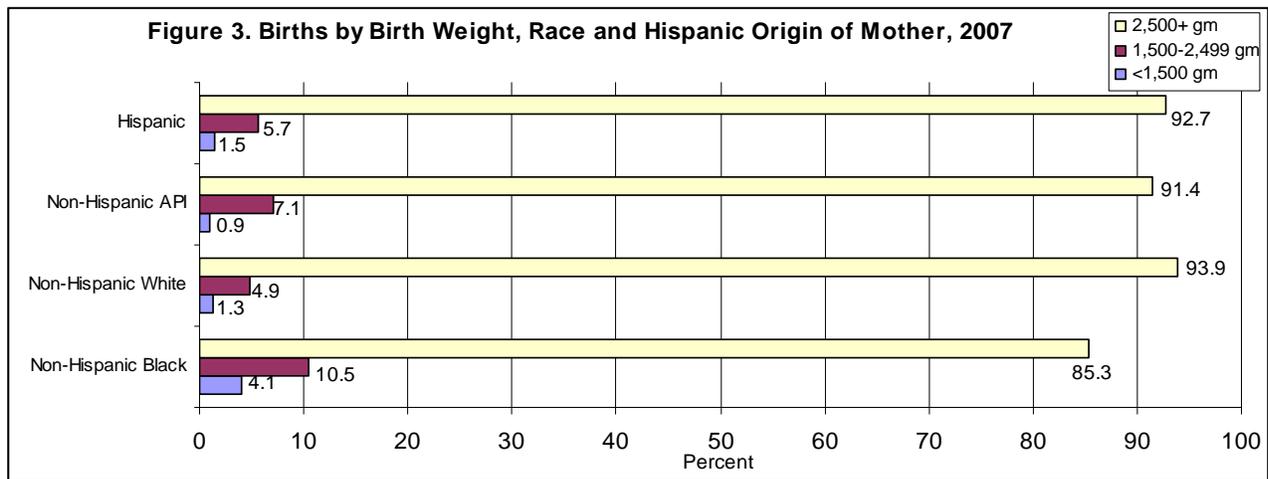
Race/Hispanic Origin	2006	2007	Percent Change
Total Births for All Races	8,522	8,870	4.1
- Number Low Birth Weight	986	989	
- Percentage LBW among all Births	11.6%	11.1%	-4.3
Total Births to Black* Mothers	4,847	4,927	1.7
- Number Low Birth Weight	706	721	
- Percentage LBW among Births to Black Mothers	14.6%	14.6%	0.0
Total Births to White* Mothers	2,311	2,370	2.6
- Number Low Birth Weight	168	147	
- Percentage LBW among Births to White Mothers	7.3%	6.2%	-15.1
Total Births to Asian and Pacific Islander Mothers	175	212	21.1
- Number Low Birth Weight	15	17	
- Percentage LBW among Births to Asian and Pacific Islander Mothers	8.6%	8.0%	-7.0
Total Births to Hispanic/Latina Mothers	1,344	1,487	10.6
- Number of Low Birth Weight	106	108	
- Percentage LBW among Births to Hispanic Mothers	7.9%	7.3%	-7.6

*Includes mothers of Hispanic origin.

Notes: 1. Number does not add up due to exclusion of other races and unknown.

2. Low Birth Weight means under 2,500 grams or 5lbs. 8oz.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.



Note: API means Asian and Pacific Islanders.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Low Birth Weight and Age of Mother

In the District of Columbia the percentage of low birth weight infants born to all mothers under 20 years of age decreased from 12.3 in 2006 to 12.0 in 2007 (Table 4). The percentage of low birth weight babies born to all mothers 20 years of age and older decreased from 11.4 percent in 2006 to 11.0 percent in 2007.

	2006	2007	Percent Change
Total Births for All Ages	8,522	8,870	
- Number of Low Birth Weight	986	989	
- Percentage of Low Birth Weight	11.6%	11.1%	-4.3
Total Births to Mothers Under 20 Years of Age	1,021	1,075	
- Number of Low Birth Weight	126	129	
- Percentage of Low Birth Weight among mothers < 20 years old	12.3%	12.0%	-2.4
Total Births to Mothers 20 Years of Age and Older	7,487	7,762	
- Number of Low Birth Weight	855	856	
- Percentage of Low Birth Weight among mothers ≥20 years old	11.4%	11.0%	-3.5
Total Births to Mothers Whose Age is Unknown ²	14	33	
- Number of Low Birth Weight	5	4	
- Percentage of Low Birth Weight	35.7%	12.1%	-

Notes: ¹ Low Birth Weight means under 2,500 grams or 5lbs. 8oz.

² Mother's age is computed from date of birth to date of delivery. If date of birth is not reported, then mother's age is reported as unknown.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Low Birth Weight and Infant Deaths by Age of mother

Of the 989 low birth weight births, 89 infants (9.0 percent) died in 2007. A total of 38 infants (32.8 percent of all 116 infant deaths) died to mothers 20-24 years of age. Twenty-nine of these 38 infants (76.3 percent) were low birth weight. Fifty-seven percent of all infant deaths (N=116) occurred to mothers aged 20-29 years. Twenty-five percent of all infant deaths occurred to mothers aged 30-39 years and 11.2 percent of all infant deaths were to mothers aged below 20 years (Table 5).

Low Birth Weight and Infant Deaths by Race of Mother

Of the 116 infant deaths, 89 (76.7 percent) were low birth weight infants (74 died during the neonatal period and 15 in the postneonatal period). Eight of the 12 infant deaths to white mothers were born weighing under 2,500 grams. Sixty-nine of the 84 (82.1 percent) infant deaths to black mothers were low birth weight babies. The two infant deaths to Asian mothers were low birth weight babies. Of the 89 low birth weight infants, 80 (90 percent) were very low birth weight; nine were moderately low birth weight (10 percent).

Age of Mother	Infant Deaths	Percent Deaths*	LBW Deaths	%LBW Deaths**	Time of Infant Death		
					Total LBW	Neonatal	Post-neonatal
Total	116	100.0	89	76.7	89	74	15
< 20 years	13	11.2	9	69.2	9	6	3
20-24 years	38	32.8	29	76.3	29	22	7
25-29 years	28	24.1	23	82.1	23	20	3
30-34 years	18	15.5	16	88.9	16	15	1
35-39 years	11	9.5	9	81.8	9	8	1
≥ 40 years	4	3.4	3	75.0	3	3	0
Unknown age	4	3.4	0	0	0	0	0

*Percentage based on all infant deaths (N=116).

**Percentage based on total deaths in each age group.

Note: LBW means low birth weight (under 2,500 grams or 5lbs. 8 oz.).

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health

Prenatal Care

Adequate prenatal care, defined by the Kessner Index (Kessner et al., 1973), is care initiated in the first trimester with a minimum of nine prenatal visits. Care is considered to be inadequate if initiated in the third trimester and consisting of fewer than four prenatal visits; no prenatal care is included in this category. Any other combination of prenatal care and number of visits is considered to be intermediate care. There was a slight decrease in adequate prenatal care between 2006 (71.2 percent) and 2007 (70 percent) (Table 8). Intermediate care increased by 4.5 percent from 22 percent in 2006 to 23 percent in 2007. Inadequate care increased slightly by 2.9 percent from 6.8 percent in 2006 to 7.0 percent in 2007.

In 2007, adequate prenatal care decreased slightly for non-Hispanic black mothers (64.1 percent) compared to 2006 (66 percent). Seventy-one percent non-Hispanic black mothers began prenatal care in the first trimester compared to 74.8 percent in 2006.

Eighty-seven percent of non-Hispanic white mothers received adequate prenatal care in 2007 compared to 85.8 percent in 2006. The percent of non-Hispanic white mothers who began prenatal care in the first trimester in 2006 and 2007 remained about the same, 92.8 percent and 92.4 percent, respectively.

Approximately, 58.9 percent of Hispanic/Latina mothers received adequate prenatal care in 2007 compared to 61.2 percent in 2006. In 2007, 65.8 percent of Hispanic/Latina mothers began prenatal care in the first trimester compared to 67.1 percent in 2006.

There was a slight decrease in the percent of births to mothers who began prenatal care in the first trimester in 2007 (76.9 percent) compared to 2006 (78.8 percent) (Table 8). Ward 3 had the highest percentage of women who began prenatal care in the first trimester (92.1 percent) and also the highest percentage of women who received adequate prenatal care (87.2 percent). Ward 7 had 72.5 percent of pregnant women who began prenatal care in the first trimester (the second lowest among the wards) and 66.2 percent received adequate prenatal care, (the second lowest among the wards) which partially explains the highest infant mortality in the city for this ward (Table 8).

Prematurity

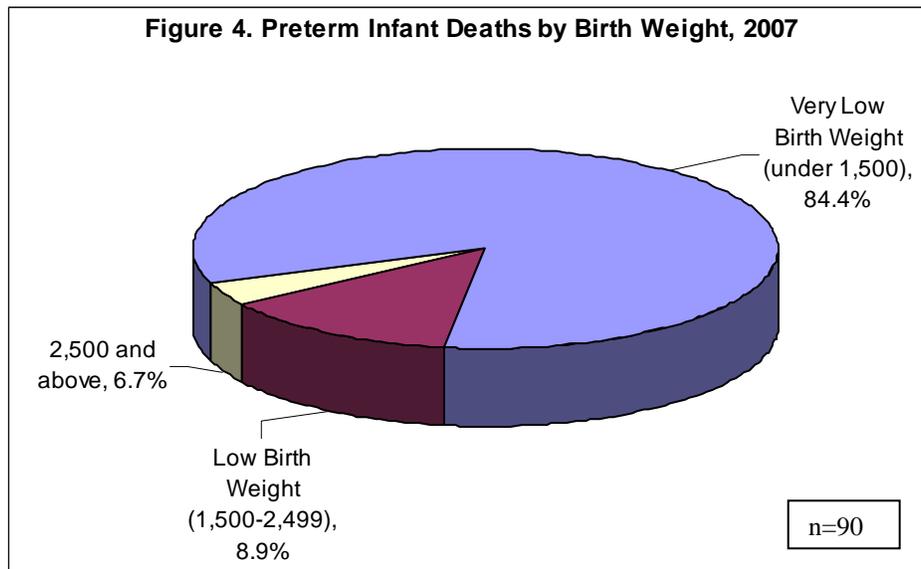
Prematurity leads to low birth weight and infant mortality. Table 6 shows the percentages of all premature births (less than 37 weeks gestation) for 2006-2007. Premature infants decreased by 8.3 percent from 13.2 percent in 2006 to 12.1 percent in 2007. Preterm births have decreased across all racial and ethnic groups in 2007. Eighty-four percent of preterm infants who died in 2007 weighed under 1,500 grams (Figure 4). Approximately 96 percent of preterm infants died to mothers ages 15-34.

**Table 6. Percent Distribution of Premature Babies by Race
and Hispanic Origin of Mother
District of Columbia Residents, 2006 and 2007**

Race/Hispanic Origin	2006	2007	Percent Change
Total Births for all Races	8,522	8,870	
-Number of Premature Babies	1,129	1,070	
-Percent Premature Babies	13.2%	12.1%	-8.3
Total Births to Black* Mothers	4,847	4,927	
-Number of Premature Babies to Black Mothers	755	723	
-Percent Premature Babies to Black Mothers	15.6%	14.7%	-5.8
Total Births to White* Mothers	2,311	2,370	
-Number of Premature Babies to White Mothers	226	179	
-Percent Premature Babies to White Mothers	9.8%	7.6%	-22.4
Total Births to Asian and Pacific Islander (API) Mothers	175	212	
-Number of Premature Babies to API Mothers	16	19	
-Percent Premature Babies to API Mothers	9.1%	9.0%	-1.1
Total Births to Hispanic Mothers	1,344	1,486	
-Number of Premature Babies to Hispanic Mothers	152	159	
-Percent Premature Babies to Hispanic Mothers	11.3%	10.7%	-5.3

* Includes mothers of Hispanic origin.

Note: Premature births means births under 37 weeks of gestation.



Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Marital Status

The proportion of births to unmarried women increased in 2007 to 58.5 percent, compared with 57.6 in 2006 a 1.6 percent change. Of the 5,190 (58.5 percent) births to unmarried women in 2007 (Tables 7 and 8), 19.5% of these births were to teenagers (15-19 years). Nearly 32 percent of births to women aged 20-24 years and 25.1 percent of births to women aged 25-29 years were to unmarried women.

In 2007, 75.0 percent of infant deaths were to unmarried women, compared to 80.2 percent in 2006 for a decrease of 6.5 percent. In 2006 and 2007, the majority of infant deaths were to unmarried women (Table 7).

Year	Total Number of Births	Births to Unmarried Women		Births to Married Women			Infant Deaths			
		Number of births	Percent	Number of Births	Percent	Total Infant Deaths	Infant Deaths to Unmarried Women	Percent	Infant Deaths to Married Women	Percent
2007	8,870	5,190	58.5	3,679	41.5	116	87	75.0	25	21.6
2006	8,522	4,908	57.6	3,613	42.4	96	77	80.2	18	18.8
2005	7,940	4,448	56.0	3,492	44.0	108	77	71.3	30	27.8

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Geographical Distribution

The District's infant mortality rate is comparable to cities of similar size and population mix. Among the following four cities, the District's rate was the lowest in 2003 and 2006; second lowest in 2004 and 2006; and third lowest in 2005 (Table 8).

Table 8: Infant Mortality Rate Comparisons for Baltimore, the District of Columbia, Richmond and Detroit Cities, 2003-2007 [Rates are Infant deaths per 1,000 live births]					
City	2003	2004	2005	2006	2007
Baltimore City, Maryland ¹	13.2	12.7	11.3	12.4	11.3
Detroit City, Michigan ²	16.3	15.5	15.9	13.4	14.9
District of Columbia ³	10.2	11.8	13.6	11.3	13.1
Richmond, Virginia ⁴	14.3	11.0	13.2	13.5	12.4

Sources: ¹ Vital Statistics Administration, Department of Health and Mental Hygiene, Maryland.

² Vital Records & Health Data Development Section, Michigan Department of Community Health.

³ State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

⁴ Virginia Department of Health, VA State Center for Health Statistics.

The presence of geographical subdivisions such as wards and census tracts in the District provides a basis for breaking down District-wide data into small area statistics for comparison and analyses. In the absence of individual-level socioeconomic data, these ward statistics form a useful basis for evaluating health status indicators against demographic and environmental ward characteristics. Table 9 shows selected maternal and child health indicators and infant deaths by geographic areas or wards in the District of Columbia. In 2007, there was an increase in the number of infants born in four wards (4, 5, 7 and 8) of the city (Table 10). The infant mortality breakdown by ward for 2007 shows a decline in the infant mortality rate for five wards (2, 3, 5, 6, and 8). The infant mortality rate increased in the other three wards (1, 4 and 7). Among the five wards with decreased infant mortality rates for 2007, Ward 8 had the highest rate (18.8), but Ward 4 had the largest percentage increase (180.3) from a rate of 6.1 in 2006 to 17.1 in 2007. In 2007, the number of infant deaths increased by 17 in Ward 4. Although Ward 4 had the largest increase in the actual number of the Hispanic population, Ward 7 had the largest percentage (32.8 percent) in the Hispanic population.. Ward 6 had the largest meaningful decrease from a rate of 9.1 in 2006 to 6.4 in 2007. Caution should be used when interpreting the rate and percentage change because of very small numbers (Tables 10, 11, and 12). Infant mortality rates by ward from 2003 and 2007 are presented in Table 13.

**Table 9. Indicators of Maternal and Child Health, and Infant Mortality by Ward
District of Columbia Residents, 2007**

Indicators	DC	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8
2006 Estimated Population ¹	582,254	78,423	78,320	78,944	77,797	68,241	64,034	69,899	66,595
Live Births Rate/1,000 pop ¹	8,870 15.2	1,243 15.8	634 8.1	796 10.1	1,460 18.8	1,041 15.3	939 14.7	1,210 17.3	1,545 23.2
Live Births									
Black	4,926	354	129	35	604	787	433	1,147	1,436
White	2,370	361	364	692	301	107	445	17	82
Hispanic ²	1,487	517	115	36	576	133	42	38	30
Births to Unmarried Women (Percent)	5,190 58.5	706 56.8	179 28.2	60 7.5	821 56.2	725 69.6	391 41.6	1,007 83.2	1,299 84.1
% Births to Unmarried Women									
Black	80.1	74.6	69.0	25.7	60.8	78.0	80.4	84.7	89.2
White	8.2	13.9	5.8	5.5	12.0	13.1	5.6	17.7	8.5
Hispanic ²	72.3	76.0	65.2	30.6	77.1	75.2	40.5	73.7	23.3
Births to Mothers age <20 yrs. (Percent)	1,075 12.1	149 12.0	32 5.0	8 1.0	137 9.4	149 14.3	72 7.7	222 18.3	306 19.8
Births to Mothers 15-19 yrs. (Percent)	1,051 11.8	146 13.9	33 3.1	7 0.7	133 12.7	145 14.0	69 6.6	221 21.0	297 28.3
Birth Rate/1,000 Women 15-19 yrs. ³	49.8	55.6	8.6	3.0	66.8	54.6	51.5	96.4	105.9
Low Birth Weight Live Births ⁴ (Percent)	989 11.1	115 9.3	45 7.1	57 7.2	144 9.9	133 12.8	109 11.6	167 13.8	219 14.2
% Low Birth Weight Births ⁴									
Black (Percent)	721 (14.6)	58 (16.4)	17 (13.2)	6 (17.1)	78 (12.9)	121 (15.4)	68 (15.7)	160 (13.9)	213 (14.8)
White (Percent)	147 (6.2)	25 (6.9)	16 (4.4)	46 (6.6)	21 (7.0)	4 (3.8)	30 (6.7)	3 (17.6)	2 (2.4)
Hispanic ² (Percent)	108 (7.3)	29 (5.6)	7 (6.1)	5 (13.9)	47 (8.2)	7 (5.3)	10 (23.8)	3 (7.9)	0 (0.0)
Low Birth Weight ⁴ to Mothers <20 yrs. (Percent)	129 12.0	14 9.4	2 6.3	1 12.5	17 12.4	19 12.8	11 15.3	34 15.3	31 10.1
% Births With Adequate Prenatal Care ⁵	70.0	67.9	77.7	87.2	66.6	65.7	77.4	66.2	62.1
% Births With Prenatal Care Beginning First Trimester ⁶	76.9	73.7	83.9	92.1	73.4	72.6	85.5	72.5	70.8
Infant Deaths (under 1 yr.) Rate (per 1,000 live births) ⁷	116 13.1	7 5.6	8 12.6	1 1.3	25 17.1	17 16.3	6 6.4	23 19.0	29 18.8

Notes: ¹ Rates based on 2006 estimated population. DC Office of Planning/State Data Center using block group data provided by Caliper Corporation to derive ward data.

² Hispanics include persons of all Hispanic origin of any race.

³ City rate based on 2007 estimated population. Annual Estimates of Population by Sex and Age for the District of Columbia, July 1, 2007. US Census Bureau, May 1, 2008. Rates by ward for women aged 15-19 years were calculated using 2000 Census population. US Census Bureau.

⁴ Low birth weight (under 2,500 grams or 5 lbs. 8 oz.).

⁵ Adequate prenatal care is based on care initiated in the first trimester with a minimum of nine prenatal visits.

⁶ Births for which unknown "prenatal care began" were subtracted from the total number of births before percentages were computed.

⁷ Due to the small number of infant deaths, infant mortality rates are highly variable and should be interpreted cautiously.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Table 10: Births, Infant Deaths and Infant Mortality Rates by Ward District of Columbia Residents, 2006 and 2007							
	Births		Infant Deaths		Infant Mortality Rate¹		
Ward	2007	2006	2007	2006	2007	2006	Percent Change²
1	1243	1262	7	7	5.6	5.5	1.8
2	634	846	8	11	12.6	13.0	-3.1
3	796	913	1	2	1.3	2.2	-40.9
4	1460	1316	25	8	17.1	6.1	180.3
5	1041	898	17	18	16.3	20.0	-18.5
6	939	991	6	9	6.4	9.1	-29.7
7	1210	1015	23	13	19.0	12.8	48.4
8	1545	1249	29	27	18.8	21.6	-13.0
Unknown	2	32	0	1	-	-	-
Total	8,870	8522	116	96	13.1	11.3	15.9

¹Infant deaths per 1,000 live births.

²Changes in value over time (e.g., rates) [(New - Old) / Old = Decimal x 100 = Percent change].

Notes: (1) Due to the small number of infant deaths, the above infant mortality rates are highly variable and should be interpreted cautiously.

(2) Ward distribution based on 2002 ward boundaries. Previous to 2007, 1992 ward boundaries were used. However, there was no change in the distribution of infant deaths among the ward when using the 1992 boundaries.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health

Table 11: Statistical Overview by Ward District of Columbia Residents, 2007						
Ward	Births	Infant Deaths	IMR*	LBW	Teen Births	LBW to Teens
1	1243	7	5.6	115	149	14
2	634	8	12.6	45	33	2
3	796	1	1.3	57	8	1
4	1460	25	17.1	144	137	17
5	1041	17	16.3	133	149	19
6	939	6	6.4	110	71	11
7	1210	23	19.0	167	222	34
8	1545	29	18.8	218	306	31
Unknown	2	0	-	0	0	0
Total	8,870	116	13.1	989	1,075	129

*Infant deaths per 1,000 live births.

Notes: (1) Due to the small number of infant deaths, the above infant mortality rates are highly variable and should be interpreted cautiously.

(2) Ward distribution based on 2002 ward boundaries. Previous to 2007, 1992 ward boundaries were used. However, there was no change in the distribution of infant deaths among the ward when using the 1992 boundaries.

(3) Teen birth in this table is defined as mother's younger than 20 years of age.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health

Ward	Births	Infant Deaths	IMR*	LBW	Teen Births	LBW to Teens
1	1,262	7	5.5	121	135	18
2	846	11	13.0	91	74	10
3	913	2	2.2	74	2	0
4	1,316	8	6.1	134	141	12
5	898	18	20.0	128	136	17
6	991	9	9.1	124	107	11
7	1,015	13	12.8	129	208	30
8	1,249	27	21.6	184	216	28
Unknown	32	1	-	1	2	0
Total	8,522	96	11.3	986	1,021	126

* Infant deaths per 1,000 live births.

Notes: 1. Teen birth means birth to a mother under the age of 20 years.

2. LBW means low birth weight (under 2,500 grams or 5 lbs. 8 oz.).

3. Due to the small number of infant deaths, the above infant mortality rates are highly variable and should be interpreted cautiously.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Ward	2003	2004	2005	2006	2007
1	7.6	13.1	11.6	5.5	5.6
2	5.3	6.6	6.3	13.0	12.6
3	4.2	1.0	5.3	2.2	1.3
4	8.7	8.3	14.2	6.1	17.1
5	12.6	16.4	17.9	20.0	16.3
6	8.4	18.0	13.7	9.1	6.4
7	12.9	22.3	15.9	12.8	19.0
8	18.4	10.6	21.7	21.6	18.8
Total	10.2	11.8	13.6	11.3	13.1

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Causes of Death

The leading cause of infant mortality, **Newborn affected by complications of placenta, cord, and membranes** accounted for 19.0 percent of all infant deaths (Table 14). **Congenital malformations, deformations and chromosomal abnormalities classified** was the second ranked leading cause of infant death, which accounted for 16.4 percent of all infant deaths in 2007. **Disorders related to short gestation and low birth weight, not elsewhere classified** was the third leading cause of death, which accounted for 12.9 percent of all infant mortality. **Newborn affected by maternal complications of pregnancy** was the fourth leading cause of death, which accounted for 12.1 percent of all infant deaths. **Sudden infant death syndrome (SIDS)** was the fifth leading cause of death, which accounted for 7.8 percent each of all infant mortality.

**Table 14: Leading Causes of Infant Death
District of Columbia Residents, 2007**

Rank ¹	Cause of Death (Based on Tenth Revision, International Classification of Diseases, 1992)	Number	Percent*	Rate**
...	All causes	116	100.0	1,307.8
1	Newborn affected by complications of placenta, cord, and membranes (P02)	22	19.0	248.0
	... Newborn affected by chorioamnionitis (P02.7)	12	10.3	135.3
	... Newborn complications involving placenta (P02.0-P02.3)	8	6.9	90.2
	... Newborn affected by complications involving cord (P02.4-P02.6)	2	1.7	22.5
2	Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	19	16.4	214.2
	... Congenital malformations and deformations of musculoskeletal system, limbs and integument (Q65-Q85)	4	3.4	45.1
	... Congenital malformations of heart (Q20-Q24)	3	2.6	33.8
	... Congenital malformations of respiratory system (Q30-Q34)	3	2.6	33.8
	... Other congenital malformations	9		101.5
3	Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	15	12.9	169.1
	... Extremely low birth or extreme immaturity (P07.0, P07.2)	10	8.6	112.7
	... Other low birth weight or preterm (P07.1, P07.3)	5	4.3	56.4
4	Newborn affected by maternal complications of pregnancy (P01)	14	12.1	157.8
	... Incompetent cervix (P01.0)	10	8.6	112.7
	... Premature rupture of membranes (P01.1)	3	2.6	33.8
	... Other maternal complications of pregnancy (P01.2-P01.4, P01.6-P01.9)	1	0.9	11.3
5	Sudden infant death syndrome (SIDS) (R95)	9	7.8	101.5
6	Newborn affected by other complications of labor and delivery (P03)	6	5.2	67.6
7	Septicemia (A40-A41)	4	3.4	45.1

**Table 14: Leading Causes of Infant Death
District of Columbia Residents, 2007**

Rank ¹	Cause of Death (Based on Tenth Revision, International Classification of Diseases, 1992)	Number	Percent*	Rate**
...	All other causes	27	23.3	304.4

*Percent based on total number of infant deaths.

**Rate per 100,000 live births.

...Category not applicable.

¹ Rank based on number of infant deaths.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

In 2006, the leading cause of death nationally was **Congenital malformations, deformations and chromosomal abnormalities. Disorders related to short gestation and low birth weight, not elsewhere classified** was the second leading cause for the U.S. (Table 15) and also the second for the District of Columbia.

Table 15. Infant Deaths and Infant Mortality Rates for the 10 Leading Causes of Infant Death: United States, Preliminary, 2006.

Rank ¹	Cause of death (based on the <i>International Classification of Diseases, Tenth Revision, 1992</i>)	Number	Rate ²
...	All causes	28,609	670.6
1	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	5,827	136.6
2	Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	4,841	113.5
3	Sudden infant death syndrome (R95)	2,145	50.3
4	Newborn affected by maternal complications of pregnancy (P01)	1,694	39.7
5	Newborn affected by complications of placenta, cord and membranes (P02)	1,123	26.3
6	Accidents (unintentional injuries) (V01–X59)	1,119	26.2
7	Respiratory distress of newborn (P22)	801	18.8
8	Bacterial sepsis of newborn (P36)	786	18.4
9	Neonatal hemorrhage (P50–P52,P54)	598	14.0
10	Diseases of the circulatory system (I00-I99)	539	12.6
...	All other causes (residual)	9,136	214.2

...Category not applicable.

¹ Rank based on number of infant deaths.

² Rates are per 100,000 live births.

Notes: 1. Data are based on a continuous file of records received from the states. Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals.

2. For certain causes of death such as unintentional injuries, sudden infant death syndrome, and congenital malformations, deformations and chromosomal abnormalities, preliminary and final data may differ significantly because of the truncated nature of the preliminary file. Data are subject to sampling and/or random variation.

Source: National Vital Statistics Reports, Vol. 56, No. 16, June 11, 2008. Deaths; Preliminary data for 2006. Available from:

http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_16.pdf

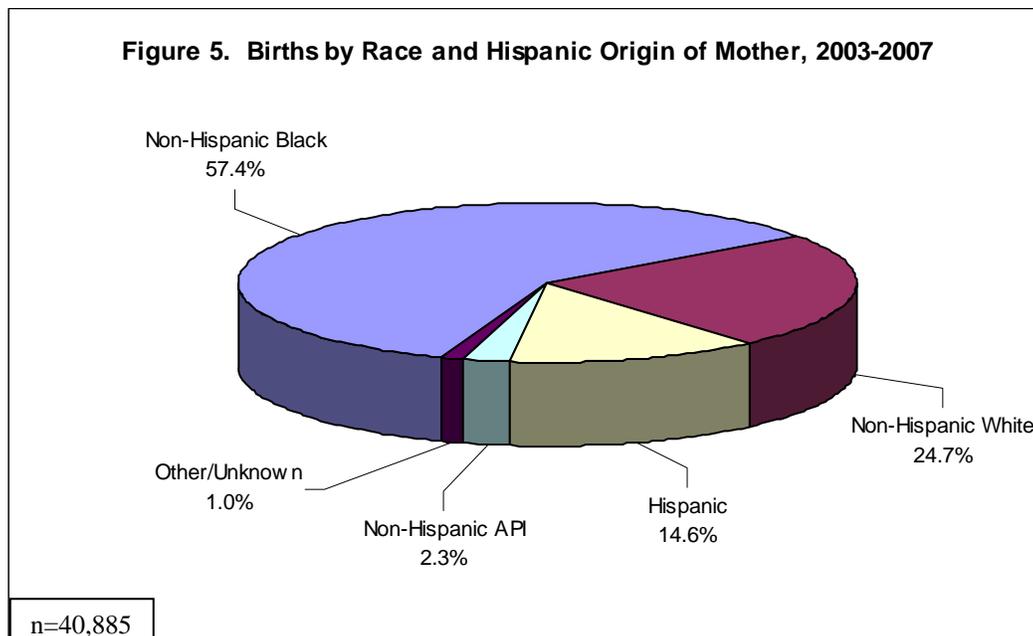
The leading cause of neonatal death in 2007 was **Newborn affected by complications of placenta, cord, and membranes**, which accounted for almost 25 percent of all neonatal deaths. **Congenital malformations, deformations and chromosomal abnormalities** was the second leading cause (17.6 percent), **Newborn affected by maternal complications of pregnancy (16.5 percent)**, was the third leading cause of neonatal death (Table 16).

Table 16: Leading Causes of Neonatal Infant Death (n=85) District of Columbia Residents, 2007				
Rank ¹	Cause of Death (Based on Tenth Revision, International Classification of Diseases, 1992)	Number	Percent*	Rate**
...	All causes	85	100.0	958.3
1	Newborn affected by complications of placenta, cord, and membranes (P02)	21	24.7	236.8
	... Newborn affected by chorioamnionitis (P02.7)	12	14.1	135.3
2	Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	15	17.6	169.1
3	Newborn affected by maternal complications of pregnancy (P01)	14	16.5	157.8
	... Incompetent cervix (P01.0)	10	11.8	112.7
4	Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	12	14.1	135.3
5	Newborn affected by other complications of labor and delivery (P03)	6	7.1	67.6
...	All other causes or total	17	20.0	191.7

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

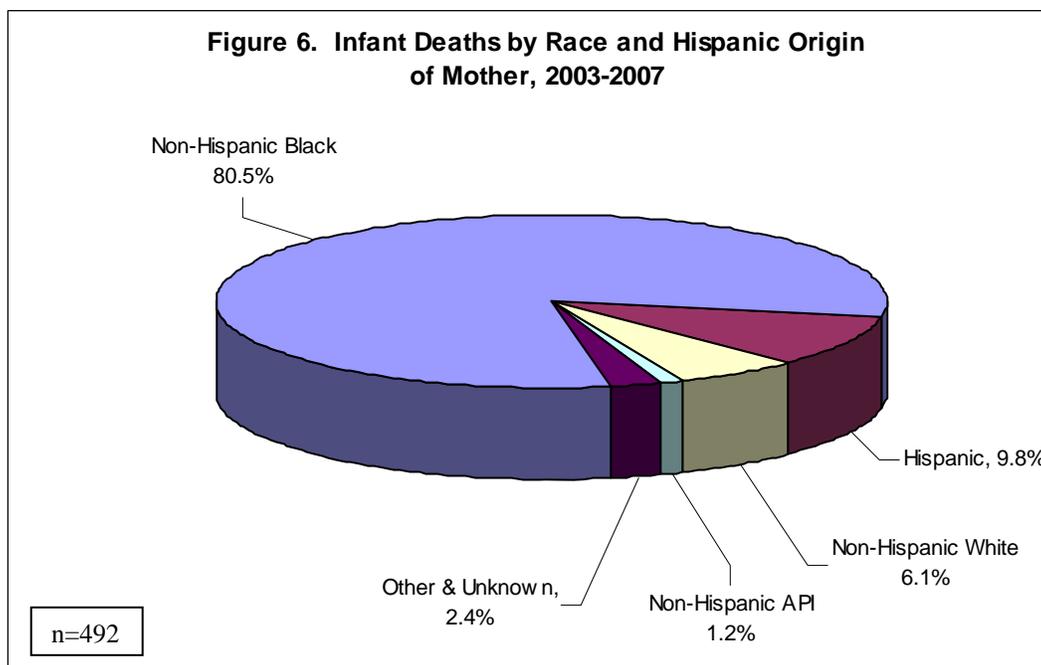
Five-Year Birth and Infant Death Trend

Figure 5 shows the total number of births, 40,885 for the five-year period of 2003 to 2007. Almost 60 percent were to non-Hispanic black mothers, 24.7 percent were to non-Hispanic white mothers and 14.6 percent were to Hispanic mothers.



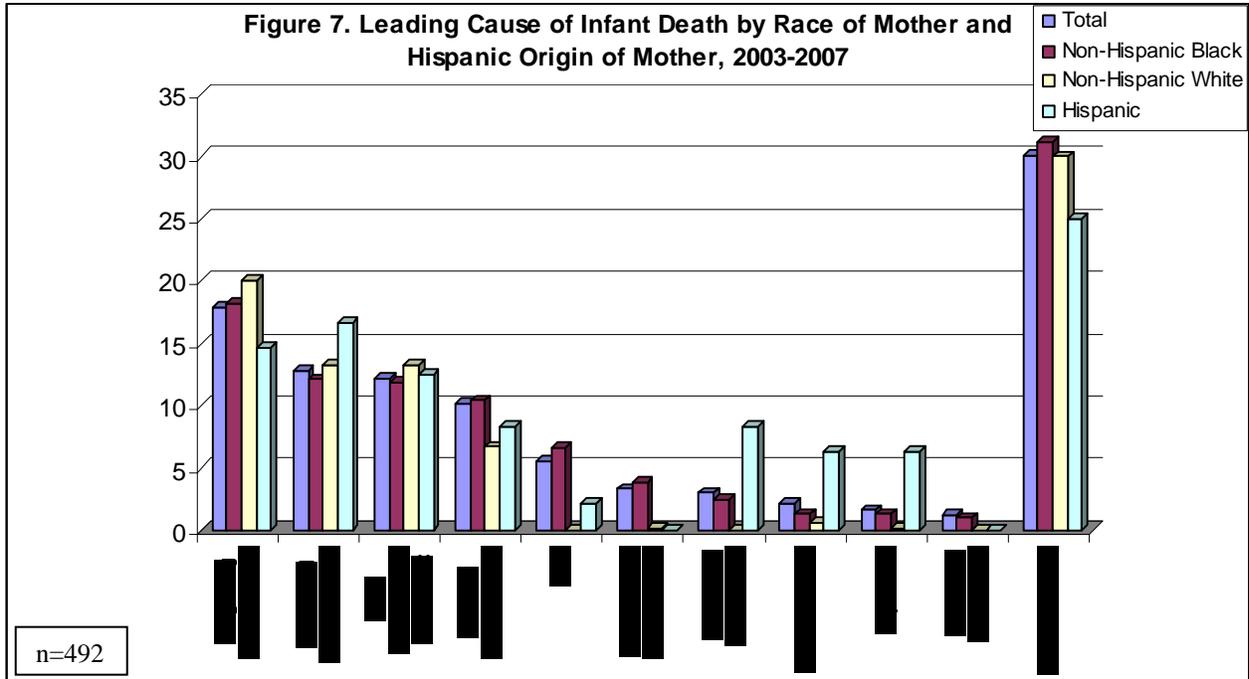
Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Of the total number of births (40,885), 492 infants died from 2003 to 2007. Figure 6 shows the average percentage of infant deaths by race/ethnicity from 2003 to 2007. On average between 2003 to 2007, infants to non-Hispanic black mothers, disproportionately died (80.5 percent) compared to their total number of births (57.4 percent).



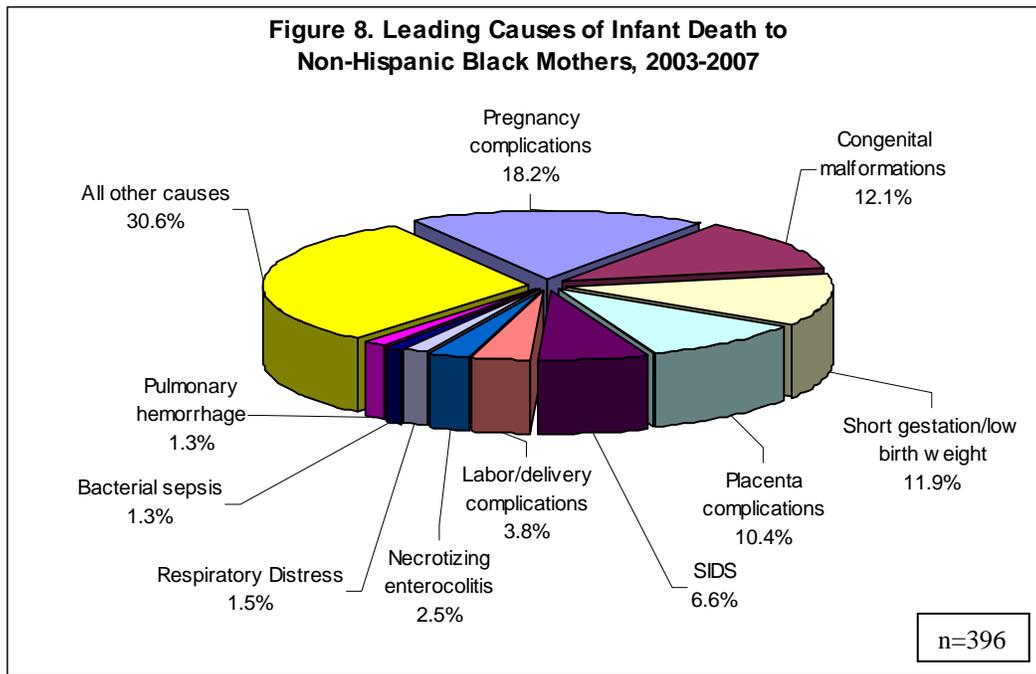
Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Figure 7 shows the leading causes of infant death over this five-year period (2003-2007). The leading cause of infant mortality was **Newborn affected by maternal complications of pregnancy**, which accounted for 17.9 percent, followed by **Congenital malformations, deformations and chromosomal abnormalities** (12.8 percent), the third leading cause was **Short gestation and low birth weight** (12.2 percent).



Note: Data by Asian/Pacific Islander were excluded due to small numbers.
 Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

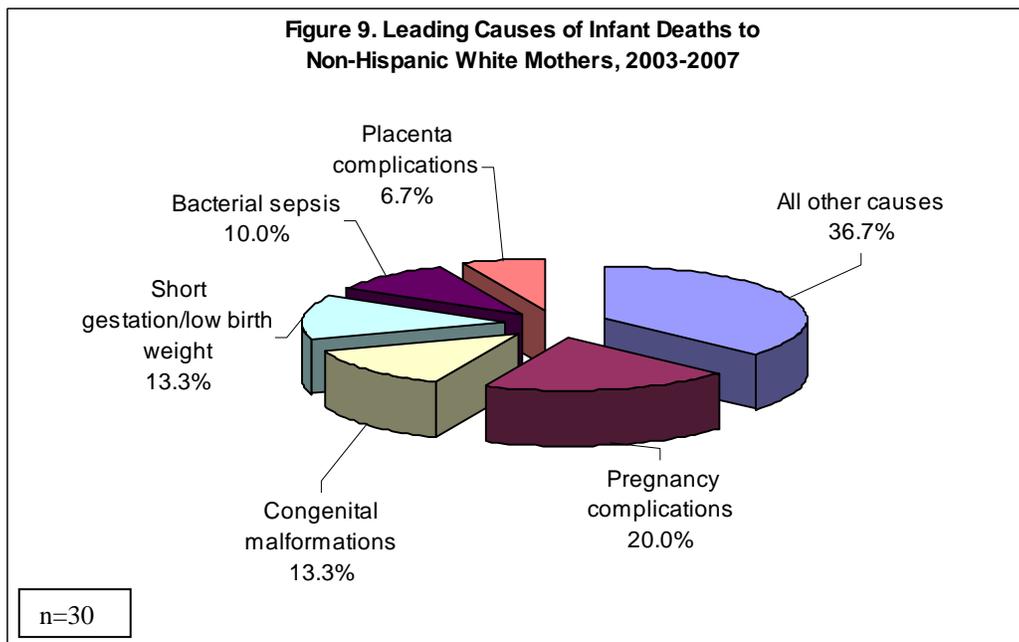
The leading cause of infant death to non-Hispanic black mothers, on average from 2003-2007, was **Newborn affected by maternal complications of pregnancy**, which accounted for 18.2 percent. **Congenital malformations, deformations and chromosomal abnormalities** (12.1 percent) was the second leading cause of infant death to non-Hispanic black mothers, followed by **Disorders related to short gestation and low birth weight, not elsewhere classified** (11.9 percent) which was the third leading cause (Figure 8).



Note: Percentage does not add to 100 due to rounding.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

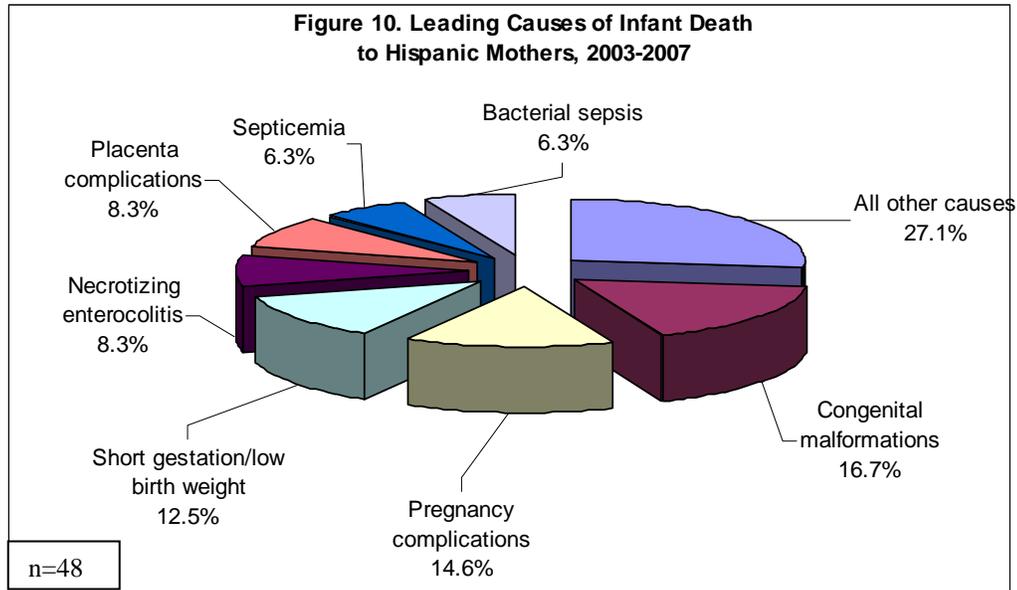
For infant deaths to non-Hispanic white mothers, **Newborn affected by maternal complications of pregnancy** was the leading cause of infant death (20 percent) and **Congenital malformations, deformations and chromosomal abnormalities** and **Disorders related to short gestation and low birth weight, not elsewhere classified** tied for the second leading cause (13.3 percent) (Figure 9).



Note: Percentage does not add to 100 due to rounding.

Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Figure 10 shows that the leading cause of infant death to Hispanic mothers was **Congenital malformations, deformations and chromosomal abnormalities (16.7 percent)**. **Newborn affected by maternal complications of pregnancy (14.6 percent)** was the second leading cause and **Newborn affected by complications of placenta, cord and membranes** ranked third place (12.5 percent).



Source: State Center for Health Statistics, Center for Policy, Planning and Epidemiology, DC Department of Health.

Current Reproductive Health Outcomes Oriented Programs

As there continues to be significant variation in the infant mortality rates for the District of Columbia in recent years after a period of decline in the 1990s, the rate has not continued to have a stable downward trend, increasing from 10.2 to 13.1 over the past four years. Due to this lack of continued improvements, the District of Columbia Department of Health (DOH) released the Infant Mortality Action Plan in December 2007, which is a comprehensive road map on the efforts to reduce the infant mortality rate in the District. There are three major foci of effort: (1) to increase the capacity of home visitation for pregnant women; (2) to enhance collaboration within DOH and between other agencies; and (3) to increase coordination between the government and community organizations.

To this end, the Perinatal and Infant Health Bureau of the Community Health Administration (CHA) in DOH has led the efforts on these initiatives. The Healthy Start Program at DOH has seen a dramatic increase in the number of women served going from 230 in 2007 to 581 in 2008. CHA works closely with Mary's Center, another federally funded Healthy Start Program in the District. This collaboration includes cross-training of staff and sharing of screening tools and resources. In that collaboration with the community is part of the mission of CHA, DOH continues to partner with organizations such as First Candle to work to increase the number of cribs available to women with newborns to reduce the rates of co-sleeping.

Within the Department of Health, The Healthy Start Program has partnered with the HIV/AIDS Administration (HAA) in a campaign to test all women participating in the program and refer women that are HIV positive into HAA programs. The goal is to identify all pregnant women that are HIV positive so that they can be effectively linked into appropriate medical care. Similar efforts are underway with the Addiction Prevention and Recovery Administration (APRA) to refer pregnant women seeking addiction related services to Healthy Start and screening all healthy start participants for substance use.

In efforts to increase coordination between local government agencies, DOH has engaged in collaborations with the Department of Mental Health to ensure that all pregnant women have access to appropriate mental health services, and the Department of Corrections to ensure adequate prenatal care for women in the correctional system. CHA has also been working with the Department of Health Care Finance and the Medicaid Managed Care Organizations to develop a comprehensive quality improvement effort to improve perinatal outcomes. This new initiative will begin in 2009.

In 2009, DOH will implement the Electronic Birth Registry System. This system will allow the real-time analysis of trends related to perinatal outcomes and, with the appropriate consent from new mothers, will allow determinations to be made relative to eligibility for Healthy Start and other programs to assist mothers and infants at risk.

References

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3. Wilson-Costello D, Friedman H, Minich N, et al. Improved survival rates with increased neurodevelopmental disability for extremely low birth weight infants in the 1990s. *Pediatrics* 115(4):997–1003. 2005.

Technical Notes

Data Sources and Method

Data shown in this report for 2007 are based on data from the District of Columbia (DC) resident linked birth/infant death data set, which are part of the DC Vital Registration System and DC resident infant deaths and births that occurred in other states through the inter-state exchange agreement. Data for DC were collected and reported using the 1989 revision of the U.S. standard birth certificate and the 2003 revision of the U.S. standard death certificate.

The linked birth/infant death data set is the primary data source for analyzing infant mortality trends and patterns in DC. In the linked birth/infant death data set, information from resident birth certificate is linked to information from resident death certificate for each infant less than 1 year of age. The purpose of the linkage is to use the many additional variables available from the birth certificate to conduct more detailed analyses of infant mortality patterns. The linked birth/infant death data set is particularly useful for computing accurate infant mortality rates by race and ethnicity because the race and ethnicity of the mother from the birth certificate is used in both the numerator and denominator of the infant mortality rate. The race and ethnicity from the birth certificate is generally provided by the mother at the time of delivery, and is considered to be more accurate than race and ethnicity from the death certificate that is provided by an informant, or in the absence of an informant, by observation. Linked birth/infant death data sets are available from the State Center for Health Statistics (SCHS), Center for Policy, Planning, and Epidemiology, DC Department of Health.

The report also uses data from the National Center for Health Statistics (NCHS) 2006 preliminary mortality report for the United States, National Vital Statistics Reports, Vol. 56, No. 16, June 11, 2008. Deaths: Preliminary data for 2006. Available from: http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_16.pdf .

Cause-of-death classification

The mortality statistics presented in this report were compiled in accordance with World Health Organization (WHO) regulations, which specify that member nations classify and code causes of death in accordance with the current revision of the International Classification of Diseases (ICD). The ICD provides the basic guidelines used in virtually all countries to code and classify causes of death. Effective with deaths occurring in 1999, the United States began using the Tenth Revision of this classification (ICD-10).

In this report, tabulations of cause-of-death statistics are based solely on the underlying cause of death. The underlying cause is defined by WHO as “the disease or injury which initiated the train of events leading directly to death, or the circumstances of the accident of violence which produced the fatal injury.” The underlying cause is selected from the conditions entered by the physician in the cause-of-death section of the death certificate. When more than one cause or condition is entered by the physician, the underlying cause is determined by the sequence of conditions on the certificate, provisions of the ICD, and associated selection rules and modifications. Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. This is captured in NCHS multiple cause-of-death statistics.

Tabulation lists and cause-of-death ranking

For this report, the tabulation List of 130 Selected Causes of Death used for deaths for all infant less than 1 year of age. This list is also used to rank leading causes of death.

Race and Hispanic origin

The 1989 revision of the U.S. Standard Certificate of Birth allows the reporting of race and Hispanic origin separately on the birth certificates. Race of the mother is reported in nine categories on the birth certificates: white, black, American Indian, Chinese, Japanese, Hawaiian, Filipino, “other” Asian or Pacific Islander, and “other” race. Hispanic origin of decedent is reported as the country of origin. The 2003 revision of the U.S. Standard Certificate of Death allows the reporting of more than one race (multiple races). This change was implemented to reflect the increasing diversity of the population of the United States and to be consistent with the decennial census. The race and ethnicity items on the revised certificate are compliant with the 1997 “Revision of the Race and Ethnic Standards for Federal Statistics and Administrative Reporting.” These were issued by the Office of Management and Budget (OMB) and have replaced the previous standards that were issued in 1997.

Population bases for computing rates

Populations used for computing death rates shown in this report represent the population residing in DC, enumerated as of April 1 for census 2000 year and estimated as of July 1 for 2007. Population estimates used to compute birth rates for DC for 2007. Birth rates shown in this report for 2007 are based on populations that are consistent with the 2000 census levels. Death rates shown in this report for 2007 by ward are based on 2000 census population.

Computing rates

Rates in this report are on an annual basis per 1,000 live births and per 100,000 population residing in the District of Columbia.

Availability of mortality data

Infant Mortality data are available in publications, unpublished tables, and electronic products as described on the Department of Health, Center for Policy, Planning, and Epidemiology website at the following address: <http://doh.dc.gov/doh/cwp/view,a,1374,q,602045.asp> detailed analyses that is not provided in this report is possible upon request.

Definition of terms

Infant death	Death of an infant before his or her first birthday.
Infant mortality rate	Number of infant deaths per 1,000 live births.
Low birth weight	Newborn weighing under 2,500 grams or 5lbs. 8oz.
Neonatal death	Death of a child younger than 28 days of age.
Neonatal mortality rate	Number of neonatal deaths per 1,000 live births.
Postneonatal death	Death of a child 28 days of age or older but younger than one year of age.
Postneonatal mortality rate	Number of postneonatal deaths per 1,000 live births.
Preterm birth	Birth before 37 completed weeks of gestation.
Very low birth weight	Newborn weighing under 1,500 grams or 3lbs. 5oz.