
Massachusetts Births 2005

Massachusetts Department of Public Health

Center for Health Information, Statistics, Research, and Evaluation
Division of Research and Epidemiology

January 2007

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Note to Readers: Changes in this year's report

This report contains significant changes from previous reports. Please review the information below before reading the report.

1. **New format:** The Report has been revised to follow the National Center for Health Statistics (NCHS) birth report format. The report is divided into five parts: 1) Highlights; 2) Introduction; 3) Methods; 4) Results; and 5) Appendix.
2. **Population changes:** New population estimates are being used for 2000-2005. The new population estimates file, which is referred to as the Massachusetts Department of Public Health Modified Age, Race/Ethnicity, and Sex (MMARS00-05), is based upon estimates produced by the National Center for Health Statistics in collaboration with the Census Bureau's Population Estimation Program. Please note that population-based rates published in this report cannot be compared with those published in previous years, which were based upon the Census 2000 counts. Please see the Appendix for a detailed description of the MMARS00-05 file.
3. **Rate, Proportion, and Number comparisons:** The comparison of rates, proportions, and numbers made in this year's report is based on tests of statistical significance. Comparative words, for example, "higher", "lower", "increase", and "decrease" are used only when the statistics being compared are statistically different (i.e., statistically significant) at the $P \leq .05$ level. Please see the Appendix for a discussion of how statistical significance is determined.

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Highlights

- In 2005, the Cesarean section delivery rate for Massachusetts was 32.3%, the highest rate ever reported, continuing an increasing trend since 1997.
- In 2005, 76,824 births occurred to Massachusetts residents, 2% fewer than in the previous year. The number of resident live births in Massachusetts has decreased by 17% since 1990 when it was 92,461 births.
- The Massachusetts teen birth rate in 2005 was 21.7 births per 1,000 women ages 15-19 compared with 22.2 births per 1,000 women ages 15-19 in 2004. The teen birth rate has declined by 16% from 2000 (25.9 births per 1,000 women ages 15-19). Yet, the number of births to young teens (ages 10-14) increased for black non-Hispanic mothers, from 4 in 2004 to 17 in 2005.
- In 2005, the Massachusetts Infant Mortality Rate (IMR) was 5.1 infant deaths per 1,000 live births, compared with 4.8 deaths per 1,000 live births in 2004.
- The percentage of low birthweight (LBW) infants (less than 2,500 grams or 5.5 pounds) remained high, 7.9% compared with 7.8% for 2004, and it has increased by 36% since 1990 when it was 5.8%.
- Births to Laotian and Brazilian mothers have increased by more than 14% since 2004; however, these groups accounted for only 3% of all births in Massachusetts in 2005.
- The percentage of women who reported smoking during pregnancy was 7.2% in 2005, compared with 7.4% in 2004. The percentage of women smoking during pregnancy has decreased 62% since 1990, when it was 19.3%.
- The percentage of mothers who had their prenatal care financed through public programs increased by 7%, from 30.5% in 2004 to 32.6% in 2005. This rate increased by 11% for white non-Hispanic mothers (19.4% in 2004 vs. 21.5% in 2005).
- Disparities in birth outcomes by race, ethnicity, education and community persist:
 - The black non-Hispanic IMR was more than twice as high as the white non-Hispanic IMR (9.4 vs. 4.3 deaths per 1,000 live births).
 - The teen birth rate for Hispanics was almost 6 times that for white non-Hispanics (73.2 vs. 12.9 per 1,000 women ages 15-19).
 - Cambodian (55.1%), Other Central American (65.0%), and Other African (66.9%) mothers were less likely to receive prenatal care in their first trimester compared with mothers in other ethnicity groups (State average: 83.2%).
 - Among the 30 largest Massachusetts municipalities, Brockton (11.5%), Revere (10.9%), New Bedford (10.6%), Springfield (9.8%), and Boston (9.6%) recorded low birthweight percentages that were higher than the statewide average of 7.9%.
 - Mothers with a high school education or less were more likely to smoke during their pregnancies, more likely to deliver low birthweight infants, and less likely to receive adequate prenatal care.

Introduction

This report presents detailed data on the number and characteristics of Massachusetts births in 2005; maternal behaviors and health characteristics; medical services utilization by pregnant mother; and infant health characteristics. These data are obtained from birth certificates. Birth certificate data are essential for surveillance, research, and development in programs such as universal newborn hearing screening, high risk infant identification and birth defects surveillance. The Registry of Vital Records and Statistics plays a critical role in the collection of birth information: its work provides the basic information that guides many public health initiatives.

Methods

Data on births are based on information from the Massachusetts Certificate of Live Birth filed with the Registry of Vital Records and Statistics. Medical information such as birthweight and prematurity is based on information supplied by hospitals; demographic and behavioral data such as race and ethnicity, and smoking during pregnancy are supplied by the woman who gave birth. For example, women chose their race from five categories: White, Black, Asian/Pacific Islander, American Indian, and Other. Mothers identified their ancestry by selecting one of 38 ancestry/ethnicity groups¹.

Vital statistics birth data may be presented in terms of either maternal residence or place of birth. Resident data include all events that occur to residents of the Commonwealth, regardless where they happen. In Massachusetts, a resident is a person with a permanent address in one of the 351 cities or towns. Occurrence data include all events that occur within the state, whether to residents or nonresidents. All data in this publication are for Massachusetts residents unless otherwise stated. There is an exchange agreement among the 50 states, District of Columbia, Puerto Rico, Virgin Islands, Guam, and Canadian provinces that provides for the exchange of copies of birth and death records for women giving birth or dying in a state other than their state of residence.

Starting with this year's publication, new population estimates are used for 2000-2005. In addition, the comparison of rates made in this year's report is based on tests of statistical significance. Comparative words, for example, "higher", "lower", "increase", and "decrease" are used only when the statistics being compared are statistically different at the $P \leq .05$ level.

Results

Number and Rate of Births

In 2005, 76,824 births occurred to Massachusetts residents, 2% fewer than in 2004. Since 1990, the number of births to Massachusetts residents has declined by 17%, and the birth rate among women of reproductive age has declined by 11% (from 62.1 to 55.6 births per 1,000 females ages 15-44) (Table 1).

The number of women over the age of 30 giving birth has risen dramatically since 1980. In 1980, about 1 in 4 Massachusetts births was to a woman age 30 and older while in 2005, almost 3 out of 5 births (55%) was to a woman age 30 and older (Figure 1). The average age of mothers at first birth was 27.9 years in 2005 compared with 28.1 years in 2004.

¹ See the "Technical Notes" for a list of ancestries listed in check boxes.

Births by Race, Hispanic Ethnicity, and Mother's Birthplace

The percentage of all Massachusetts resident births to white non-Hispanic mothers has decreased by 11% since 1990, from 78.4% to 69.6%, while the percentage of births to Hispanic mothers increased by 44%, from 9.1% to 13.1% (Table 1).

The percentage of births to non-U.S.-born mothers increased between 2004 and 2005 – from 25.2% to 26.1% (Table 2). The percentage of white non-Hispanic mothers who were non-U.S.-born increased from 11.0% to 11.8%. In 2005, 1 out of 4 births to a Massachusetts resident was to a mother born outside the continental U.S., Puerto Rico, and the U.S. Territories (Table 2).

Emerging Populations

Despite a 2% decrease in the number of births from 2004, certain groups experienced increases in the numbers of births in 2005. Births to Laotian and Brazilian mothers increased by more than 14% since 2004, yet these groups accounted for only 3% of all births in Massachusetts (Table 3). Since 2000, births to Brazilian mothers have increased by 99% and births to Salvadoran mothers by 42%.

Patterns in Number and Rate of Births by Age Group

There has been a marked change in the age distribution of Massachusetts resident mothers since 1980. Approximately 25% of women giving birth in 1980 were age 30 years and older compared with 55% in 2005. Beginning in 1996, the number of births to mothers age 30 years and older exceeded the number of births to mothers under age 30. This trend has continued through 2005 (Figure 1).

Compared with the rates of 1990, birth rates have increased in the age groups over 30 and decreased for age groups under 30. The largest birth rate increase has been for ages 40-44 while the largest decreases have been among the youngest age groups, 15-19 and 10-14. In 2005, there were 59 births to mothers ages 10-14 years (an increase of 17 births from 2004) and there were 188 births to women 45 years of age or older (an increase of 6 births from 2004) (Table 4).

Marital Status

The percentage of mothers who were not married at the time of delivery increased by 6% from 28.5% in 2004 to 30.2% in 2005, continuing the trend of steady increase during the last 15 years (Table 1). Hispanic infants continue to have the highest percentage of unmarried mothers at 64.0%, which was similar to the 2004 figure (Table 2). The percentage of white non-Hispanic mothers who were not married increased by 7%, from 20.1% in 2004 to 21.5% in 2005.

Breastfeeding

The percentage of mothers who were breastfeeding or intending to breastfeed in 2005 was 79.3%, similar to the rate in 2004. This is the first time this rate remained the same after a continuing trend of steady increase in the previous 14 years. The rate of breastfeeding has increased 52% since 1989 when it was 52.2%. Among race and ethnicity groups, Asians had the highest percentage of breastfeeding, 84.9% (Table 2).

Multiple Births

In 2005, 95.4% of births were singletons (73,258), 4.4% were twins (3,375 births), 0.2% were triplets (178 births), and 12 (3 sets) were quadruplets (Table 5). The total percentage of multiple births (twins, triplets or more) was 4.6% in 2005 and 4.8% in 2004. The percentage of multiple births among mothers ages 35 and older was the same as in 2004, 7.5%. The

percentage of multiples among births to mothers ages 35 and older (7.5%) was nearly double the percentage for mothers under age 35 (3.7%).

Teen Births

In 2005, 4,539 births occurred to Massachusetts resident women ages 15-19, which was a difference of 20 fewer births for this age group in 2004 (Table 1). The Massachusetts teen birth rate has decreased yearly from 35.4 births per 1,000 women ages 15-19 in 1990 to the current low of 21.7 in 2005. The Massachusetts teen birth rate in 2005 was 46% below the preliminary U.S. teen birth rate of 40.4 births per 1,000 women ages 15-19.

In 2005, about one-third of teen births were to women ages 15-17 (1,440 births), and two-thirds were to women ages 18-19 (3,099) (Table 6). The annual number of births to young teens (ages 10-14) was 59 in 2005 compared with 42 in 2004. This represents a 62% decline in births in this age group since 1994. In Massachusetts, in 2005, the youngest mothers were ages 12 and 13; 7 births were to mothers age 13, and 1 was to a mother age 12.

In 2005, 47.5% of births to young teens (ages 10-14) were to Hispanic mothers (28 births); 28.8% were to black non-Hispanic mothers (17 births); and 15.3% were to white non-Hispanic mothers (9 births). The birth rate to young teens (ages 10-14) increased for black non-Hispanics, from 0.2 in 2004 to 1.0 live births per females aged 10-14 years in 2005. The 2005 birth rate for younger teens was 0.3 live births per 1,000 females ages 10-14 years, which was 57% below the U.S. birth rate for young teens (0.7).

In 2005, birth rates among resident teen women had the same rank order from highest to lowest by race and Hispanic ethnicity as they had in 1995 (Hispanic and black non-Hispanic women had the highest teen birth rates, while Asian and white non-Hispanic women had the lowest), and they have decreased for all groups compared with 1995 rates (Figure 2). In 2005, the teen birth rate for Hispanics was almost 6 times that for white non-Hispanics (73.2 vs. 12.9 per 1,000 women ages 15-19). There were no significant changes in teen birth rates by race and ethnicity from 2004, but all rates, except for Asian mothers, have declined since 2000.

Among Massachusetts municipalities with the highest number of teen births, teen birth rates were highest in Holyoke (96.8), Chelsea (75.0), Lawrence (71.7), and Springfield (71.6). These communities had rates over 3 times the statewide rate of 21.7 teen births per 1,000 females 15-19 (Table 7).

Low Birthweight (LBW)

The percentage of low birthweight infants (less than 2,500 grams or 5.5 pounds) was 7.9% in 2005 and 7.8% in 2004. The percentage of low birthweight infants has increased by 36% since 1990 when it was 5.8% (Table 8).

Black non-Hispanic infants continue to have the highest percentage of LBW at 12.0%, followed by Hispanics at 8.2% (Table 8). There were no significant changes from 2004 to 2005 in LBW percentages by race and ethnicity. The percentage of very low birthweight (VLBW; infants weighing less than 3.3 pounds) was 1.4% in 2005 compared with 1.5% in 2004. Black non-Hispanic infants continue to have the highest percentage of VLBW at 2.9% (Table 8).

The increase in low birthweight in Massachusetts over the past decade can be attributed in part to the increase in multiple births in Massachusetts. The percentage of low birthweight (LBW) and very low birthweight (VLBW) rises for twins and higher order births. In 2004, 5% of singleton births were LBW, whereas 53% of twins and 95% of higher order births were LBW (Table 9).

Preterm Deliveries

The percentage of preterm infants (infants delivered before the 37th week of gestation) was 9.0% in 2005 and 9.2% in 2004 (Table 1). Black non-Hispanic mothers continue to have the highest percentage of preterm infants at 12.4% followed by Hispanics at 9.1%. There were no significant changes from 2004 to 2005 in the percentage of preterm infants by race and ethnicity.

The percentage of infants delivered very early (before the 28th week of gestation) has remained the same since 1997 at 0.6%. Black non-Hispanic women had the highest proportion of infants delivered very early, 1.7%, which was more than double that of any other race group (Table 10).

Smoking

The percentage of women who reported smoking during pregnancy was 7.2 in 2005 compared with 7.4% in 2004 and has declined by 62% since 1990 (19.3%) (Figure 3). White non-Hispanic mothers continued to have the highest percentage of smoking during pregnancy at 8.4% followed by black non-Hispanics at 6.1% (Figure 4). There were no significant changes in the percentage of mothers who reported smoking during pregnancy from 2004 to 2005 by race and ethnicity.

Prenatal Care

Adequacy of prenatal care was 84.0% in 2005 and 84.2% in 2004 (Table 1). Adequacy of prenatal care is a measure of the timing and number of prenatal care visits, not an assessment of the quality of prenatal care. [Please note: these data are not comparable to data published in reports prior to 2001. Beginning with the 2001 report, the Adequacy of Prenatal Care Utilization (APNCU) Index is used to measure adequacy of prenatal care, replacing the Kessner Index].

The percentage of adequate prenatal care varied by mother's race and Hispanic ethnicity, ranging from a low of 75.8% for Hispanic mothers to a high of 86.8% for white non-Hispanic mothers. The rates for black non-Hispanic and Asian mothers were 76.3% and 81.6%, respectively (Figure 5).

Less educated mothers (less than High school) were less likely to receive adequate prenatal care, 71.0%, compared with 90.2% for mothers with a college degree or higher (Figure 6). Younger teens (ages 17 or younger) were less likely to receive adequate prenatal care than mothers ages 35 and older, 66.2% compared to 88.2%.

Publicly Financed and Privately Insured Prenatal Care

Maternal and birth characteristics varied according to whether prenatal care was financed through public programs or through private insurance. The percentage of mothers who had their prenatal care financed through public programs increased in 2005 by 7% from 2004, from 30.5% in 2004 to 32.6% in 2005 (Figure 7). Among white non-Hispanic mothers, this rate increased by 11% from 2004. Hispanic mothers continue to have the highest percentage of deliveries financed by public funds at 72.3%.

Overall in Massachusetts, approximately 1 in 5 mothers (24.2%) had her prenatal care financed by Medicaid/MassHealth. However, Medicaid/MassHealth financing varied largely by race and Hispanic ethnicity. About half of Hispanic and black non-Hispanic mothers had their PNC financed by Medicaid/MassHealth; whereas, 19.6% of Asian and 17.0% of white non-Hispanic mothers' PNC was Medicaid/MassHealth financed (Table 30).

Cesarean Sections

In 2005, the Cesarean section delivery rate rose for the sixth straight year to an all time high of 32.3%. The 2005 Cesarean section delivery rate is a 4% increase over the 2004 percentage (31.0%), which also was an all time high (Table 1). The Cesarean section rate in Massachusetts in 2005 was 7% higher than the nationwide rate of 30.2%. The nationwide rate for 2005 was also the highest ever recorded.

The percentage of Cesarean sections increased by 5% for white non-Hispanic mothers. Black non-Hispanic women had the highest percentage of Cesarean section deliveries (33.7%)². Hispanic and Asian women had the lowest percentages (27.1% and 28.9%, respectively). With regard to maternal ancestry groups, the highest percentage of Cesarean section deliveries occurred to Brazilian women (40.6%), and the lowest percentage was among Cambodian women (15.9%) (Table 3).

Infant Mortality Rate (IMR)

In 2005, there were 391 infant deaths (deaths of children less than one year of age) among Massachusetts residents, 15 more infant deaths than in 2004 (Table 11). The infant mortality rate was 5.1 deaths per 1,000 live births in 2005, compared with 4.8 deaths per 1,000 live births in 2004. The infant mortality rate has decreased by 27% since 1990, from 7.0 deaths per 1,000 live births to 5.1 deaths per 1,000 live births.

Although the IMR for black non-Hispanics went from 11.5 to 9.4 from 2004 to 2005, black non-Hispanics continued to have the highest IMR among race and ethnicity groups (Figure 8). The white non-Hispanic IMR went from 3.8 in 2004 to 4.3 in 2005, and the IMR for Asians went from 2.7 in 2004 to 3.4 infant deaths per 1,000 live births in 2005. The Hispanic IMR went from 7.6 in 2004 to 7.7 in 2005. None of these changes were statistically significant (for Confidence Intervals, please see Table 36).

Birth Characteristics in the 30 Largest Massachusetts Cities and Towns

In 2005, among live births to residents of the 30 largest municipalities in the Commonwealth (Table 12):

- Five communities recorded low birthweight percentages that were higher than the statewide average of 7.9%: Brockton (11.5%), Revere (10.9%), New Bedford (10.6%), Springfield (9.8%), and Boston (9.6%). Leominster (5.5%) had a lower percentage of low birthweight infants than the statewide average.
- At least 90% of mothers living in Brookline and Cambridge received adequate prenatal care. In contrast, fewer than 70% of mothers living in Pittsfield (61.0%) and Lowell (68.2%) received adequate prenatal care.
- Among the largest municipalities, two communities had 2005 infant mortality rates (IMR) higher than the state IMR of 5.1 per 1,000 live births: Springfield (10.6) and Worcester (13.9 deaths per 1,000 live births).
- Based on a three-year infant mortality rate (IMR) from 2003-2005, which is more stable than a one-year rate, Worcester (8.2, 95% CI: 6.2-10.3) had the highest IMR. The difference in

² Note that the category of black non-Hispanic mothers includes mothers who identified with several ancestries including Haitian, African American and Other African. Mothers who identified as African American for their ancestry had a Cesarean section rate of 30.9% and Haitian mothers had a Cesarean section rate of 36.7%.

IMR for Springfield approached statistical significance (7.1, 95% CI: 5.2-9.0) compared with the state (4.9, 95% CI: 4.6-5.2) (For a discussion of CI, please see Appendix).

Birth Characteristics by Facility

Listed below are facilities that in 2005 had the 3 highest and 3 lowest rates for cesarean deliveries, low birthweight infants, publicly funded deliveries, and deliveries with adequate prenatal care (Table 13).

Cesarean section (state rate 32.5%)

Highest percentages in:

Beth Israel Deaconess Medical Center	42.4%
Caritas Holy Family Hospital and Medical Center	41.2%
Melrose-Wakefield Hospital	41.0%

Lowest percentages in:

Tobey Hospital	18.1%
Holyoke Hospital	20.3%
Heywood Memorial Hospital	21.6%

Low Birthweight (LBW) (state rate 7.9%)

Highest percentages in:

Tufts-New England Medical Center Hospital	27.3%
Caritas St. Elizabeth's Medical Center of Boston	15.0%
Baystate Medical Center	12.8%

Lowest percentages in:

Cambridge Hospital	2.0%
Tobey Hospital	3.0%
Leominster Hospital	3.1%

Publicly Funded Delivery (state rate 31.8%)

Highest percentages in:

Boston Medical Center	83.3%
Cambridge Hospital	73.2%
Holyoke Hospital	66.6%

Lowest percentages in:

Newton Wellesley Hospital	2.7%
Winchester Hospital	5.7%
Emerson Hospital	6.2%

Adequacy of Prenatal Care by Facility (state rate 84.1%)

Lowest percentages in:

Boston Medical Center	54.0%
Caritas Good Samaritan Medical Center	57.6%
Berkshire Medical Center	62.8%

Highest percentages in:

Brigham and Women's Hospital	97.5%
Beth Israel Deaconess Medical Center	95.3%
Saint Vincent Hospital	94.3%

Healthy People 2010 Objectives

Healthy People 2010 (HP2010) sets targets for each measurable Healthy People objective³. Table 6 presents the most recent Massachusetts data for HP2010 Maternal, Infant, and Child Health objectives and measures the state's progress toward meeting the targets set for 2010.

Out of 16 objectives presented, Massachusetts has already met the 2010 target for breastfeeding (Table 14). For eight objectives, the 2005 Massachusetts indicators are within 25% of the 2010 target goals: perinatal mortality, infant mortality rate, postneonatal mortality rate, preterm birth, early and adequate prenatal care, prenatal care beginning in the first trimester, very low birthweight infants born at Level III hospitals, and smoking during pregnancy. For seven objectives, Massachusetts is still more than 25% away from achieving the 2010 targets: fetal mortality rate, neonatal mortality rate, maternal mortality ratio, low birthweight, very low birthweight, and Cesarean sections (both low-risk women giving birth for the first time and for low-risk women with prior Cesarean sections).

A Comparison of Massachusetts and U.S. Indicators

According to preliminary U.S. birth statistics for 2005⁴, the following Massachusetts perinatal health indicators in 2005 were better than those for the U.S.:

- The teen birth rate in Massachusetts (21.7 births per 1,000 women ages 15-19) was 46% lower than the U.S. teen birth rate (40.4 births per 1,000 women ages 15-19).
- The percentage of unmarried mothers in Massachusetts (30.2%) was 18% lower than the U.S. percent (36.8%).
- The low birthweight rate in Massachusetts (7.9%) was 4% lower than the U.S. low birthweight rate (8.2%).
- The preterm rate in Massachusetts (9.0%) was 29% lower than the U.S. preterm rate (12.7%).

The Cesarean section delivery rate in Massachusetts (32.3%) was 7% higher than the U.S. Cesarean section rate (30.2%).

³ U.S. Department of Health and Human Services. Tracking Healthy People 2010. Washington, DC: U.S. Government Printing Office, November 2000.

⁴ National Center for Health Statistics. Births: Preliminary Data for 2005. Released November 22, 2006.

Table 1. Trends in Birth Characteristics, Massachusetts: 1990, 1991, 1993-2005

Characteristic		1990	1991	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Births ¹	n ²	92,461	88,176	84,627	83,758	81,562	80,164	80,321	81,406	80,866	81,582	81,014	80,624	80,167	78,460	76,824
	Rate ³	62.1	59.4	57.6	57.0	55.5	54.6	54.7	55.6	55.9	57.1	56.6	56.8	56.8	56.2	55.6
Race of Mother																
White non-Hispanic	n	72,483	68,619	65,487	64,589	63,043	61,829	61,204	61,764	60,402	60,051	59,115	58,136	57,604	55,322	53,469
	% ⁴	78.4	77.8	77.4	77.1	77.3	77.1	76.2	75.9	74.7	73.6	73.0	72.1	71.9	70.5	69.6
Black non-Hispanic	n	7,158	6,737	6,419	6,262	5,858	5,491	5,482	5,549	5,844	5,755	5,862	5,948	5,902	6,053	6,077
	% ⁴	7.7	7.6	7.6	7.5	7.2	6.9	6.8	6.8	7.2	7.1	7.2	7.4	7.4	7.7	7.9
Asian	n	3,349	3,218	3,267	3,325	3,355	3,398	3,719	3,748	4,138	4,667	4,784	5,300	5,224	5,454	5,251
	% ⁴	3.6	3.7	3.9	4.0	4.1	4.2	4.6	4.6	5.2	5.7	5.9	6.6	6.5	7.0	6.8
Hispanic	n	8,406	8,477	8,250	8,429	8,077	7,756	8,211	8,665	8,815	9,247	9,410	9,543	9,764	9,798	10,061
	% ⁴	9.1	9.6	9.8	10.1	9.9	9.7	10.2	10.6	10.9	11.3	11.6	11.8	12.2	12.5	13.1
Teen Births (Ages 15-19)	n	7,258	6,892	6,469	6,412	5,990	5,758	5,801	5,823	5,515	5,305	4,979	4,642	4,639	4,559	4,539
	Rate ³	35.4	35.4	34.0	33.2	30.3	28.5	28.5	28.1	26.7	25.9	24.9	23.3	23.0	22.2	21.7
Births to Unmarried Mothers ⁵	n	22,837	22,852	22,345	22,302	20,857	20,253	20,640	21,191	21,448	21,621	21,620	21,604	22,262	22,376	23,170
	%	24.7	25.9	26.4	26.6	25.6	25.3	25.7	26.0	26.5	26.5	26.7	26.8	27.8	28.5	30.2
C-section	n	20,615	19,495	18,146	17,289	16,758	15,675	15,742	16,975	18,080	19,086	20,639	22,553	23,392	24,295	24,732
	%	22.3	22.1	21.4	20.6	20.6	19.6	19.6	20.9	22.4	23.4	25.5	28.0	29.2	31.0	32.3
Low Birthweight	n	5,388	5,199	5,202	5,335	5,174	5,105	5,617	5,655	5,708	5,711	5,795	6,060	6,115	6,125	6,073
	%	5.8	5.9	6.2	6.4	6.4	6.4	7.0	7.0	7.1	7.1	7.2	7.5	7.6	7.8	7.9
Preterm	n	5,899	6,492	6,201	6,492	6,438	5,705	5,831	6,117	6,136	6,582	6,412	6,795	6,963	7,222	6,925
	%	6.5	7.8	7.4	7.8	7.9	7.2	7.3	7.6	7.6	8.3	8.0	8.5	8.7	9.2	9.0
Adequate Prenatal Care																
Kessner Index ⁶	%	80.1	81.6	83.8	84.3	84.2	79.9	80.0	79.8	79.4	79.1	80.4	79.9	79.9	79.5	78.9
	APNCU Index ⁷						83.3	82.9	82.9	82.9	83.3	85.2	84.7	84.5	84.2	84.0

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Births presented in all tables are resident live births unless otherwise specified. 2. Differences in numbers of births from previous publications are the result of updated files. 3. Birth rates represent the total number of births to women ages 15-44 years per 1,000 females ages 15-44; teen birth rates refer to number of births per 1,000 women age 15-19. 2000-2005 birth rates are calculated Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2000-2005 (MMARS00-05), released October, 2006. 1999 rates are calculated using the 1999 DPH Massachusetts population estimates (see Technical Notes in Appendix). PLEASE NOTE: DIFFERENCES BETWEEN THESE RATES AND PREVIOUSLY PUBLISHED DATA REFLECT UPDATES IN POPULATION ESTIMATES. 4. Percentages are calculated based on births, including those to mothers of unknown race. 5. Includes those women who were unmarried 300 days before giving birth. 6. Adequacy of prenatal care in Massachusetts has historically been measured with the Kessner Index, based on the timing of care and number of visits. This measure is calculated based on only those births with known adequacy of prenatal care. Changes in the calculation of the Kessner Index in 1996, as well as computational adjustments made for 1996-2000 data, make data prior to 1996 non-comparable to data from 1996 onward. 7. Beginning with *Births 2001*, the APNCU Index has replaced the Kessner Index as the standard measurement of adequacy of prenatal care (see Technical Notes in Appendix for more information).

Table 2. Birth Characteristics by Maternal Race and Hispanic Ethnicity and Birthplace, Massachusetts: 2005

Race and Hispanic Ethnicity (by mother's birthplace)	Births		Teen Births				Birthweight				Prenatal Care				Cesarean Section		Breastfeeding ⁵	
			<18 Years		<20 Years		Very Low ²		Low ³		Adequate ⁴		First Trimester					
	n	% ¹	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
State Total	76,824	100.0	1,499	2.0	4,598	6.0	1,098	1.4	6,073	7.9	63,748	84.0	63,410	83.2	24,732	32.3	59,845	79.3
U.S. States / D.C.	54,752	71.3	1,140	2.1	3,504	6.4	785	1.4	4,392	8.0	46,442	85.8	46,574	85.6	17,943	32.9	40,546	75.7
Puerto Rico/U.S. Terr. ⁷	2,018	2.6	164	8.1	385	19.1	44	2.2	206	10.2	1,527	77.2	1,522	76.1	545	27.1	1,483	74.3
Non-U.S.-Born ⁸	20,044	26.1	194	1.0	707	3.5	268	1.3	1,472	7.4	15,774	79.8	15,310	77.2	6,239	31.2	17,812	89.6
White non-Hispanic	53,469	69.6	546	1.0	2,081	3.9	653	1.2	3,896	7.3	46,012	86.8	46,129	86.7	17,861	33.5	40,890	78.1
U.S. States / D.C.	47,050	88.0	511	1.1	1,919	4.1	589	1.3	3,501	7.4	40,650	87.1	40,876	87.3	15,822	33.8	35,134	76.4
Puerto Rico/U.S. Terr. ⁷	79	0.1	-- ⁶	-- ⁶	13	16.5	-- ⁶	-- ⁶	8	10.1	62	79.5	73	92.4	21	26.6	68	88.3
Non-U.S.-Born ⁸	6,335	11.8	33	0.5	149	2.4	64	1.0	386	6.1	5,298	84.2	5,178	82.1	2,016	31.9	5,686	90.8
Black non-Hispanic	6,077	7.9	207	3.4	604	9.9	177	2.9	731	12.0	4,463	76.3	4,258	72.0	2,037	33.7	4,851	80.5
U.S. States / D.C.	3,094	50.9	177	5.7	513	16.6	102	3.3	426	13.8	2,292	76.7	2,235	73.8	959	31.3	2,168	70.9
Puerto Rico/U.S. Terr. ⁷	14	0.2	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	10	76.9	11	78.6	7	50.0	11	78.6
Non-U.S.-Born ⁸	2,967	48.8	30	1.0	91	3.1	74	2.5	302	10.2	2,159	75.8	2,011	70.0	1,070	36.1	2,671	90.4
Hispanic	10,061	13.1	608	6.0	1,551	15.4	160	1.6	828	8.2	7,512	75.8	7,428	74.5	2,713	27.1	8,088	80.8
U.S. States / D.C.	3,185	31.7	352	11.1	822	25.8	59	1.9	319	10.0	2,395	76.5	2,389	75.9	795	25.1	2,166	68.5
Puerto Rico/U.S. Terr. ⁷	1,911	19.0	160	8.4	369	19.3	40	2.1	191	10.0	1,441	76.9	1,427	75.3	514	27.0	1,398	73.6
Non-U.S.-Born ⁸	4,964	49.3	96	1.9	359	7.2	61	1.2	318	6.4	3,675	74.9	3,611	73.4	1,403	28.3	4,523	91.3
Asian	5,251	6.8	66	1.3	163	3.1	47	0.9	409	7.8	4,259	81.6	4,116	78.7	1,515	28.9	4,447	84.9
U.S. States / D.C.	592	11.3	49	8.3	116	19.6	10	1.7	53	9.0	456	77.3	432	73.2	139	23.5	483	82.0
Puerto Rico/U.S. Terr. ⁷	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶
Non-U.S.-Born ⁸	4,659	88.7	17	0.4	47	1.0	37	0.8	356	7.7	3,803	82.2	3,684	79.4	1,376	29.6	3,964	85.3
Other⁹	1,868	2.4	69	3.7	192	10.3	58	3.1	203	10.9	1,468	80.4	1,446	78.5	586	31.6	1,544	86.7
U.S. States / D.C.	754	40.4	49	6.5	129	17.1	23	3.1	90	12.0	620	83.6	614	82.2	215	28.8	573	78.4
Puerto Rico/U.S. Terr. ⁷	13	0.7	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	-- ⁶	5	38.5	13	100.0	10	76.9	-- ⁶	-- ⁶	5	83.3
Non-U.S.-Born ⁸	1,100	58.9	17	1.5	59	5.4	31	2.8	107	9.7	835	77.9	822	76.0	368	33.7	966	92.6
Unknown¹⁰	98	0.1	-- ⁶	-- ⁶	7	7.1	-- ⁶	-- ⁶	6	10.9	34	72.3	33	68.8	20	37.0	25	59.5

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. This column "Births %", the percentages of the race/Hispanic groups (bolded) are based on the state total (including births of unknown race/ethnicity), and the birthplace percents for the race/ethnicities are based on the total number in race/Hispanic ethnicity category. For all other categories, percentages are based on row totals. 2. Very low birthweight: less than 1,500 grams or 3.3 pounds. 3. Low birthweight: less than 2,500 grams or 5.5 pounds. 4. Beginning with *Births 2001*, the Adequacy of Prenatal Care Utilization Index has replaced the Kessner Index as the measure of adequate prenatal care. 5. Mother was breastfeeding or was intending to breastfeed at the time the birth certificate was completed. 6. Calculations based on fewer than five events are excluded. 7. The category "Puerto Rico/U.S. Territories" includes women born in Puerto Rico, the U.S. Virgin Islands, and Guam. Approximately 95% of the births in this category were to women born in Puerto Rico. 8. The category "Non-U.S.-Born" includes women born outside of the 50 U.S. states, District of Columbia, and Puerto Rico/U.S. territories. 9. Other: Mothers who designated themselves as American Indian or Other race. 10. Unknown: Mothers who did not indicate a race/ethnicity.

Table 3. Birth Characteristics by Maternal Ancestry, Massachusetts: 2005

Maternal Ancestry	Births ¹		Teen Births				Birthweight				Prenatal Care				Cesarean Section		Breastfeeding ⁵	
			<18 Years		<20 Years		Very Low ²		Low ³		Adequate ⁴		1st Trimester					
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
State Total	76,824	100.0	1,499	2.0	4,598	6.0	1,098	1.4	6,073	7.9	63,748	84.0	63,410	83.2	24,732	32.3	59,845	79.3
American	33,118	43.1	449	1.4	1,603	4.8	460	1.4	2,579	7.8	28,662	87.0	28,803	87.3	10,799	32.7	25,030	75.7
European	14,139	18.4	50	0.4	246	1.7	113	0.8	872	6.2	12,277	87.4	12,248	87.0	4,844	34.4	11,812	83.8
Puerto Rican	4,414	5.7	454	10.3	1,034	23.4	91	2.1	447	10.1	3,307	76.4	3,295	75.5	1,132	25.8	3,017	68.9
African-American	2,750	3.6	164	6.0	456	16.6	87	3.2	364	13.3	2,037	77.0	2,000	74.4	841	30.9	1,962	71.9
Brazilian	2,058	2.7	24	1.2	104	5.1	19	0.9	126	6.1	1,700	82.8	1,598	77.8	835	40.6	1,931	93.9
Dominican	1,807	2.4	61	3.4	188	10.4	34	1.9	133	7.4	1,364	75.6	1,442	79.9	567	31.4	1,608	89.1
All others ⁶	1,754	2.3	36	2.1	97	5.5	26	1.5	119	6.8	1,471	84.6	1,484	85.1	536	30.7	1,390	79.8
Chinese	1,376	1.8	-- ⁷	-- ⁷	-- ⁷	-- ⁷	7	0.5	90	6.6	1,207	87.9	1,166	84.9	394	28.7	1,226	89.3
Missing	1,312	1.7	9	0.7	26	2.0	61	4.8	198	15.6	956	86.2	1,028	86.4	450	37.2	135	81.8
Other Portuguese	1,295	1.7	22	1.7	83	6.4	17	1.3	108	8.3	1,112	86.1	1,106	85.6	452	35.0	682	52.7
Asian Indian	1,199	1.6	-- ⁷	-- ⁷	5	0.4	7	0.6	105	8.8	967	81.0	977	81.8	418	34.9	1,147	95.8
Haitian	1,136	1.5	6	0.5	23	2.0	34	3.0	125	11.0	804	74.6	747	68.7	417	36.7	995	87.6
Other Central American	1,110	1.4	27	2.4	110	9.9	12	1.1	74	6.7	758	69.2	713	65.0	251	22.7	993	89.5
Salvadoran	1,046	1.4	36	3.4	105	10.0	7	0.7	55	5.3	750	73.7	689	67.3	212	20.3	967	92.7
Other African	1,035	1.3	9	0.9	22	2.1	20	1.9	79	7.6	765	75.7	680	66.9	358	34.7	959	92.7
Cape Verdean	872	1.1	29	3.3	116	13.3	17	1.9	94	10.8	626	73.0	628	72.8	272	31.3	717	82.4
Vietnamese	788	1.0	15	1.9	28	3.6	10	1.3	58	7.4	634	82.0	614	78.8	225	28.7	575	73.3
Cambodian	584	0.8	34	5.8	91	15.6	7	1.2	60	10.3	370	63.4	322	55.1	93	15.9	325	55.7
Mexican	526	0.7	12	2.3	39	7.4	-- ⁷	-- ⁷	35	6.7	398	76.8	371	71.1	163	31.1	471	89.9

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. In the first category, "Births", percentages are based on column total (state total of births, including births for which maternal ethnicity is unknown and other). For all other categories, percentages are based on row totals. 2. Very low birthweight: less than 1,500 grams or 3.3 pounds. 3. Low birthweight: less than 2,500 grams or 5.5 pounds. 4. The Adequacy of Prenatal Care Utilization Index 2 has replaced the Kessner Index as the measure of adequate prenatal care. 5. Mother was breastfeeding or was intending to breastfeed at the time the birth certificate was completed. 6. "Other" refers to groups not specified on the parents' worksheet. See the Glossary entry "ethnicity" for the complete list of ethnicities. 7. Calculations based on fewer than five events are excluded.

Figure 1. Trends in the Number of Births by Mother's Age Group, Massachusetts: 1980-2005

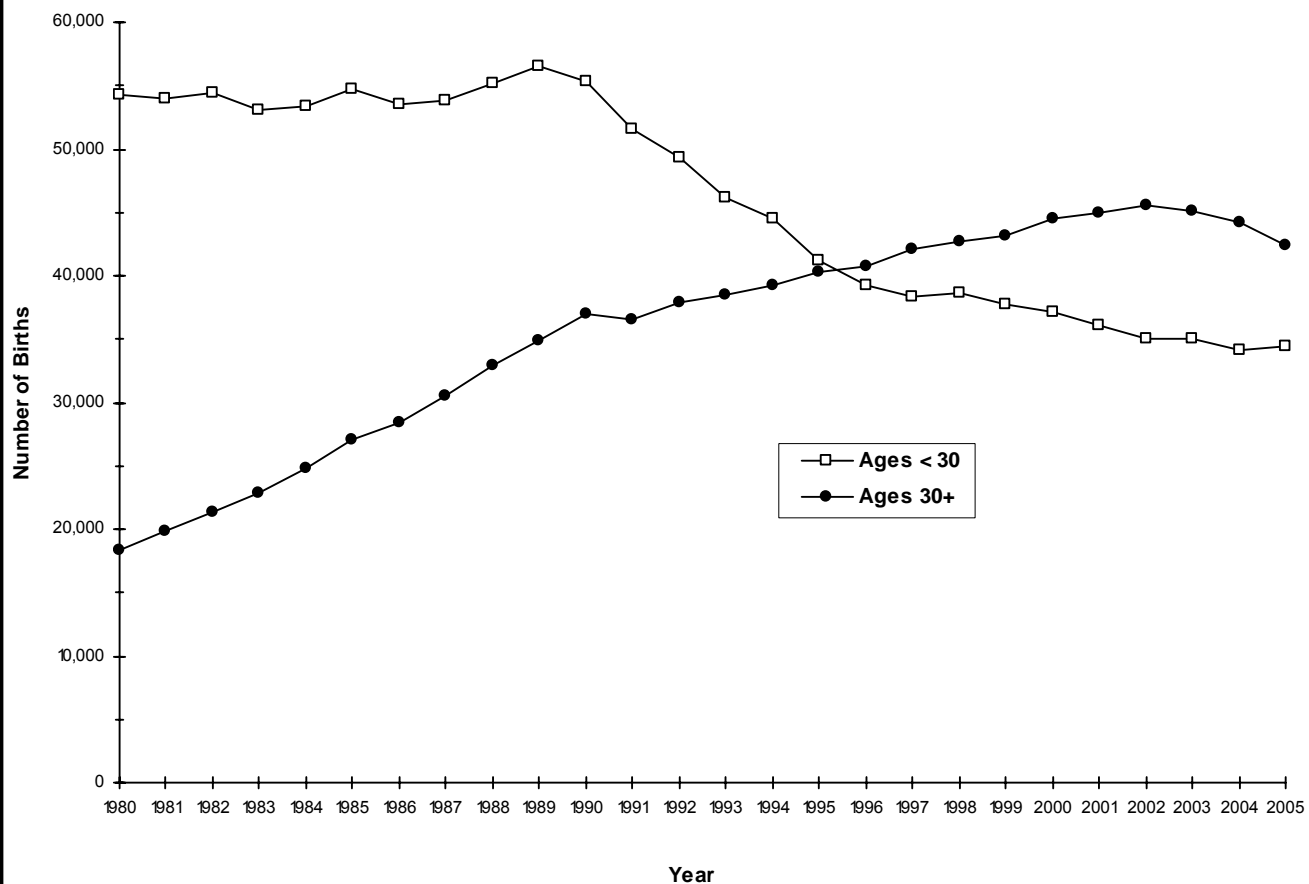


Table 4. Age-Specific and Crude Birth Rates, Massachusetts: 1990 and 2005

Mother's Age	1990		2005		Percent Change in Rate
	Births ¹	Rate	Births	Rate ²	
10-14	124	1.3	59	0.3	-77.9
15-19	7,258	35.1	4,539	21.7	-38.1
20-24	18,115	69.5	11,805	56.3	-19.0
25-29	29,913	107.2	18,026	82.9	-22.6
30-34	25,687	93.9	24,140	107.7	14.7
35-39	9,795	40.1	14,740	59.3	47.8
40-44	1,522	6.9	3,323	12.4	79.1
45+ ³	46	0.3	188	0.1	-53.5
Birth rate, ages 15-44⁴	92,290	62.2	76,573	55.6	-10.6
Crude Birth Rate⁵	92,461	15.4	76,824	11.9	-22.5

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Differences in the number of births from previous publications are the result of updating of the birth files. The number of births for all age groups does not always add to the total number of births as mother's age is sometimes not recorded on the birth certificate.

2. 2005 birth rates are calculated using Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October, 2006 (see Technical Notes in Appendix). 3. Denominator is female population ages 45-49. 4. Rate represents the total number of births to women age 15-44 per 1,000 women age 15 to 44. 5. Births per 1,000 residents (male and female). Includes births to mothers of all age groups and mothers for whom age is unknown.

**Table 5. Trends in Number and Percent Distribution of Births¹ by Plurality and Age
Massachusetts: 1992-2005**

		Singletons		Multiples ²						Total births	
				Twins		Triplets or more		Total Multiples			
Age Group	Year	n	%	n	%	n	%	n	%	n	%
All Ages											
	1992	84,722	97.2	2,347	2.7	133	0.2	2,480	2.8	87,202	100.0
	1993	82,055	97.0	2,367	2.8	205	0.2	2,572	3.0	84,627	100.0
	1994	81,187	96.9	2,357	2.8	214	0.3	2,571	3.1	83,758	100.0
	1995	78,935	96.8	2,429	3.0	198	0.2	2,627	3.2	81,562	100.0
	1996	77,355	96.5	2,621	3.3	194	0.2	2,815	3.5	80,164	100.0
	1997	77,203	96.1	2,856	3.6	262	0.3	3,118	3.9	80,321	100.0
	1998	78,004	95.8	3,114	3.8	288	0.4	3,402	4.2	81,406	100.0
	1999	77,473	95.8	3,147	3.9	246	0.3	3,393	4.2	80,866	100.0
	2000	78,075	95.7	3,263	4.0	244	0.3	3,507	4.3	81,582	100.0
	2001	77,409	95.6	3,371	4.2	234	0.3	3,605	4.4	81,014	100.0
	2002	76,673	95.1	3,708	4.6	243	0.3	3,951	4.9	80,624	100.0
	2003	76,367	95.3	3,551	4.4	249	0.3	3,800	4.7	80,167	100.0
	2004	74,677	95.2	3,538	4.5	245	0.3	3,783	4.8	78,460	100.0
	2005	73,258	95.4	3,375	4.4	190	0.2	3,565	4.6	76,824	100.0
Ages <35											
	1992	73,043	97.3	1,914	2.6	103	0.1	2,017	2.7	75,060	100.0
	1993	70,042	97.2	1,849	2.6	158	0.2	2,007	2.8	72,049	100.0
	1994	68,644	97.2	1,844	2.6	164	0.2	2,008	2.8	70,652	100.0
	1995	65,669	97.2	1,787	2.6	141	0.2	1,928	2.9	67,597	100.0
	1996	63,560	96.9	1,935	2.9	126	0.2	2,061	3.1	65,621	100.0
	1997	62,598	96.7	1,949	3.0	170	0.3	2,119	3.3	64,717	100.0
	1998	62,719	96.4	2,193	3.4	170	0.3	2,363	3.6	65,082	100.0
	1999	61,816	96.4	2,147	3.3	150	0.2	2,297	3.6	64,113	100.0
	2000	61,659	96.4	2,205	3.4	130	0.2	2,335	3.6	63,994	100.0
	2001	60,704	96.3	2,211	3.5	134	0.2	2,345	3.7	63,049	100.0
	2002	59,736	96.0	2,379	3.8	127	0.2	2,506	4.0	62,242	100.0
	2003	59,347	95.9	2,389	3.9	118	0.2	2,507	4.1	61,854	100.0
	2004	57,618	96.0	2,229	3.7	142	0.2	2,371	4.0	59,989	100.0
	2005	56,380	96.3	2,086	3.6	102	0.2	2,188	3.7	58,569	100.0
Ages 35+											
	1992	11,675	96.2	433	3.6	30	0.3	463	3.8	12,138	100.0
	1993	12,007	95.5	518	4.1	47	0.4	565	4.5	12,572	100.0
	1994	12,543	95.7	513	3.9	50	0.4	563	4.3	13,106	100.0
	1995	13,264	95.0	642	4.6	57	0.4	699	5.0	13,963	100.0
	1996	13,793	94.8	686	4.7	68	0.5	754	5.2	14,547	100.0
	1997	14,602	93.6	907	5.8	92	0.6	999	6.4	15,601	100.0
	1998	15,282	93.6	921	5.6	118	0.7	1,039	6.4	16,321	100.0
	1999	15,657	93.5	1,000	6.0	96	0.6	1,096	6.5	16,753	100.0
	2000	16,412	93.3	1,058	6.0	114	0.6	1,172	6.7	17,584	100.0
	2001	16,703	93.0	1,160	6.5	100	0.6	1,260	7.0	17,963	100.0
	2002	16,936	92.1	1,329	7.2	116	0.6	1,445	7.9	18,381	100.0
	2003	17,015	92.9	1,162	6.3	131	0.7	1,293	7.1	18,308	100.0
	2004	17,055	92.4	1,309	7.1	103	0.6	1,412	7.6	18,467	100.0
	2005	16,874	92.5	1,289	7.1	88	0.5	1,377	7.5	18,251	100.0

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Differences in the number of births from previous publications are the result of updated files. 2. Numbers of multiples (n) represent individual infants rather than sets of infants.

Table 6. Summary of Selected Teen Birth Characteristics, Massachusetts: 2005

	Age 15-17		Age 18-19		Combined Ages 15-19	
	N	% ¹	N	% ¹	N	% ¹
State total	1,440	31.7%	3,099	68.3	4,539	100.0%
Maternal Demographics						
Race/Hispanic Ethnicity	N	% ²	N	% ²	N	% ²
White non-Hispanic	537	37.4	1,535	48.0	2,072	44.7
Black non-Hispanic	190	13.2	397	12.4	587	12.7
Asian	64	4.5	197	6.2	261	5.6
Hispanic	580	40.4	943	29.5	1,523	32.9
Other	66	4.6	123	3.8	189	4.1
Birthplace						
U.S. States / D.C.	1,098	76.3	2,364	76.3	3,462	76.3
Puerto Rico / US Terr.	155	10.8	221	7.1	376	8.3
Non-U.S.-born	186	12.9	513	16.6	699	15.4
Prenatal care funding						
Public	1,067	75.9	2,368	77.5	3,435	77.0
Private, other	339	24.1	688	22.5	1,027	23.0
Pregnancy-Related Factors						
Adequacy of Prenatal Care³						
Adequate Total ⁴	948	67.0	2,176	71.1	3,124	69.8
Adequate Intensive	455	32.2	983	32.1	1,438	32.1
Adequate Basic	493	34.9	1,193	39.0	1,686	37.7
Intermediate	133	9.4	333	10.9	466	10.4
Inadequate/None	333	23.6	550	18.0	883	19.7
Unknown	26	1.8	40	1.3	66	1.5
Parity⁶						
1	1,351	94.0	2,510	81.3	3,861	85.3
2	80	5.6	519	16.8	599	13.2
3+	6	0.4	60	1.9	66	1.5
Smoking during Pregnancy						
Yes	155	10.8	484	15.7	639	14.1
No	1,284	89.2	2,607	84.3	3,891	85.9
Birth Outcomes						
Birthweight						
< 500 g	4	-- ⁵	7	0.2	11	0.2
500-1,499 g	35	2.4	38	1.2	73	1.6
1,500-2,499 g	128	8.9	244	7.9	372	8.2
LBW (<2,499 g)	167	11.6	289	9.0	456	10.1
2,500-3,999 g	1,211	84.2	2,633	85.1	3,844	84.8
4000+ g	60	4.2	172	5.6	232	5.1
Gestational age						
< 28 weeks	18	1.3	25	0.8	43	1.0
< 37 weeks	160	11.2	282	9.1	442	9.8
37-42 weeks	1,270	88.8	2,802	90.8	4,072	90.2
43+ weeks	0	-- ⁵	1	-- ⁵	1	-- ⁵
Plurality						
Singleton	1,422	98.8	3,047	98.3	4,469	98.5
Multiple birth	18	1.3	52	1.7	70	1.5

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

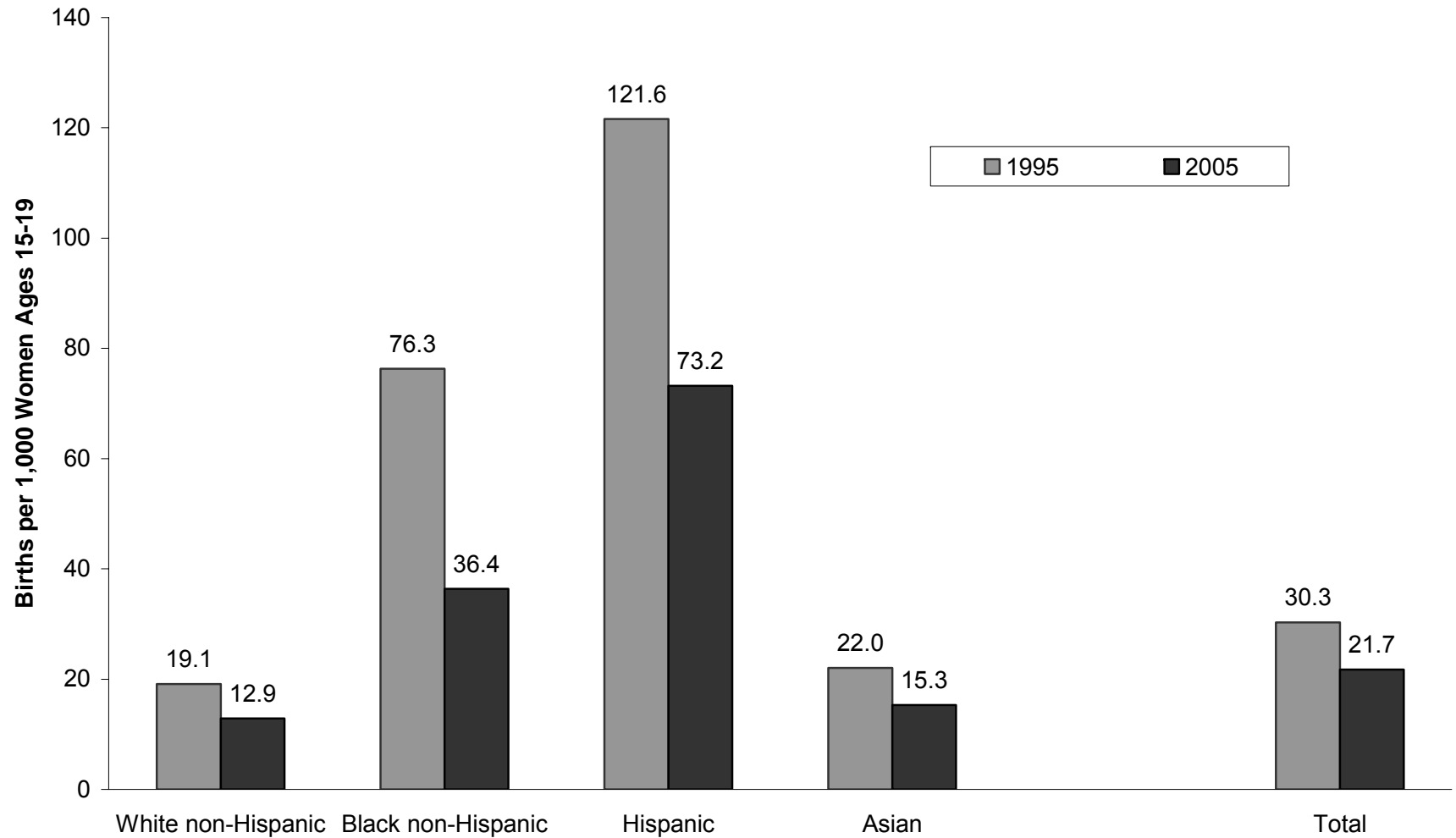
1. For state total row, percentages are based on total births to women ages 15-19. For the rest of the table, percentages are based on births for a given age group and characteristic. 2. Percents are based on state total of the age group. 3. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. 4. Adequate Total = Adequate Basic + Adequate Intensive. 5. Calculations based on fewer than five events are excluded. 6. Number of live births including the current birth.

**Table 7. Trends in Teen Birth Rates for Selected Communities¹, Ranked by 2005 Teen Birth Rate²,
Massachusetts: 1995, 2004, 2005**

2005 Rank	Municipality	1995 ³		2004		2005	
		Number of Teen Births	Teen Birth Rate	Number of Teen Births	Teen Birth Rate	Number of Teen Births	Teen Birth Rate
	State Total	5,990	30.3	4,559	22.2	4,539	21.7
1	Holyoke	170	126.3	115	76.2	146	96.8
2	Chelsea	74	83.7	73	73.0	75	75.0
3	Lawrence	286	115.4	226	74.7	217	71.7
4	Springfield	448	83.0	428	70.5	435	71.6
5	Southbridge	43	78.2	38	68.1	36	64.5
6	New Bedford	203	66.9	183	61.9	174	58.9
7	Pittsfield	68	48.8	59	46.4	67	52.7
8	Lowell	298	84.7	194	48.9	204	51.4
9	Fall River	169	61.2	171	60.4	140	49.5
10	Lynn	175	75.7	135	43.8	146	47.3
11	Revere	44	42.0	42	39.9	48	45.6
12	Chicopee	59	34.0	64	36.8	72	41.4
13	Brockton	183	67.3	161	44.3	148	40.7
14	Fitchburg	93	57.8	70	44.8	62	39.6
15	Worcester	349	56.2	250	35.5	262	37.2
16	Everett	37	39.9	34	32.1	35	33.0
17	Taunton	85	56.0	54	33.1	53	32.5
18	Haverhill	88	56.8	56	29.3	59	30.9
19	Boston	880	47.5	578	29.2	566	28.6
20	Methuen	49	39.3	38	28.6	36	27.1
21	Attleboro	47	44.7	37	32.6	29	25.6
22	Quincy	44	22.1	34	16.4	48	23.1
23	Framingham	51	26.8	44	22.5	45	23.0
24	Barnstable	23	19.4	21	15.4	29	21.3
25	Somerville	57	34.7	36	16.6	37	17.1

1. Selected communities include the 25 Massachusetts cities and towns with the greatest number of teen births. Ranking is by 2005 teen birth rate. 2. Rates are per 1,000 females ages 15-19 per city/town.
3. Source for 1995 births and rates: Massachusetts Community Health Information Profile (MassCHIP), MDPH, v3.0 r315, December 2006; natality dataset and MISER 1995 population estimate.

Figure 2. Birth Rates Among Women Ages 15-19 by Mother's Race and Hispanic Ethnicity, Massachusetts: 1995-2005



Teen birth rate is number of births to women ages 15-19 per 1,000 women ages 15-19

Population data sources: denominators for 1995 rates are based on the 1993 MISER Population Estimates. 2005 birth rates are calculated using Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October, 2006.

Table 8. Births by Birthweight, Race and Hispanic Ethnicity, Massachusetts: 2005

Birthweight (in grams)	Total		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other		Unknown race/ethnicity n
	n	% ¹	n	% ¹	n	% ¹	n	% ¹	n	% ¹	n	% ¹	
State Total	76,824	100.0	53,469	100.0	6,077	100.0	10,061	100.0	5,251	100.0	1,868	100.0	98
<500	127	0.2	72	0.1	19	0.3	23	0.2	3	-- ²	7	0.4	3
500-999	408	0.5	211	0.4	88	1.4	64	0.6	19	0.4	26	1.4	0
1,000-1,499	563	0.7	370	0.7	70	1.2	73	0.7	25	0.5	25	1.3	0
1,500-1,999	1,285	1.7	846	1.6	153	2.5	157	1.6	86	1.6	43	2.3	0
2,000-2,499	3,690	4.8	2,397	4.5	401	6.6	511	5.1	276	5.3	102	5.5	3
2,500-2,999	12,351	16.1	7,625	14.3	1,258	20.7	1,947	19.4	1,186	22.6	325	17.4	10
3,000-3,499	28,545	37.2	19,264	36.0	2,248	37.0	4,041	40.2	2,246	42.8	726	38.9	20
3,500-3,999	22,258	29.0	16,612	31.1	1,443	23.7	2,551	25.4	1,146	21.8	491	26.3	15
4,000-4,499	6,345	8.3	5,107	9.6	332	5.5	573	5.7	228	4.3	101	5.4	4
4,500-4,999	1,022	1.3	829	1.6	51	0.8	97	1.0	24	0.5	21	1.1	0
>=5,000	102	0.1	81	0.2	8	0.1	10	0.1	3	-- ²	0	-- ²	0
Unknown birthweight	128	0.2	55	0.1	6	0.1	14	0.1	9	0.2	1	-- ²	43
VLBW³ (0-1,499 g)	1,098	1.4	653	1.2	177	2.9	160	1.6	47	0.9	58	3.1	3
LBW⁴ (0-2,499 g)	6,073	7.9	3,896	7.3	731	12.0	828	8.2	409	7.8	203	10.9	6

NOTE: Percentages for detailed birthweight rows ("<500" through "Unknown birthweight") are calculated based on births including those with unknown birthweight. Percentages for VLBW and LBW rows are calculated based on births with known birthweight only.

1. Percentages are based on column totals. 2. Calculations based on fewer than five events are excluded. 3. Very Low Birthweight (VLBW): less than 1,500 grams (3.3 lbs.).

4. Low Birthweight (LBW): less than 2,500 grams (5.5 lbs.).

Table 9. Low Birthweight by Plurality, Massachusetts: 1995-2005

Age Group	Year	Singleton				Multiples								Total Births							
						Twin				Triplets or more				Total Multiples							
		VLBW ¹		LBW ²		VLBW ¹		LBW ²		VLBW ¹		LBW ²		VLBW ¹		LBW ²		VLBW ¹		LBW ²	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Ages	1995	674	0.9	3,867	4.9	227	9.4	1,128	46.6	63	31.8	179	90.4	290	11.1	1,307	49.9	964	1.2	5,174	6.4
	1996	657	0.9	3,674	4.8	227	8.8	1,264	49.1	45	24.5	167	90.8	272	9.9	1,431	51.9	929	1.2	5,105	6.4
	1997	731	0.9	3,938	5.1	292	10.3	1,439	50.5	75	28.6	240	91.6	367	11.8	1,679	54.0	1,098	1.4	5,617	7.0
	1998	690	0.9	3,819	4.9	298	9.6	1,570	50.7	82	28.5	266	92.4	380	11.2	1,836	54.2	1,070	1.3	5,655	7.0
	1999	731	0.9	3,869	5.0	324	10.3	1,617	51.6	65	26.5	222	90.6	389	11.5	1,839	54.5	1,120	1.4	5,708	7.1
	2000	722	0.9	3,886	5.1	284	8.9	1,603	50.0	84	35.0	222	92.5	368	10.7	1,825	53.0	1,090	1.4	5,711	7.1
	2001	730	0.9	3,931	5.1	310	9.2	1,654	49.2	74	32.9	210	93.3	384	10.7	1,864	52.0	1,114	1.4	5,795	7.2
	2002	699	0.9	3,972	5.2	342	9.2	1,855	50.2	68	28.0	233	95.9	410	10.4	2,088	53.0	1,109	1.4	6,060	7.5
	2003	713	0.9	4,006	5.3	331	9.3	1,877	52.9	71	28.5	232	93.2	402	10.6	2,109	55.6	1,115	1.4	6,115	7.6
	2004	740	1.0	4,015	5.4	324	9.2	1,879	53.2	84	34.4	231	94.7	408	10.8	2,110	55.9	1,148	1.5	6,125	7.8
Ages < 35	2005	701	1.0	4,126	5.6	322	9.5	1,765	52.3	75	39.5	181	95.3	397	11.1	1,946	54.6	1,098	1.4	6,072	7.9
	1995	543	0.8	3,187	4.9	196	11.0	852	47.9	52	36.9	135	95.7	248	12.9	987	51.4	791	1.2	4,174	6.2
	1996	501	0.8	2,937	4.7	194	10.2	944	49.9	32	27.1	111	94.1	226	11.2	1,055	52.5	727	1.1	3,992	6.1
	1997	566	0.9	3,179	5.1	214	11.0	1,030	53.0	46	27.1	153	90.0	260	12.3	1,183	55.9	826	1.3	4,362	6.8
	1998	540	0.9	3,086	4.9	248	11.4	1,148	52.5	60	35.3	153	90.0	308	13.1	1,301	55.2	848	1.3	4,387	6.8
	1999	569	0.9	3,082	5.0	231	10.8	1,124	52.6	49	32.9	138	92.6	280	12.3	1,262	55.2	849	1.3	4,344	6.8
	2000	555	0.9	3,096	5.1	204	9.4	1,097	50.7	49	38.0	125	96.9	253	11.0	1,222	53.3	808	1.3	4,318	6.9
	2001	576	1.0	3,147	5.2	235	10.7	1,156	52.4	41	31.3	120	91.6	276	11.8	1,276	54.6	852	1.4	4,423	7.0
	2002	537	0.9	3,129	5.2	237	10.0	1,229	51.9	42	33.1	125	98.4	279	11.2	1,354	54.2	816	1.3	4,483	7.2
	2003	539	0.9	3,161	5.3	256	10.7	1,325	55.5	38	32.2	114	96.6	294	11.7	1,439	57.5	833	1.3	4,600	7.5
Ages 35+	2004	565	1.0	3,128	5.4	207	9.3	1,224	55.0	56	39.7	133	94.3	263	11.1	1,357	57.3	828	1.4	4,485	7.5
	2005	552	1.0	3,198	5.7	215	10.3	1,149	55.1	47	46.1	100	98.0	262	12.0	1,249	57.1	814	1.4	4,447	7.6
	1995	130	1.0	679	5.1	31	4.8	276	43.0	11	19.3	44	77.2	42	6.0	320	45.8	172	1.2	999	7.2
	1996	156	1.1	737	5.4	33	4.9	320	47.1	13	19.7	56	84.8	46	6.2	376	50.5	202	1.4	1,113	7.7
	1997	165	1.1	759	5.2	78	8.6	409	45.3	29	31.5	87	94.6	107	10.8	496	49.9	272	1.7	1,255	8.1
	1998	150	1.0	733	4.8	50	5.5	422	46.2	22	18.6	113	95.8	72	7.0	535	51.8	222	1.4	1,268	7.8
	1999	162	1.0	787	5.0	93	9.3	493	49.5	16	16.7	84	87.5	109	10.0	577	52.8	271	1.6	1,364	8.2
	2000	167	1.0	790	4.9	80	7.7	506	48.6	35	31.5	97	87.4	115	10.0	603	52.3	282	1.6	1,393	8.1
	2001	154	0.9	784	4.7	75	6.5	498	43.2	33	35.1	90	95.7	108	8.7	588	47.2	262	1.5	1,372	7.7
	2002	161	1.0	842	5.0	105	7.9	626	47.1	26	22.4	108	93.1	131	9.1	734	50.8	292	1.6	1,576	8.6
Ages 35+	2003	174	1.0	844	5.0	75	6.5	552	47.5	33	25.2	118	90.1	108	8.4	670	51.9	282	1.5	1,514	8.3
	2004	174	1.0	886	5.2	117	9.0	655	50.2	28	27.2	98	95.1	145	10.3	753	53.5	319	1.7	1,639	8.9
	2005	149	0.9	927	5.5	107	8.3	616	47.8	28	31.8	81	92.0	135	9.8	697	50.6	284	1.6	1,624	8.9

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Very Low Birthweight (VLBW): less than 1,500 grams (3.3 lbs.). 2. Low Birthweight (LBW): less than 2,500 grams (5.5 lbs.).

Table 10. Births by Gestational Age¹, Race and Hispanic Ethnicity, Massachusetts: 2005

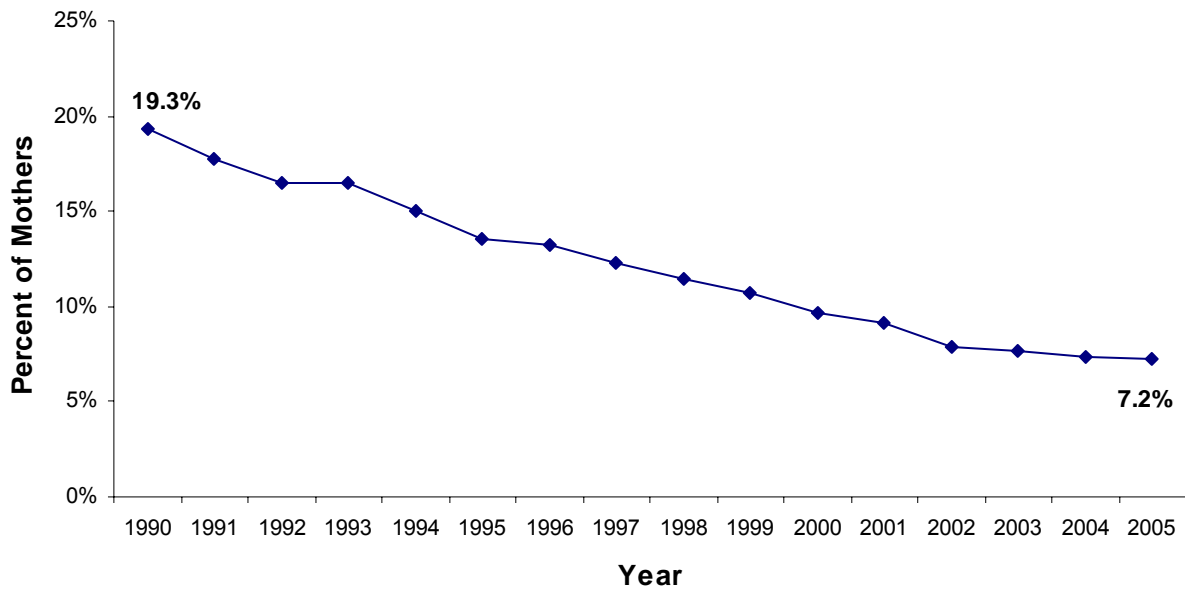
Gestational Age ⁴ (weeks completed)	Total		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other ³		Unknown
	n	% ²	n	% ²	n	% ²	n	% ²	n	% ²	n	% ²	n
State Total	76,824	100.0	53,469	100.0	6,077	100.0	10,061	100.0	5,251	100.0	1,868	100.0	98
<20	23	0.0	9	0.0	3	-- ⁸	7	0.1	0	-- ⁸	4	-- ⁸	0
20-23	142	0.2	84	0.2	26	0.4	21	0.2	4	-- ⁸	5	0.3	2
24-27	325	0.4	169	0.3	71	1.2	52	0.5	12	0.2	20	1.1	1
28-31	707	0.9	470	0.9	85	1.4	91	0.9	33	0.6	28	1.5	0
32-35	3,160	4.1	2,186	4.1	297	4.9	421	4.2	173	3.3	81	4.3	2
36	2,568	3.3	1,751	3.3	266	4.4	315	3.1	162	3.1	72	3.9	2
37-39	37,564	48.9	26,104	48.8	2,821	46.4	5,035	50.0	2,765	52.7	816	43.7	23
40	23,747	30.9	16,657	31.2	1,792	29.5	3,071	30.5	1,610	30.7	601	32.2	16
41	7,683	10.0	5,487	10.3	613	10.1	916	9.1	453	8.6	206	11.0	8
42	581	0.8	381	0.7	61	1.0	87	0.9	27	0.5	25	1.3	0
43	20	0.0	8	0.0	8	0.1	3	-- ⁸	0	-- ⁸	1	-- ⁸	0
44+	2	-- ⁸	2	-- ⁸	0	-- ⁸	0	-- ⁸	0	-- ⁸	0	-- ⁸	0
Unknown⁵	302	0.4	161	0.3	34	0.6	42	0.4	12	0.2	9	0.5	44
Very early gestation, <28 weeks⁶	490	0.6	262	0.5	100	1.7	80	0.8	16	0.3	29	1.6	3
Preterm, <37 weeks⁷	6,925	9.0	4,669	8.8	748	12.4	907	9.1	384	7.3	210	11.3	7

NOTE: Percentages for detailed gestational age category rows ("<20" through "Unknown") are calculated based on births including those with unknown gestational age. Percentages for "Very early gestation" and "Preterm" rows are calculated based on births with known gestational age only.

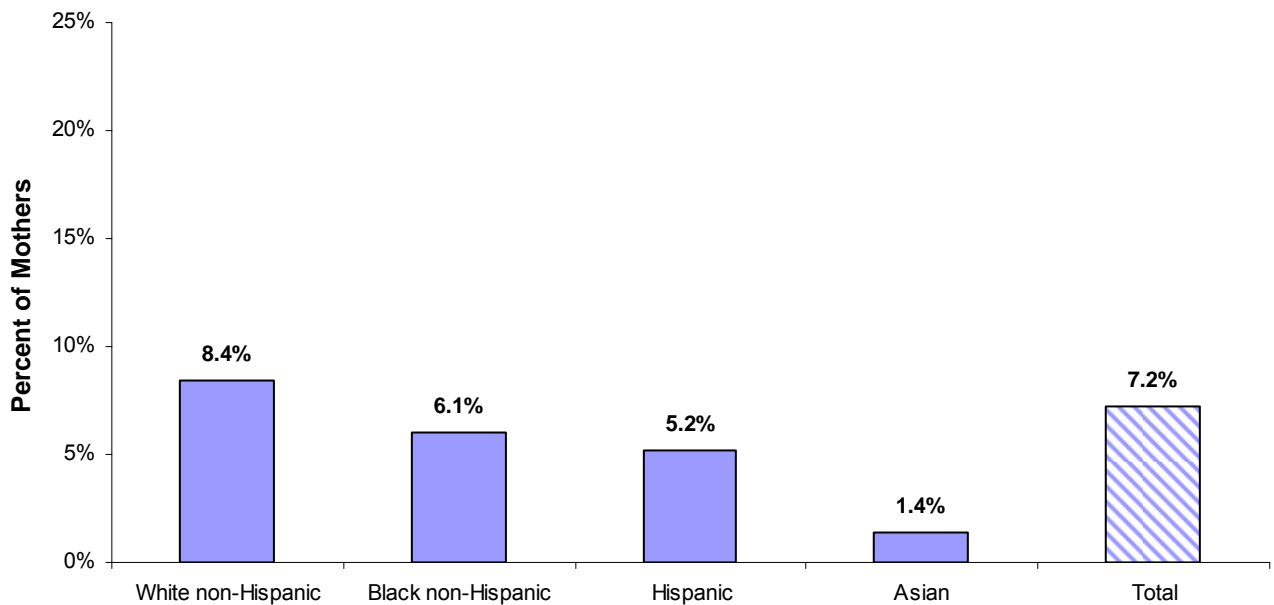
1. A clinical estimate of the number of weeks of pregnancy completed; as estimated by the attendant at birth or the postnatal physician. 2. Percentages are based on column total. 3. Other races include American Indian and others not specified. 4. Normal gestational age is defined as 37-42 weeks. 5. Estimate of gestational age not provided. 6. Also known as extremely premature delivery, or extremely preterm delivery.

7. Also known as early gestational age, premature delivery, or preterm delivery. 8. Calculations based on fewer than five events are excluded.

**Figure 3. Percent of Mothers who Smoked During Pregnancy¹,
Massachusetts: 1990-2005**



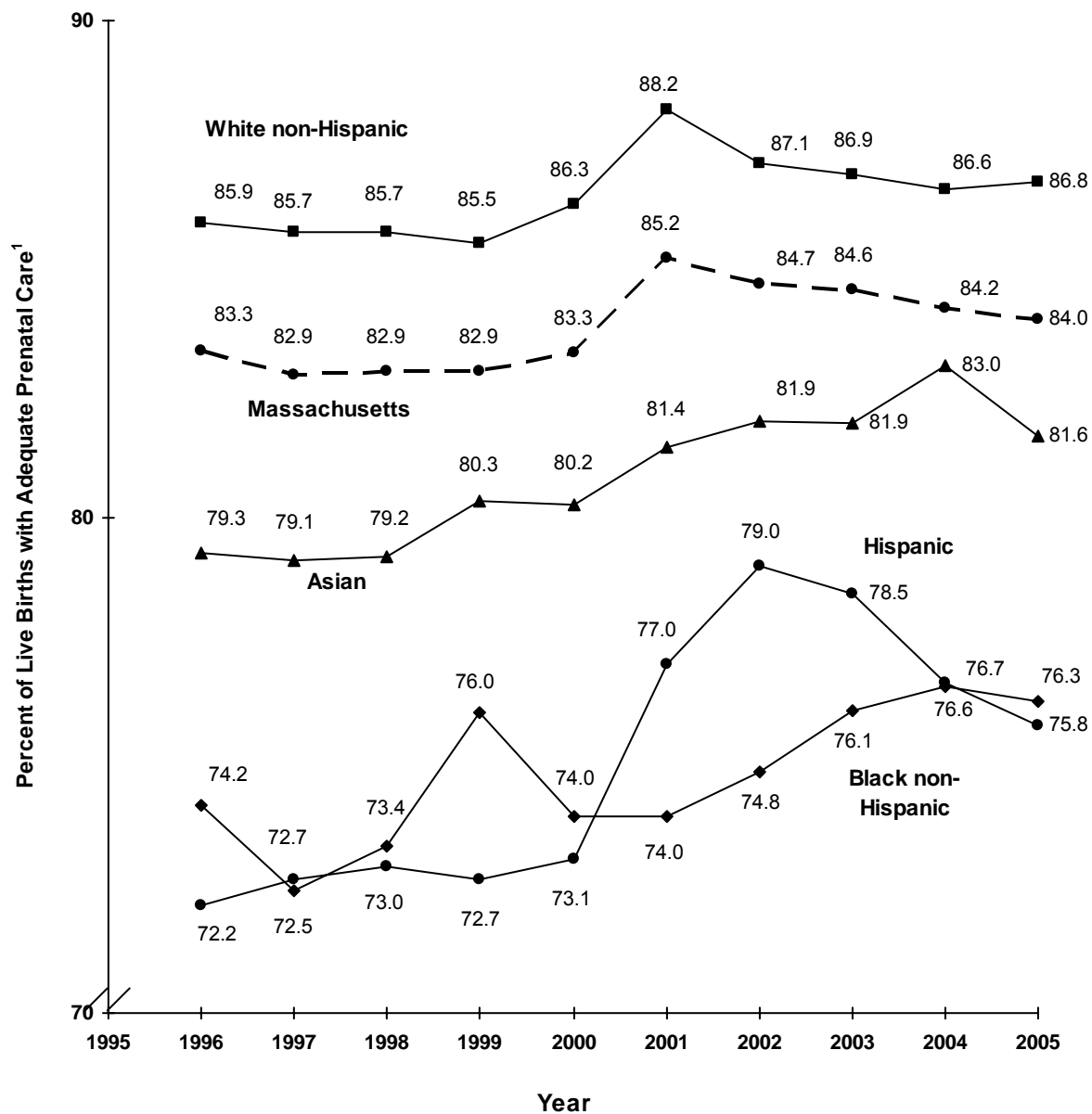
**Figure 4. Percent of Mothers who Smoked During Pregnancy¹, by Mother's
Race/Hispanic Ethnicity, Massachusetts: 2005**



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Based on information provided on the birth certificate as reported by the mother. Due to self-reported nature, data on smoking prevalence should be interpreted cautiously. Mothers with more than one delivery are counted for each birth. 2. Caution should be used with Asian data because of small numbers.

Figure 5. Trends in Adequacy of Prenatal Care¹ by Race and Hispanic Ethnicity, Massachusetts: 1996-2005

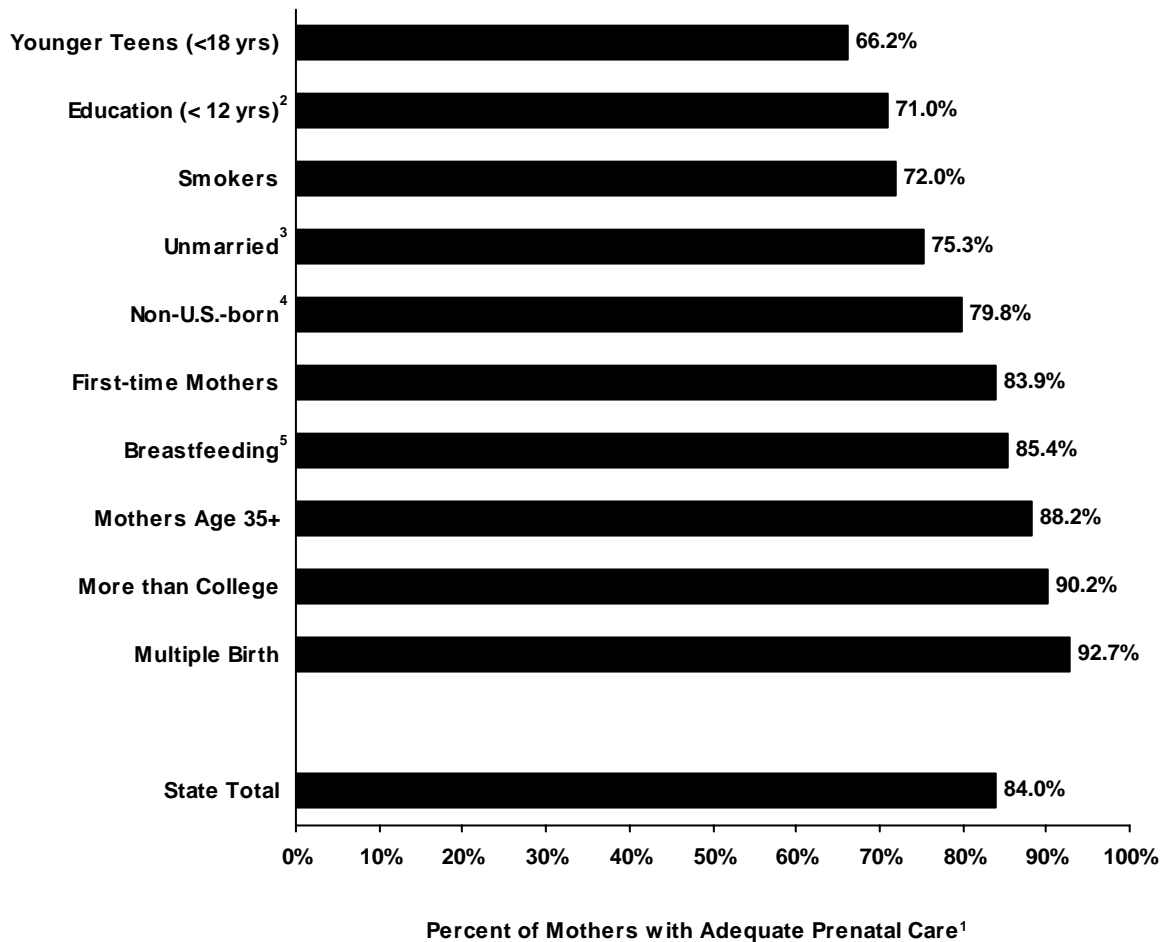


PLEASE NOTE THAT THE VERTICAL SCALE OF GRAPH REPRESENTS A SMALL INTERVAL (from 70% to 90%) FOR PURPOSES OF VISUAL REPRESENTATION.

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Please note: The APNCU is an assessment of the timing and number of prenatal care visits and not an evaluation of the quality of care delivered.

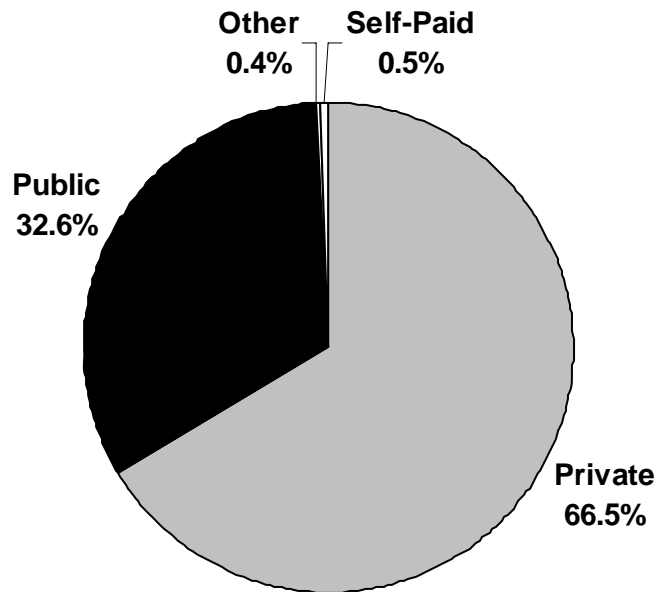
Figure 6. Adequacy of Prenatal Care¹ for Selected Maternal Characteristics, Massachusetts: 2005



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. Characteristics of interest are not mutually exclusive, except as noted.

1. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. 2. Women 20 years of age and older. 3. Marital status at time of birth. 4. Non-U.S.-born includes women born outside of the 50 U.S. states, District of Columbia, and U.S. territories (Puerto Rico, U.S. Virgin Islands, Guam). 5. Mother was or was intending to breastfeed at the time the birth certificate was completed.

Figure 7. Distribution of Prenatal Care Payment Source¹, Massachusetts: 2005



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Private: Commercial indemnity plan, commercial managed care (HMO, PPO, IPP, IPA, and other), or other private insurance. Public: Government programs including Commonhealth, Healthy Start, Medicaid/MassHealth, and Medicare (may also be HMO or managed care), or free care. Other: Worker's Compensation and other sources.

Table 11. Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race and Hispanic Ethnicity, Massachusetts: 1990-2005

INFANT MORTALITY (less than one year of age)												
Year	State Total ¹		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other ²	
	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³
1990	649	7.0	442	6.1	98	13.7	77	9.1	24	7.0	8	9.5
1991	577	6.5	381	5.5	101	15.0	80	9.4	14	4.2	1	-- ⁴
1992	569	6.5	371	5.5	110	16.4	67	7.9	16	4.9	5	5.1
1993	523	6.2	346	5.3	84	13.1	77	9.3	13	3.9	3	-- ⁴
1994	499	6.0	343	5.3	79	12.6	64	7.6	8	2.4	5	5.3
1995	419	5.1	275	4.4	65	11.1	58	7.2	19	5.5	2	-- ⁴
1996	403	5.0	289	4.7	63	11.4	40	5.1	8	2.2	2	-- ⁴
1997	425	5.3	294	4.8	64	11.7	55	6.7	10	2.6	2	-- ⁴
1998	414	5.1	287	4.6	59	10.6	58	6.7	10	2.7	0	0.0
1999	418	5.2	285	4.7	72	12.3	49	5.5	8	1.9	4	-- ⁴
2000	377	4.6	232	3.8	74	12.8	48	5.2	19	4.1	4	-- ⁴
2001	407	5.0	245	4.1	71	12.1	69	7.3	15	3.1	7	4.1
2002	397	4.9	239	4.1	69	11.6	67	7.0	16	3.0	6	3.8
2003	383	4.8	235	4.1	75	12.7	55	5.6	14	2.7	4	-- ⁴
2004	376	4.8	210	3.8	70	11.5	75	7.6	15	2.7	6	3.5
2005	391	5.1	230	4.3	57	9.4	78	7.7	18	3.4	8	4.3

NEONATAL MORTALITY (birth to 27 days)												
Year	State Total ¹		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other ²	
	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³
1990	446	4.8	298	4.1	75	10.5	49	5.8	19	5.5	5	5.5
1991	401	4.5	266	3.9	72	10.7	53	6.2	10	3.0	0	0.0
1992	415	4.8	274	4.0	76	11.4	51	6.0	10	3.0	4	-- ⁴
1993	375	4.4	245	3.7	64	10.0	55	6.7	9	2.7	2	-- ⁴
1994	349	4.2	240	3.7	58	9.3	40	4.7	7	2.1	4	-- ⁴
1995	298	3.6	198	3.1	50	8.5	39	4.8	10	2.9	1	-- ⁴
1996	290	3.6	222	3.6	34	6.2	27	3.5	5	1.4	1	-- ⁴
1997	323	4.0	228	3.7	44	8.0	43	5.2	7	1.8	1	-- ⁴
1998	315	3.9	218	3.5	47	8.5	43	5.0	7	1.9	0	0.0
1999	332	4.1	226	3.7	58	9.9	39	4.4	5	1.2	4	-- ⁴
2000	288	3.5	177	2.9	57	9.9	37	4.0	14	3.0	3	-- ⁴
2001	308	3.8	190	3.2	56	9.5	49	5.2	10	2.1	3	-- ⁴
2002	299	3.7	185	3.2	49	8.2	50	5.2	13	2.4	2	-- ⁴
2003	285	3.6	179	3.1	56	9.5	38	3.9	10	1.9	2	-- ⁴
2004	291	3.7	167	3.0	51	8.4	57	5.8	12	2.2	4	-- ⁴
2005	282	3.7	168	3.1	40	6.6	57	5.8	11	2.1	5	2.7

Table 11 (cont.). Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race and Hispanic Ethnicity, Massachusetts: 1990-2005

POST NEONATAL MORTALITY (28-364 days)

Year	State Total ¹		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other ²	
	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³	n	Rate ³
1990	203	2.2	144	2.0	23	3.2	28	3.3	5	1.5	3	-- ⁴
1991	176	2.0	115	1.7	29	4.3	27	3.2	4	-- ⁴	1	-- ⁴
1992	154	1.8	97	1.4	34	5.1	16	1.9	6	1.8	1	-- ⁴
1993	148	1.7	101	1.5	20	3.1	22	2.7	4	-- ⁴	1	-- ⁴
1994	150	1.8	103	1.6	21	3.3	24	2.8	1	-- ⁴	1	-- ⁴
1995	121	1.5	77	1.2	15	2.6	19	2.3	9	2.6	1	-- ⁴
1996	113	1.4	67	1.1	29	5.3	13	1.7	3	-- ⁴	1	-- ⁴
1997	102	1.3	66	1.1	20	3.7	12	1.5	3	-- ⁴	1	-- ⁴
1998	99	1.2	69	1.1	12	2.2	15	1.7	3	-- ⁴	0	0.0
1999	86	1.1	59	1.0	14	2.4	10	1.1	3	-- ⁴	0	0.0
2000	89	1.1	55	0.9	17	2.9	11	1.2	5	1.1	1	-- ⁴
2001	99	1.2	55	0.9	15	2.6	20	2.1	5	1.0	4	-- ⁴
2002	98	1.2	54	0.9	20	3.4	17	1.8	3	-- ⁴	4	-- ⁴
2003	98	1.2	56	1.0	19	3.2	17	1.7	4	-- ⁴	2	-- ⁴
2004	85	1.1	43	0.8	19	3.1	18	1.8	3	-- ⁴	2	-- ⁴
2005	109	1.4	62	1.2	17	2.8	20	2.0	7	1.3	3	-- ⁴

1. Deaths of infants of unknown race are included in the total calculation. For rate computations, births of infants of unknown race are allocated into the race categories according to the distribution of births of known race. 2. Other: American Indian and Other races. 3. Rates are expressed per 1,000 live births. 4. Calculations based on fewer than five events are excluded.

**Figure 8. Infant Mortality Rates by Race and Hispanic Ethnicity,
Massachusetts: 2005**

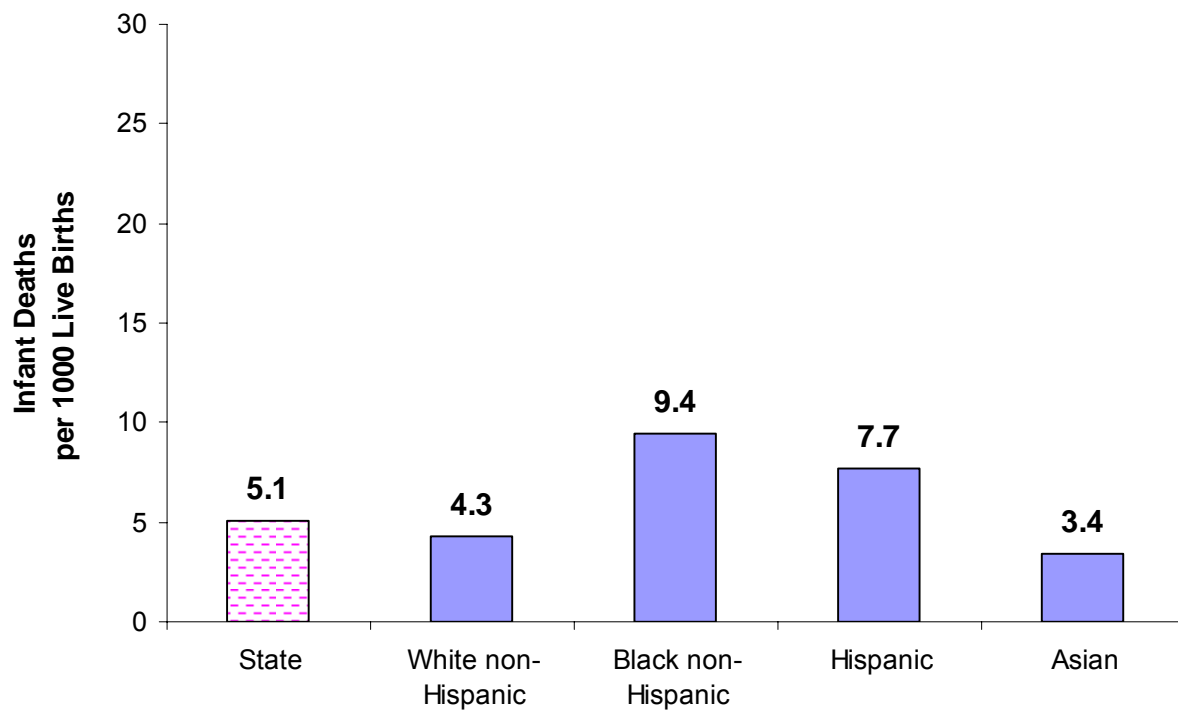


Table 12. Resident Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2005

Municipality ¹	Rank (by pop. size)	Population	Crude Birth Rate ²	Mother's Race and Ethnicity				Very Low Birthweight (<1500 g)	Low Birthweight (<2500 g)
				White non- Hispanic	Black non- Hispanic	Hispanic	Asian or Other ⁴		
				% ³	% ³	% ³	% ³		
STATE TOTAL		6,436,940	11.9	69.6	7.9	13.1	9.3	1.4	7.9
Attleboro	29	43,364	14.3	80.4	2.9	7.6	9.2	1.3	8.5
Barnstable	25	47,902	9.5	81.5	5.3	4.2	8.8	1.3	6.2
Boston	1	558,435	13.5	35.7	28.8	21.2	14.2	2.1	9.6
Brockton	6	100,366	15.4	35.0	38.2	12.3	14.5	2.3	11.5
Brookline	18	56,422	10.9	71.0	3.1	3.4	22.3	1.6	6.0
Cambridge	5	101,529	10.1	57.2	15.0	8.6	19.1	0.5	7.2
Chicopee	21	54,599	11.1	77.0	2.8	16.8	3.5	1.2	6.9
Fall River	9	92,117	13.0	80.0	7.4	7.8	4.8	1.4	7.9
Framingham	14	65,651	15.3	68.3	6.1	14.8	10.8	1.8	8.0
Haverhill	15	60,032	13.7	76.6	2.9	16.3	4.2	1.1	7.9
Lawrence	12	81,591	17.9	15.7	2.7	78.5	3.2	2.6	9.0
Leominster	30	42,120	12.2	67.7	6.4	19.3	6.6	1.2	5.5
Lowell	4	105,749	15.8	45.3	7.3	19.3	28.0	1.2	9.2
Lynn	8	92,186	16.1	36.2	13.7	39.3	10.7	1.4	8.3
Malden	17	56,730	14.0	46.7	17.9	11.6	23.5	2.8	9.6
Medford	22	53,801	11.3	73.3	11.2	3.8	11.7	1.5	7.8
Methuen	27	44,532	13.1	69.8	2.9	23.0	4.3	1.0	6.5
New Bedford	7	94,502	14.7	63.8	6.5	21.4	8.3	1.8	10.6
Newton	11	83,346	9.5	77.4	2.2	4.1	16.4	0.6	6.5
Peabody	24	50,954	9.5	84.6	3.1	7.8	4.5	1.9	9.7
Pittsfield	28	43,949	12.0	80.6	6.5	8.2	4.6	-- ⁵	8.4
Plymouth	20	54,781	12.0	92.4	1.5	1.8	4.1	1.1	8.5
Quincy	10	90,458	12.6	58.6	5.7	4.6	30.9	0.7	7.3
Revere	26	45,551	14.1	50.3	4.5	30.8	14.2	1.9	10.9
Somerville	13	75,372	12.0	63.0	9.0	16.1	11.9	0.8	6.5
Springfield	3	156,358	15.2	28.0	20.1	47.0	4.7	2.2	9.8
Taunton	19	56,348	13.1	80.5	7.1	4.3	7.9	1.8	9.5
Waltham	16	59,564	12.3	53.9	7.0	21.8	17.2	0.7	7.9
Weymouth	23	53,708	13.1	86.9	2.9	1.4	8.6	1.4	7.7
Worcester	2	179,839	14.4	59.1	12.3	20.7	7.8	2.2	8.3

Table 12 (cont'd). Resident Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2005

Municipality ¹	Birth				Deaths				
	Adequate Prenatal Care ⁶	Public Payment ⁷ for Prenatal Care	Unmarried	Teen Mothers 15 to 19 years	Infant Mortality Rate ⁸		Neonatal Mortality Rate ⁸		
	%	%	%	n	Rate ²	2005	2003-2005	2005	2003-2005
STATE TOTAL	84.0	32.6	30.2	4,539	21.7	5.1	4.9	3.7	3.6
Attleboro	77.6	26.3	23.8	29	25.6	-- ⁵	3.2	-- ⁵	2.7
Barnstable	89.2	44.9	33.0	29	21.3	-- ⁵	6.6	-- ⁵	4.4
Boston	84.1	46.8	44.9	566	28.6	5.2	5.8	4.2	4.5
Brockton	74.6	60.8	52.8	148	40.7	6.5	7.6	5.8	5.8
Brookline	94.7	5.6	6.0	-- ⁵	-- ⁵	-- ⁵	3.5	-- ⁵	3.0
Cambridge	89.5	17.0	15.2	20	5.1	-- ⁵	2.8	-- ⁵	2.2
Chicopee	82.9	51.1	45.4	72	41.4	-- ⁵	6.6	-- ⁵	3.3
Fall River	85.7	61.9	50.8	140	49.5	7.5	6.0	-- ⁵	3.6
Framingham	86.6	36.6	25.3	45	23.0	6.0	6.4	5.0	5.1
Haverhill	86.8	31.2	33.1	59	30.9	-- ⁵	3.1	-- ⁵	1.9
Lawrence	71.1	70.5	64.5	217	71.7	7.5	7.5	6.2	5.9
Leominster	84.0	36.0	35.0	22	17.5	-- ⁵	5.0	-- ⁵	3.8
Lowell	68.2	54.6	51.3	204	51.4	6.6	7.8	3.0	5.0
Lynn	73.8	63.8	50.7	146	47.3	-- ⁵	5.9	-- ⁵	4.5
Malden	84.1	44.2	29.5	23	16.1	11.4	5.7	11.4	5.7
Medford	87.1	26.5	20.3	13	7.3	-- ⁵	4.4	-- ⁵	3.3
Methuen	83.2	23.9	28.4	36	27.1	-- ⁵	3.3	-- ⁵	-- ⁵
New Bedford	77.4	59.2	60.0	174	58.9	8.6	6.9	5.0	4.2
Newton	88.5	6.1	5.8	-- ⁵	-- ⁵	-- ⁵	3.8	-- ⁵	3.8
Peabody	81.0	28.2	23.0	15	10.5	-- ⁵	3.9	-- ⁵	3.9
Pittsfield	61.0	53.0	47.6	67	52.7	-- ⁵	5.7	-- ⁵	3.1
Plymouth	86.3	17.6	19.1	26	15.6	-- ⁵	4.8	-- ⁵	3.8
Quincy	86.4	33.0	26.6	48	23.1	4.4	4.6	-- ⁵	3.4
Revere	81.2	58.1	37.5	48	45.6	10.9	5.4	10.9	5.4
Somerville	83.2	40.7	32.0	37	17.1	-- ⁵	3.7	-- ⁵	3.4
Springfield	71.6	70.9	67.7	435	71.6	10.6	7.1	8.0	4.7
Taunton	78.1	41.2	41.8	53	32.5	8.1	5.3	-- ⁵	3.5
Waltham	82.1	28.4	22.2	22	9.4	0.0	2.3	0.0	2.3
Weymouth	88.8	25.8	24.1	22	15.2	8.6	7.5	7.1	6.6
Worcester	82.7	47.0	45.8	262	37.2	13.9	8.3	11.6	6.4

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. The 30 largest municipalities are the cities and towns in Massachusetts with the largest populations according to DPH 2005 Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October, 2006 (see Technical Notes in Appendix). 2. Crude birth rates represent the number of births per 1,000 residents; teen birth rates refer to the number of births per 1,000 females ages 15-19. 3. For the category of Mother's Race and Ethnicity, percentages are calculated based on the state total of resident births, including births for which mother's race/Hispanic ethnicity is unknown. 4. Mothers who designated themselves as Asian, American Indian or Other. 5. Calculations based on fewer than 5 events are excluded. 6. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary for definition. 7. Public payment sources include Commonhealth, Healthy Start, Medicaid/MassHealth, and Medicare (may be HMO or managed care), or free care. 8. Deaths per 1,000 live births. See Definitions of Rates section in Appendix for definitions of infant and neonatal mortality rates.

Table 13. Birth Characteristics by Licensed Maternity Facility¹, Massachusetts: 2005

Facility	Location	Occurrence Births ² (n)	Low Birthweight ³ (%)	Public Payment for Delivery ⁴ (%)	Adequate Prenatal Care ⁵ (%)	C-Section ⁶ (%)
State Total		77,841	7.9	31.8	84.1	32.5
Anna Jaques Hospital	Newburyport	710	4.4	18.6	91.0	33.2
Baystate Medical Center	Springfield	4,112	13.0	45.5	78.6	30.2
Berkshire Medical Center	Pittsfield	771	6.7	43.0	62.8	30.4
Beth Israel Deaconess Medical Center	Boston	4,873	12.0	16.9	95.3	42.4
Beverly Hospital	Beverly	2,068	5.4	25.2	93.4	33.5
Boston Medical Center	Boston	2,290	11.0	83.3	54.0	30.1
Brigham and Women's Hospital	Boston	8,382	11.0	18.8	97.5	32.8
Brockton Hospital	Brockton	1,378	8.1	63.8	83.2	34.8
Cambridge Birth Center	Cambridge	103	-- ⁷	30.4	67.6	0.0
Cambridge Hospital	Cambridge	1,180	2.0	73.2	76.5	28.3
Cape Cod Hospital	Barnstable	1,009	4.4	40.9	89.7	27.6
Caritas Good Samaritan Medical Center	Brockton	958	6.6	47.4	57.6	38.4
Caritas Holy Family Hospital And Medical Center	Methuen	1,323	4.4	21.2	86.1	41.2
Caritas St. Elizabeth's Medical Center Of Boston	Boston	1,345	15.0	19.0	76.7	37.6
Charlton Memorial Hospital	Fall River	1,647	5.4	47.2	87.8	33.8
Cooley Dickinson Hospital	Northampton	830	3.3	24.8	91.0	25.4
Emerson Hospital	Concord	1,168	3.5	6.2	84.7	36.6
Fairview Hospital	Great Barrington	160	3.8	48.1	83.6	31.3
Falmouth Hospital	Falmouth	637	4.3	27.3	82.0	32.3
Franklin Medical Center	Greenfield	458	5.0	43.3	84.5	27.5
Harrington Memorial Hospital	Southbridge	424	3.6	50.1	88.7	30.6
Heywood Memorial Hospital	Gardner	565	3.7	36.9	81.5	21.6
Holyoke Hospital	Holyoke	620	4.4	66.6	77.3	20.3
Jordan Hospital	Plymouth	620	4.4	26.8	84.7	34.5
Lawrence General Hospital	Lawrence	1,739	5.8	60.6	74.9	29.2
Leominster Hospital	Leominster	1,153	3.1	44.2	82.6	24.1
Lowell General Hospital	Lowell	1,850	6.3	40.9	65.8	31.6
Martha's Vineyard Hospital	Oak Bluffs	152	-- ⁷	36.8	92.1	23.7
Mary Lane Hospital	Ware	188	3.2	50.8	77.1	35.6
Massachusetts General Hospital	Boston	3,500	8.7	33.9	86.6	31.9
Melrose-Wakefield Hospital	Melrose	1,267	5.9	25.3	90.5	41.0
Mercy Medical Center	Springfield	1,416	3.6	55.9	81.0	22.6
Metrowest Medical Center- Framingham Union Campus	Framingham	2,018	5.8	31.2	91.8	36.4
Milford Regional Medical Center	Milford	915	4.3	23.5	90.9	35.4
Morton Hospital	Taunton	469	8.0	47.1	71.6	38.1
Mount Auburn Hospital	Cambridge	1,812	4.1	18.2	89.9	24.4
Nantucket Cottage Hospital	Nantucket	111	-- ⁷	45.0	82.9	27.9

Table 13 (cont.). Birth Characteristics by Licensed Maternity Facility¹, Massachusetts: 2005

Facility	Location	Occurrence Births ² (n)	Low Birthweight ³ (%)	Public Payment for Delivery ⁴ (%)	Adequate Prenatal Care ⁵ (%)	C-Section ⁶ (%)
Newton Wellesley Hospital	Newton	3,182	5.8	2.7	78.0	37.4
North Adams Regional Hospital	North Adams	294	4.1	49.0	91.2	26.5
North Shore Birth Center	Beverly	83	0.0	19.3	92.7	0.0
North Shore Medical Center - Salem Hospital	Salem	1,914	6.0	46.7	67.9	31.8
Saint Vincent Hospital	Worcester	1,760	5.5	8.8	94.3	27.3
Saints Memorial Medical Ctr.	Lowell	684	5.3	42.1	84.3	34.7
South Shore Hospital	Weymouth	3,790	7.4	13.2	89.9	37.5
Caritas Norwood Hospital	Norwood	557	4.3	20.9	67.0	36.3
St. Luke's Hospital	New Bedford	1,605	8.0	52.8	78.6	28.5
Sturdy Memorial Hospital	Attleboro	1,076	3.3	21.3	71.9	36.4
The Birthplace at Wellesley ⁸	Wellesley	72	-- ⁷	0.0	84.7	0.0
Tobey Hospital	Wareham	496	3.0	36.3	79.8	18.1
Tufts-New England Medical Center Hospital	Boston	1,244	27.0	38.9	85.2	37.9
UMASS Memorial Medical Center - West Campus	Worcester	4,462	11.0	35.8	81.7	27.4
Winchester Hospital	Winchester	2,079	5.3	5.7	85.3	32.6
Other Hospitals		6	-- ⁷	33.3	83.3	16.7
Home, En route & Doctors' Offices		316	9.4	25.0	65.3	0.7

NOTES: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. A licensed maternity facility is a medical unit licensed by the Commonwealth for the care of women during pregnancy and childbirth. 2. See Glossary for definition of occurrence births. 3. Less than 2,500 grams (5.5 lbs.) 4. Public payment for delivery includes Medicaid/MassHealth, Commonhealth, Medicare, Healthy Start, other government programs, and free care. 5. Based on the APNCU Index. 6. The percentages provided in this row are based on occurrence births and may differ from data presented elsewhere in this book which are based on resident births. 7. Calculations based on values of 1-4 for medical characteristics of facilities with less than 200 births are suppressed based Guidelines for Release of Births Data, Center for Health Information, Statistics, Research and Evaluation, Massachusetts Department of Public Health. 8. The Birthplace at Wellesley closed on September 2005.

Table 14. Comparison of Massachusetts Perinatal Health Indicators with Healthy People 2010 Objectives¹, Massachusetts: 2002-2005

Healthy People 2010 Objectives (Focus Area 16: Maternal, Infant and Child Health ²)	HP2010 Target	Massachusetts				Has Massachusetts achieved HP2010 target? ✓ = YES ○ = NO, but within 25% of target ● = NO, > 25% from target
		2002	2003	2004	2005	
Fetal, Infant, and Maternal Deaths						
16-1a. Fetal Mortality Rate ³	4.1	4.6	5.7	5.3	5.5	●
16-1b. Perinatal Mortality Rate ⁴	4.5	4.7	5.8	5.8	5.4	○
16-1c. Infant Mortality Rate ⁵	4.5	4.9	4.8	4.7	5.1	○
16-1d. Neonatal Mortality Rate ⁶	2.9	3.7	3.6	3.7	3.7	●
16-1e. Postneonatal Mortality Rate ⁷	1.2	1.2	1.2	1.1	1.4	○
16-4. Maternal Mortality Ratio ⁸	3.3	2.4	4.9	6.3	10.3	●
Risk Factors						
16-10a. Low Birthweight ⁹ (%)	5.0	7.5	7.6	7.8	7.9	●
16-10b. Very Low Birthweight ¹⁰ (%)	0.9	1.4	1.4	1.5	1.4	●
16-11a. Preterm ¹¹ (%)	7.6	8.5	8.7	9.2	9.0	○
Prenatal Care						
16-6a. Care beginning in first trimester (%)	90.0	84.2	83.9	83.5	83.2	○
16-6b. Early and adequate care ¹² (%)	90.0	85.0	84.5	84.2	84.0	○
Obstetrical Care						
16-8. Very Low Birthweight ¹⁰ Infants born at Level III Hospitals ¹³ (%)	90.0	81.2	79.1	80.1	78.5	○
16-9a. Cesarean Sections: Low-Risk ¹⁴ Women Giving Birth for the First Time (%)	15.0	24.0	25.0	26.7	27.8	●
16-9b. Cesarean Sections: Low-Risk ¹⁴ Women with Prior Cesarean Section (%)	63.0	84.2	86.7	87.9	89.8	●
Breastfeeding						
16-19a. Breastfeeding ¹⁵ (%)	75.0	76.1	78.1	78.9	79.3	✓
Prenatal Substance Exposure						
16-17c. Abstinence from Smoking (%)	99.0	92.1	92.3	92.6	92.8	○

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. National health promotion and disease prevention agenda established by the U.S. Dept. of Health and Human Services. 2. Goal: to improve the health and well-being of women, infants, children, and families. 3. Number of fetal deaths per 1,000 fetal deaths plus live births. 4. Number of fetal and infant deaths in perinatal period (from 28 weeks gestation (inclusive) to 6 days (inclusive) after birth per 1,000 fetal deaths plus live births. 5. Number of infant deaths (under one year of age) per 1,000 live births. 6. Number of deaths to infants less than 28 days of age per 1,000 live births. 7. Number of deaths to infants 28-364 days of age per 1,000 live births. 8. See Definition of Rates section in Appendix. 9. Less than 2,500 grams, or 5.5 pounds. 10. Less than 1,500 grams, or 3.3 pounds. 11. Born before completion of 37th week of gestation. 12. Based on Adequacy of Prenatal Care Utilization Index (see Glossary). 13. Facilities for high-risk deliveries and neonates that can provide care to very small infants, including mechanical ventilation and neonatal surgery and special care for transferred patients and for which a full-time neonatologist serves as the director. 14. "Low-risk"= full term birth, singleton, vertex presentation. 15. HP2010 specifies objective as mother breastfeeding in "early postpartum period." Massachusetts data is based on mother's self-report of current breastfeeding or intention to breastfeed.

Appendix

Table 15. Resident Birth Characteristics, Community Health Network Areas (CHNAs), Massachusetts: 2005

CHNA	Population	Crude Birth Rate ¹	Mother's Race and Ethnicity				Very Low Birthweight (<1500 g) %	Low Birthweight (<2500 g) %
			White non-Hispanic % ³	Black non-Hispanic % ³	Hispanic % ³	Asian or Other ² % ³		
STATE TOTAL	6,436,940	11.9	69.6	7.9	13.1	9.3	1.4	7.9
Community Health Network of Berkshire County	131,965	9.7	87.9	3.7	4.7	3.4	1.3	8.6
Upper Valley Health Web (Franklin County)	88,506	9.5	89.8	1.9	3.3	3.3	1.7	6.7
Partnership for Health in Hampshire County (Northampton)	151,801	7.7	85.1	2.0	6.7	6.2	1.0	8.0
The Community Health Connection (Springfield)	299,490	12.5	50.7	13.3	31.2	4.6	1.7	8.9
Community Health Network of Southern Worcester County	119,141	11.9	88.8	1.3	7.6	2.3	1.6	7.7
Community Partners for Health (Milford)	160,521	13.1	90.0	1.0	3.4	5.4	1.7	7.2
Community Health Network of Greater Metro West (Framingham)	379,658	13.0	81.0	2.2	6.8	9.9	1.3	7.0
Community Wellness Coalition (Worcester)	303,669	13.2	68.2	8.5	14.1	9.1	1.7	7.7
Fitchburg/Gardner Community Health Network	261,369	11.5	80.7	3.0	11.3	5.0	1.3	7.5
Greater Lowell Community Health Network	272,893	13.2	66.3	4.2	10.1	19.3	1.1	8.3
Greater Lawrence Community Health Network	195,176	14.0	45.3	2.2	47.6	4.9	1.8	7.9
Greater Haverhill Community Health Network	148,557	11.9	86.1	1.5	9.1	3.3	1.1	7.7
Community Health Network North (Beverly/Gloucester)	119,378	10.0	92.3	1.2	2.8	3.7	1.0	6.8
North Shore Community Health Network	287,352	11.9	63.3	7.3	22.1	7.2	1.1	7.6
Greater Woburn/Concord/Littleton Community Health Network	209,597	10.0	78.4	2.6	3.1	15.8	1.1	6.9
North Suburban Health Alliance (Medford/Malden/Melrose)	257,235	12.6	69.7	9.6	9.0	11.6	1.7	7.0
Greater Cambridge/Somerville Community Health Network	273,883	11.5	67.5	8.4	8.8	15.2	1.0	7.2
West Suburban Health Network (Newton/Waltham)	253,138	10.2	75.6	3.3	8.1	12.9	0.8	6.4
Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	711,603	13.6	38.4	23.6	23.8	14.0	2.0	9.4
Blue Hills Community Health Alliance (Greater Quincy)	372,309	11.7	74.5	7.2	2.9	15.2	1.4	7.6
Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	161,454	11.7	65.7	2.1	29.6	2.6	1.0	7.4
Greater Brockton Community Health Network	242,404	12.8	61.4	21.5	7.2	9.8	1.8	10.3
South Shore Community Partners in Prevention (Plymouth)	188,787	11.3	94.3	1.2	1.4	2.8	1.0	7.8
Greater Attleboro-Taunton Health & Education Response	252,919	12.6	87.3	3.0	3.5	6.0	1.3	7.9
Partners for a Healthier Community (Fall River)	141,977	11.2	84.5	5.7	5.9	3.9	1.5	6.9
Greater New Bedford Health & Human Services Coalition	199,955	11.8	76.2	4.3	13.1	6.4	1.6	9.6
Cape and Islands Community Health Network	252,204	9.2	85.9	4.0	4.4	5.5	0.9	6.4

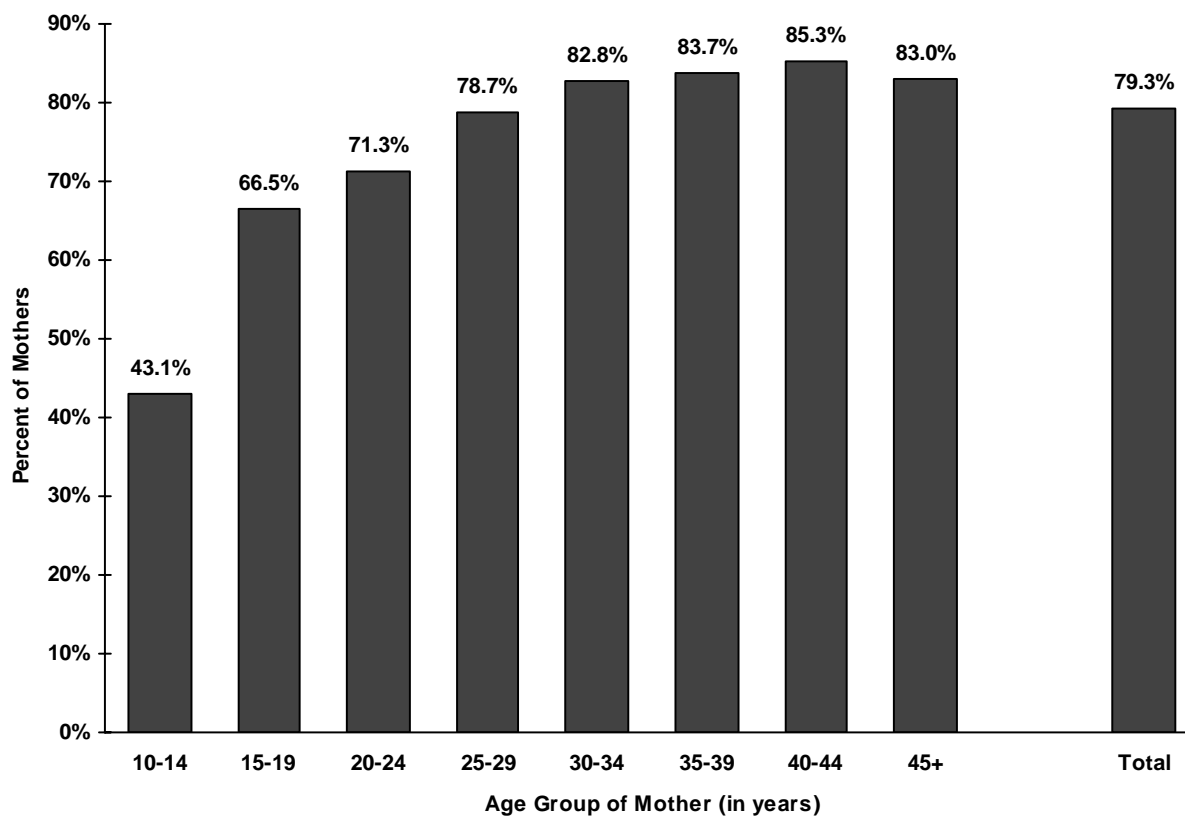
Table 15 (cont'd) Resident Birth Characteristics, Community Health Network Areas (CHNAs), Massachusetts: 2005

CHNA Number and CHNA	Births					Deaths			
	Adequate Prenatal Care ⁶	Public Payment ⁷ for Prenatal Care	Unmarried	Teen Mothers 15 to 19 years		Infant Mortality Rate ⁸		Neonatal Mortality Rate ⁸	
	%	%	%	n	Rate ⁴	2005	2003-2005	2005	2003-2005
STATE TOTAL	84.0	32.6	30.2	4,539	21.7	5.1	4.9	3.7	3.6
1. Community Health Network of Berkshire County	72.5	45.7	40.5	130	29.0	-- ⁵	5.2	-- ⁵	3.4
2. Upper Valley Health Web (Franklin County)	85.5	35.9	34.6	58	20.5	-- ⁵	5.1	-- ⁵	4.3
3. Partnership for Health in Hampshire County (Northampton)	86.9	25.8	26.8	59	7.0	4.3	2.4	-- ⁵	1.6
4. The Community Health Connection (Springfield)	76.9	54.4	50.9	493	47.2	8.5	6.8	6.7	4.7
5. Community Health Network of Southern Worcester County	87.4	26.8	30.5	109	28.0	5.7	7.1	4.9	5.4
6. Community Partners for Health (Milford)	88.7	16.1	16.3	57	11.3	4.3	3.6	3.8	2.8
7. Community Health Network of Greater Metro West (Framingham)	86.9	16.9	14.0	113	10.7	4.3	4.2	3.0	3.5
8. Community Wellness Coalition (Worcester)	84.5	33.5	34.0	294	27.3	9.5	6.4	8.0	5.2
9. Fitchburg/Gardner Community Health Network	83.4	28.8	29.6	184	21.0	5.7	4.7	3.7	3.2
10. Greater Lowell Community Health Network	76.8	32.0	31.9	252	28.1	5.3	5.2	2.8	3.1
11. Greater Lawrence Community Health Network	78.4	44.8	42.7	260	39.2	6.2	5.6	4.8	3.9
12. Greater Haverhill Community Health Network	89.5	21.6	23.9	97	21.3	4.5	3.8	3.4	2.9
13. Community Health Network North (Beverly/Gloucester)	92.0	19.1	15.5	26	6.6	0.0	3.3	-- ⁵	3.0
14. North Shore Community Health Network	79.2	41.0	34.0	201	23.0	3.2	4.9	2.6	3.7
15. Greater Woburn/Concord/Littleton Community Health Network	87.5	9.6	10.0	39	7.0	3.8	2.6	2.9	2.0
16. North Suburban Health Alliance (Medford/Malden/Melrose)	86.2	30.6	22.1	81	11.4	5.3	4.3	4.6	3.6
17. Greater Cambridge/Somerville Community Health Network	88.6	21.4	17.7	64	7.8	2.9	3.8	2.2	3.1
18. West Suburban Health Network (Newton/Waltham)	86.8	11.7	9.8	35	3.4	-- ⁵	2.7	-- ⁵	2.2
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	84.3	46.4	42.4	695	29.4	5.8	5.7	4.6	4.5
20. Blue Hills Community Health Alliance (Greater Quincy)	87.8	21.3	19.7	122	11.8	5.5	5.4	3.7	4.5
21. Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	81.9	53.4	48.5	250	43.8	3.7	5.7	-- ⁵	3.5
22. Greater Brockton Community Health Network	80.1	39.0	36.1	187	21.2	4.5	5.8	3.2	4.3
23. South Shore Community Partners in Prevention (Plymouth)	90.0	14.8	17.1	76	12.9	5.6	4.7	3.8	3.4
24. Greater Attleboro-Taunton Health & Education Response	80.8	26.2	24.4	149	19.2	3.8	3.0	2.5	2.4
25. Partners for a Healthier Community (Fall River)	87.3	54.9	44.2	160	36.9	6.9	5.8	3.1	3.5
26. Greater New Bedford Health & Human Services Coalition	80.3	46.2	47.8	226	34.7	6.8	5.4	3.8	3.4
27. Cape and Islands Community Health Network	86.8	33.5	28.3	122	18.6	3.9	4.7	-- ⁵	2.8

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Births per 1,000 residents (male and female). 2005 rates are calculated using Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October, 2006. (see Technical Notes in Appendix). 2. Mothers who designated themselves as Asian, American Indian or Other. 3. For the category of Mother's Race and Ethnicity, percentages are calculated based on the state total of resident births, including births for which mother's race/Hispanic ethnicity is unknown. 4. Births per 1,000 female residents ages 15-19. 5. Calculations based on fewer than 5 events are excluded. 6. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary for definition. 7. Public payment sources include Commonhealth, Healthy Start, Medicaid/MassHealth, and Medicare (may be HMO or managed care), or free care. 8. Deaths per 1,000 live births. See Definitions of Rates section in Appendix for definitions of infant and neonatal mortality rates.

**Figure 9. Percent of Mothers Breastfeeding or Intending to Breastfeed¹
by Age Group, Massachusetts: 2005**

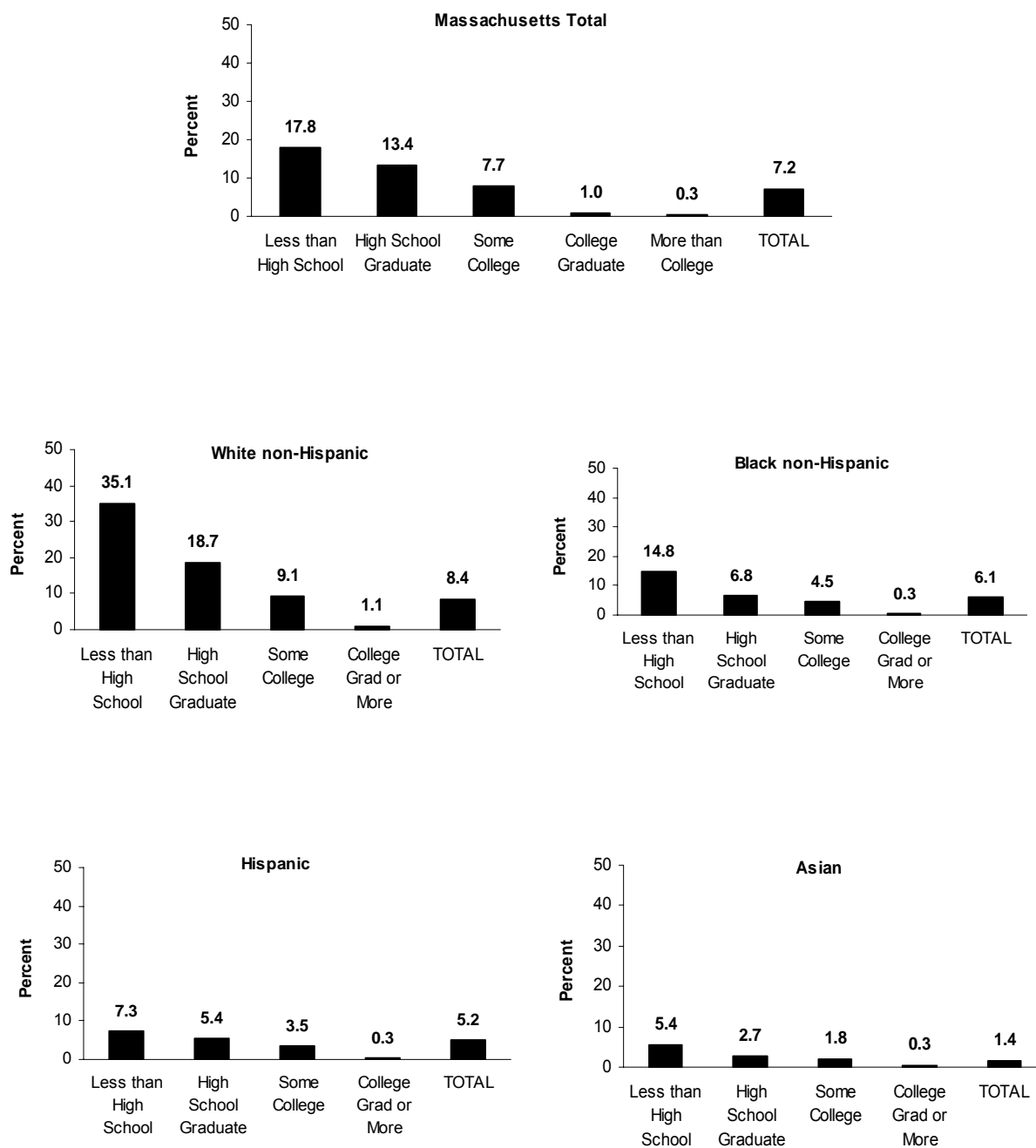


NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Information about breastfeeding is reported by the mother at the time of the birth.

2. For race-specific breastfeeding rates see Table 2.

Figure 10. Percent of Mothers who Smoked During Pregnancy¹, by Mother's Race/Hispanic Ethnicity and Educational Attainment, Massachusetts: 2005



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Based on information provided on parent worksheet. Because smoking is self-reported, data on smoking prevalence should be interpreted cautiously. Mothers with multiples are counted for each birth. Caution should be used with Asian data because of small numbers.

**Figure 11. Distribution of Smoking Status¹ during Pregnancy
by Smoking Status Prior to Pregnancy, Massachusetts: 2005**

**Smoking
Status¹
Prior to
Pregnancy:**

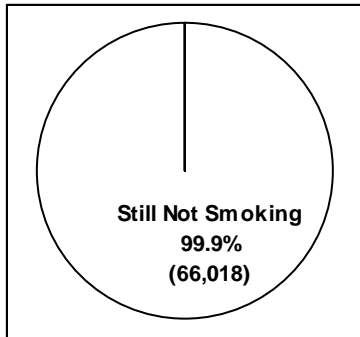
Non-Smokers
86.2%
(66,069)

Light Smokers
7.8%
(5,981)

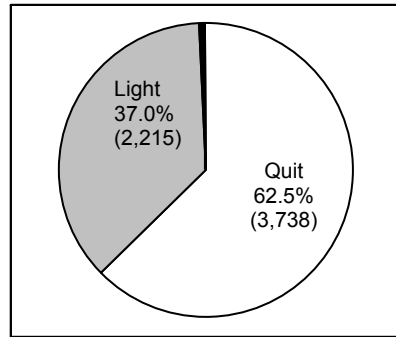
Moderate Smokers
5.3%
(4,069)

Heavy Smokers
0.7%
(523)

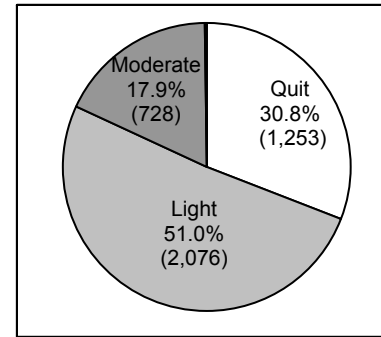
**Smoking
Status¹
During
Pregnancy:**



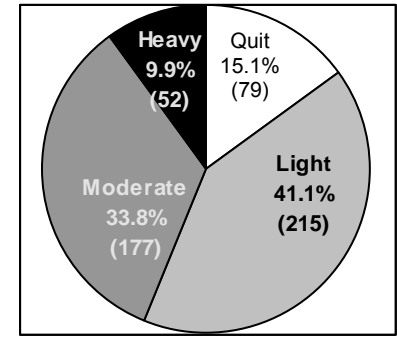
**99.9% of Non-Smokers
continued not smoking
(0.1% started smoking)**



**62.5 % of Light Smokers quit
smoking (0.5% increased)**



**81.8% of Moderate Smokers
decreased the number of
cigarettes smoked daily or
quit (0.3% increased)**



**90.1% of Heavy Smokers
decreased the number of
cigarettes smoked daily
or quit**

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Light Smokers=1-10 cigarettes daily; Moderate Smokers=11-20 cigarettes daily; Heavy Smokers=21 cigarettes or more daily.

Table 16. Parity¹ by Age of Mother, Massachusetts: 2005

Age of Mother (years)		Total Births	1st	2nd	3rd	4th	5th+
STATE TOTAL	n ²	76,824	33,891	26,558	10,810	3,546	1,802
	% ³	100.0	44.2	34.7	14.1	4.6	2.4
10-14	n	59	57	1	0	0	0
	%	100.0	98.3	-- ⁴	-- ⁴	-- ⁴	-- ⁴
15-19	n	4,539	3,861	599	58	7	1
	%	100.0	85.3	13.2	1.3	0.2	-- ⁴
20-24	n	11,805	6,671	3,692	1,108	242	61
	%	100.0	56.7	31.4	9.4	2.1	0.5
25-29	n	18,026	8,748	5,799	2,324	791	313
	%	100.0	48.7	32.3	12.9	4.4	1.7
30-34	n	24,140	9,433	9,461	3,529	1,099	561
	%	100.0	39.2	39.3	14.7	4.6	2.3
35-39	n	14,740	4,162	5,719	3,121	1,100	587
	%	100.0	28.3	38.9	21.2	7.5	4.0
40-44	n	3,323	900	1,233	645	286	246
	%	100.0	27.2	37.3	19.5	8.6	7.4
45+	n	188	58	52	24	21	33
	%	100.0	30.9	27.7	12.8	11.2	17.6

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. The number of live births including this birth. 2. State totals include births of unknown parity and unknown mother's age. 3. Percents may not sum to 100.0 due to rounding. 4. Calculations based on fewer than five events are excluded.

Table 17. Selected Birth Characteristics by Maternal Education, Massachusetts: 2005

	<u>Less than High School</u>		<u>High School Graduate</u>		<u>Some College</u>		<u>College Graduate</u>		<u>More than College</u>	
	n	% ¹	n	% ¹	n	% ¹	n	% ¹	n	% ¹
State Total	7,949	10.4	19,312	25.2	16,968	22.1	20,650	26.9	11,762	15.3
Race										
White non-Hispanic	2,802	5.2	11,569	21.7	12,226	22.9	17,093	32.0	9,696	18.2
Black non-Hispanic	830	13.7	2,314	38.1	1,813	29.9	867	14.3	244	4.0
Hispanic	3,409	33.9	3,838	38.2	1,805	17.9	716	7.1	289	2.9
Asian	575	11.0	891	17.0	712	13.6	1,681	32.1	1,385	26.4
Age										
20-29	3,997	13.4	10,708	36.0	7,927	26.6	5,318	17.9	1,816	6.1
30-39	1,452	3.7	6,122	15.8	7,992	20.6	14,116	36.4	9,103	23.5
40+	151	4.3	564	16.1	751	21.5	1,192	34.1	842	24.1
Non-U.S.-born²	3,347	42.1	6,094	31.6	3,685	21.7	4,209	20.4	2,671	22.7
Unmarried	5,851	73.6	10,170	52.7	5,295	31.2	1,423	6.9	378	3.2
Publicly-financed prenatal care	6,541	83.8	11,136	58.6	5,030	31.0	1,469	7.2	288	2.5
Very low birthweight³	117	1.5	335	1.7	242	1.4	298	1.4	94	0.8
Low birthweight⁴	711	9.0	1,698	8.8	1,336	7.9	1,532	7.4	777	6.6
Adequate prenatal care⁵	5,392	69.4	15,270	80.1	14,180	84.9	18,310	89.2	10,513	89.8
Cesarean section delivery	1,875	23.7	5,829	30.3	5,708	33.8	7,292	35.4	3,968	33.8
Breastfeeding⁶	5,120	65.1	13,567	71.1	12,339	75.9	18,014	88.0	10,732	92.0
Multiple births	156	2.0	619	3.2	775	4.6	1,280	6.2	728	6.2
Smoking during pregnancy	1,417	17.8	2,592	13.4	1,306	7.7	201	1.0	35	0.3

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

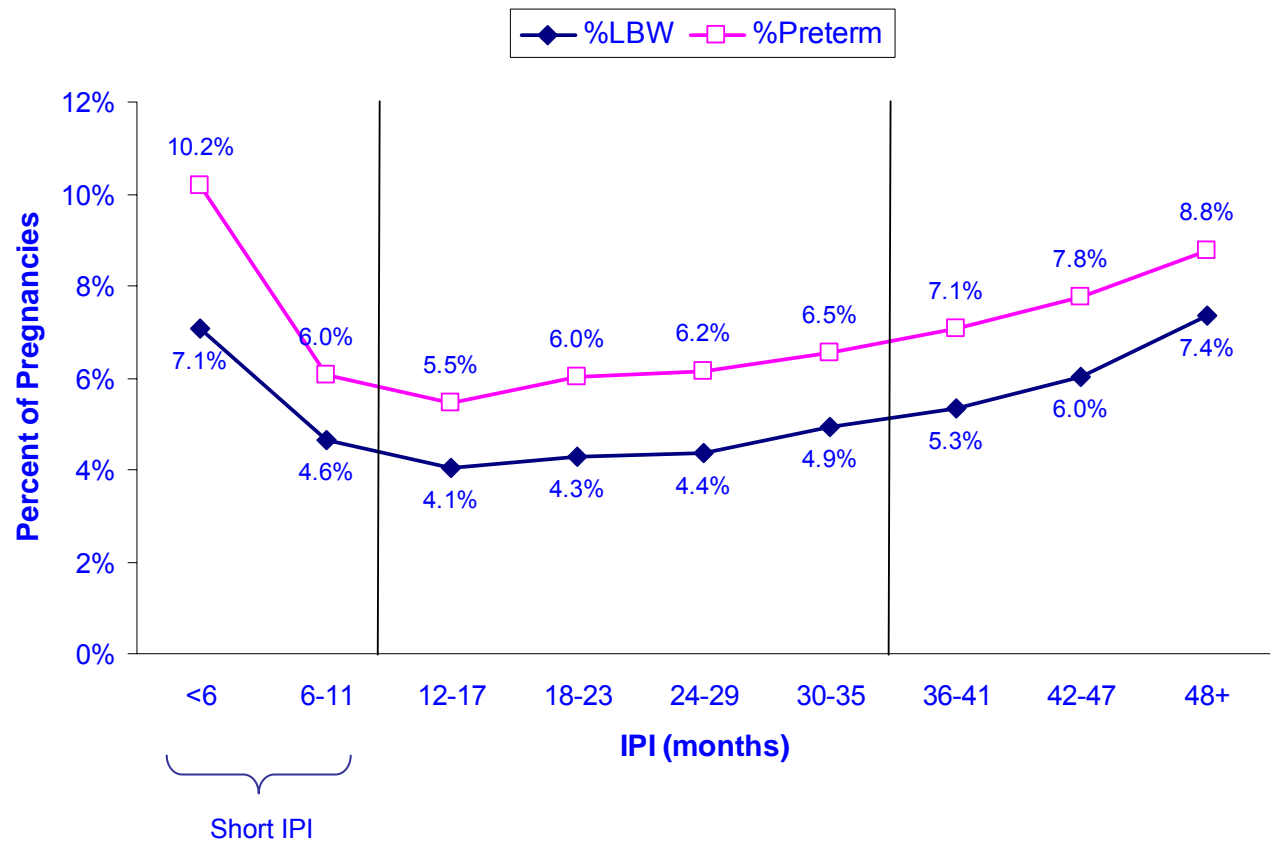
1. For state total, race and age categories, percentages are based on row totals. For all other categories, percentages are based on state column totals. 2. Includes women born outside of the 50 U.S. States, Washington D.C., and Puerto Rico/U.S. territories (the U.S. Virgin Islands, and Guam). 3. Very low birthweight: less than 1,500 grams or 3.3 pounds. 4. Low birthweight: less than 2,500 grams or 5.5 pounds. 5. Beginning with the 2001 publication, the Adequacy of Prenatal Care Utilization Index has replaced the Kessner Index as the measure of adequate prenatal care. 6. Mother was breastfeeding or was intending to breastfeed at the time the birth certificate was completed.

Table 18. Inter-pregnancy Interval¹ (IPI) and Birth Outcomes. Pregnancies to Multiparous² Mothers, Massachusetts: 2005

IPI (months) Pregnancies		Birth Weight (BW)				Gestational Age (GA)			
		Low (<2,500 g)		Very Low (<1,500 g)		Preterm ³ (<37 wk)		Very Early ⁴ (<28 wk)	
		n	%LBW	n	%VLBW	n	%Preterm	n	%VEGA
State Total	40,605	2,209	5.4%	349	0.9%	2,860	7.1%	157	0.4%
<6	1,796	127	7.1%	29	1.6%	182	10.2%	14	0.8%
6-11	4,679	217	4.6%	28	0.6%	282	6.0%	17	0.4%
12-17	6,138	249	4.1%	34	0.6%	335	5.5%	16	0.3%
18-23	5,261	226	4.3%	35	0.7%	316	6.0%	13	0.2%
24-29	4,234	185	4.4%	30	0.7%	260	6.2%	14	0.3%
30-35	3,154	155	4.9%	28	0.9%	206	6.5%	12	0.4%
36-41	2,484	132	5.3%	12	0.5%	175	7.1%	4	-- ⁵
42-47	2,049	123	6.0%	11	0.5%	159	7.8%	4	-- ⁵
48+	10,810	795	7.4%	142	1.3%	945	8.8%	63	0.6%
Short 0-11	6,475	344	5.3%	57	0.7%	464	25.9%	31	1.7%
12-35	18,787	815	4.3%	127	0.6%	1,117	62.4%	55	3.1%
36+	15,343	1,050	6.8%	165	1.2%	1,279	71.4%	71	4.0%

1. Inter-pregnancy Interval (IPI) is the time in months between the date of last menstrual period of current pregnancy and the date of previous live birth. 2. Multiparous is defined as having given birth 2 or more times. 3. Also known as premature delivery. 4. Very early gestational age (VEGA) refers to birth delivery before 28 weeks of gestational age and is also known as **extremely preterm** delivery. 5. Calculations based on fewer than 5 are excluded.

Figure 12. Inter-pregnancy Interval (IPI)¹ vs. LBW² and Preterm³-- Pregnancies to Multiparous Mothers⁴, Massachusetts: 2005



NOTE: Short IPIs (less than 12 months) and IPIs over 35 months were associated with higher proportions on low birthweight and premature deliveries.

Percentages are calculated based on pregnancies to mothers who gave birth to their 2nd or later child in 2005 and with known values for the characteristic(s) of interest, unless otherwise stated.

1. Inter-pregnancy Interval (IPI) is the time in months between the date of last menstrual period of current pregnancy and the date of previous live birth. 2. Low birthweight: less than 2,500 grams or 5.5 pounds. 3. Preterm delivery is defined as gestational age less than 37 weeks. It is also known as premature delivery. 4. Multiparous is defined as having given birth 2 or more times.

Table 19. Inter-pregnancy Interval¹ (IPI) by Maternal Characteristics --Pregnancies to Multiparous Mothers², Massachusetts: 2005

	Total Pregnancies Parity >1		IPI					
			Short < 12 months		12-35 months		36+ months	
	n	%	n	%	n	%	n	%
State Total³	40,604	100%	6,475	15.9%	18,787	46.3%	15,342	37.8%
Age								
< 20	624	1.5	264	42.3	302	48.4	58	9.3
20-34	27,691	68.2	4,754	17.2	13,000	46.9	9,937	35.9
35+	12,289	30.3	1,457	11.9	5,485	44.6	5,347	43.5
Race Ethnicity								
White non-Hispanic	28,087	69.2	4,692	16.7	14,258	50.8	9,138	32.5
Black non-Hispanic	3,397	8.4	477	14.0	1,134	33.4	1,786	52.6
Hispanics	5,745	14.1	847	14.7	1,994	34.7	2,904	50.5
Asian	2,446	6.0	336	13.7	1,070	43.7	1,040	42.5
Education								
High School or less	14,726	36.3	2,343	15.9	5,264	35.7	7,119	48.3
BA or Assoc	20,105	49.5	3,190	15.9	9,984	49.7	6,932	34.5
More than college	5,720	14.1	937	16.4	3,514	61.4	1,269	22.2
Delivery Payment Source								
Public	13,409	33.0	2,171	16.2	4,784	35.7	6,454	48.1
Private	26,100	64.3	4,115	15.8	13,486	51.7	8,499	32.6
EOHHS Region of Residence								
Western MA	4,986	12.3	871	17.5	2,156	43.2	1,959	39.3
Central MA	5,519	13.6	873	15.8	2,669	48.4	1,977	35.8
Northeast MA	8,573	21.1	1,361	15.9	3,912	45.6	3,300	38.5
Metrowest MA	8,735	21.5	1,340	15.3	4,693	53.7	2,702	30.9
Southeast MA	8,140	20.0	1,333	16.4	3,597	44.2	3,210	39.4
Boston Region	4,652	11.5	697	15.0	1,760	37.8	2,195	47.2
Town of Residency⁴			<u>10 Largest by %</u>		<u>10 Largest by %</u>		<u>10 Largest by %</u>	
			Holyoke (21.0%)		Arlington (60.2%)		Worcester (42.7%)	
			Haverhill (20.9%)		Beverly (58.5%)		Woburn (40.6%)	
			Weymouth (20.5%)		Franklin (58.3%)		Weymouth (36.1%)	
			Quincy (19.0%)		Newton (56.4%)		Westfield (36.9%)	
			Attleboro (18.6%)		Shrewsbury (53.6%)		Waltham (38.6%)	
			Medford (18.3%)		Cambridge (52.7%)		Taunton (44.2%)	
			Pittsfield (18.1%)		Brookline (52.5%)		Springfield (45.1%)	
			Chicopee (17.7%)		North Attleboro (52.5%)		Somerville (42.1%)	
			North Attleboro (17.6%)		Billerica (52.2%)		Shrewsbury (33.0%)	
			Lawrence (17.5%)		Braintree (52.1%)		Salem (40.2%)	

1. Inter-pregnancy Interval (IPI) is the time in months between the date of last menstrual period of current pregnancy and the date of previous live birth. 2. Multiparous is defined as having given birth 2 or more times. 3. State total includes pregnancies with known IPI.

4. Among towns with at least 200 mothers giving birth to their 2nd or later child.

Figure 13. Inter-pregnancy Interval (IPI)¹ Distribution by Maternal Age -- Pregnancies to Multiparous Mothers², Massachusetts: 2005

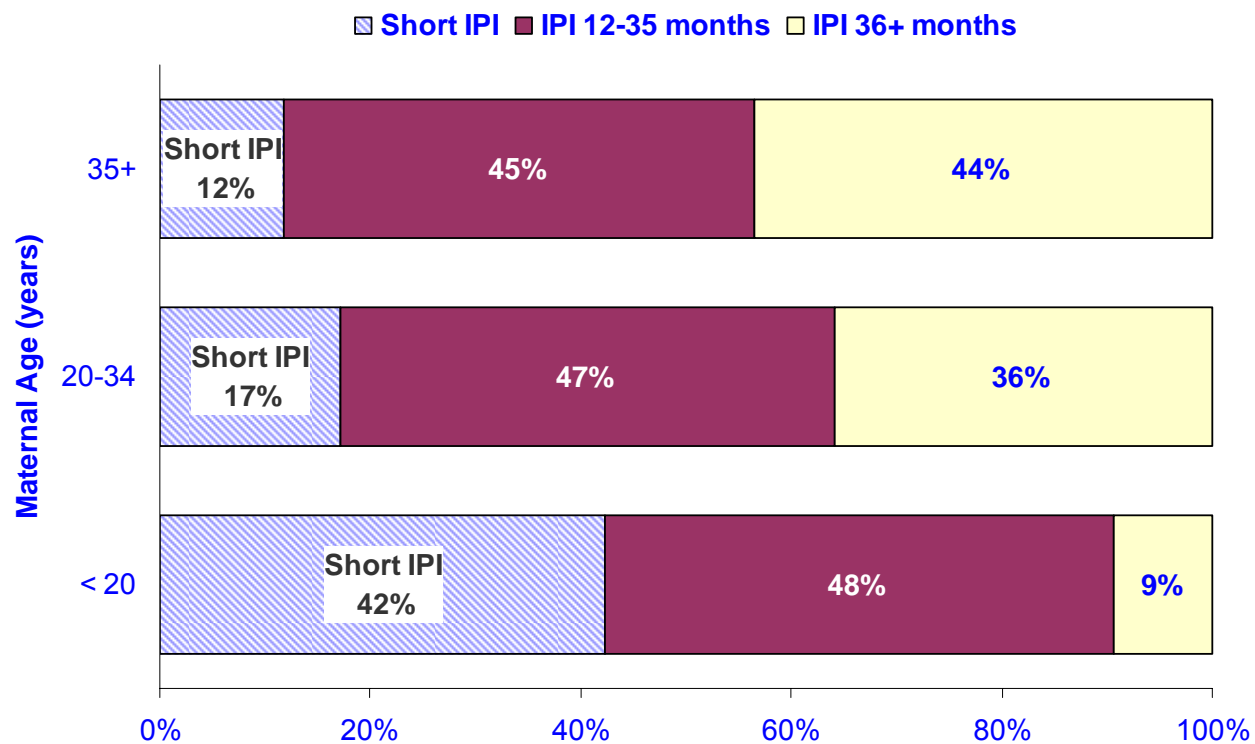
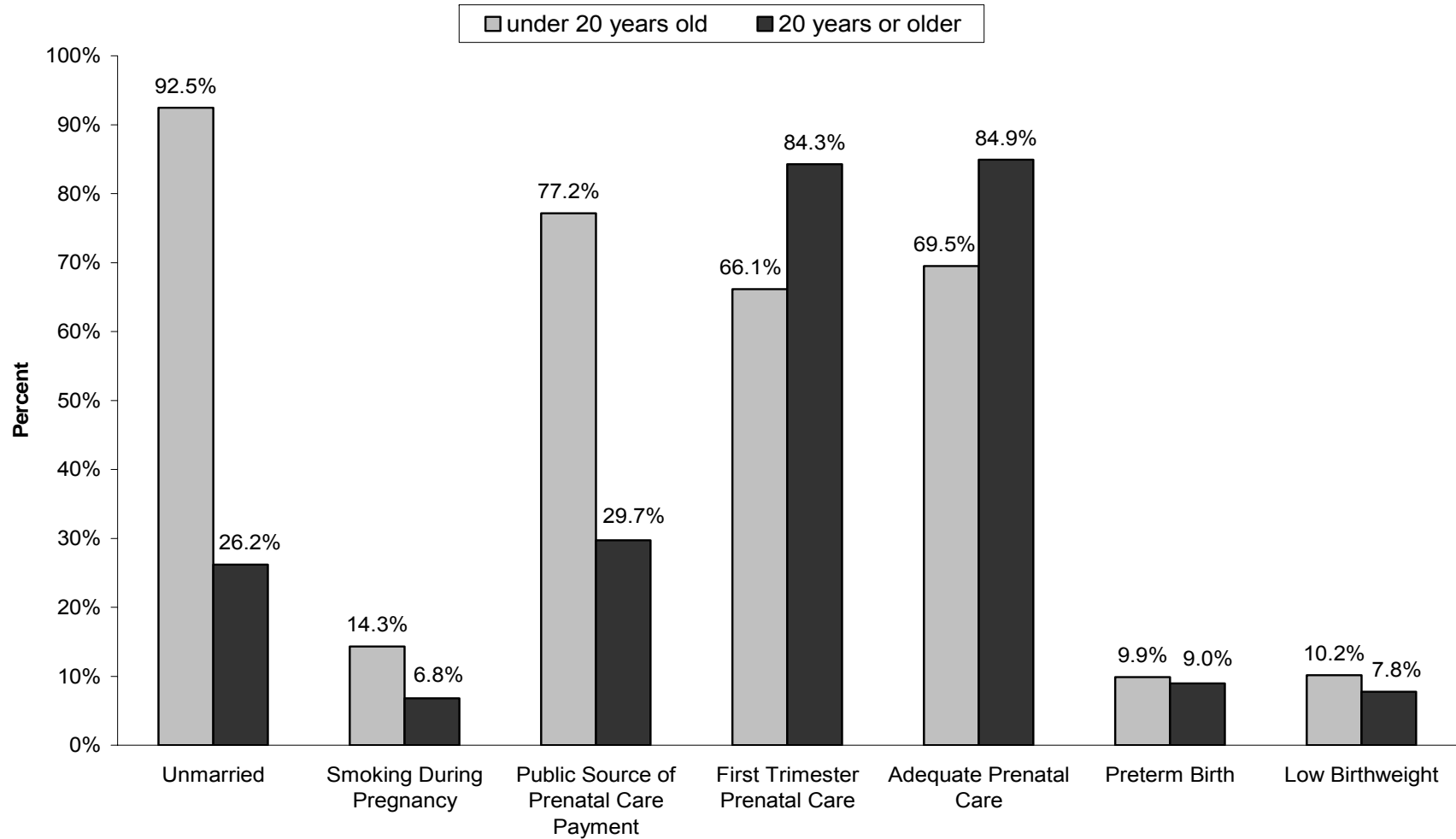


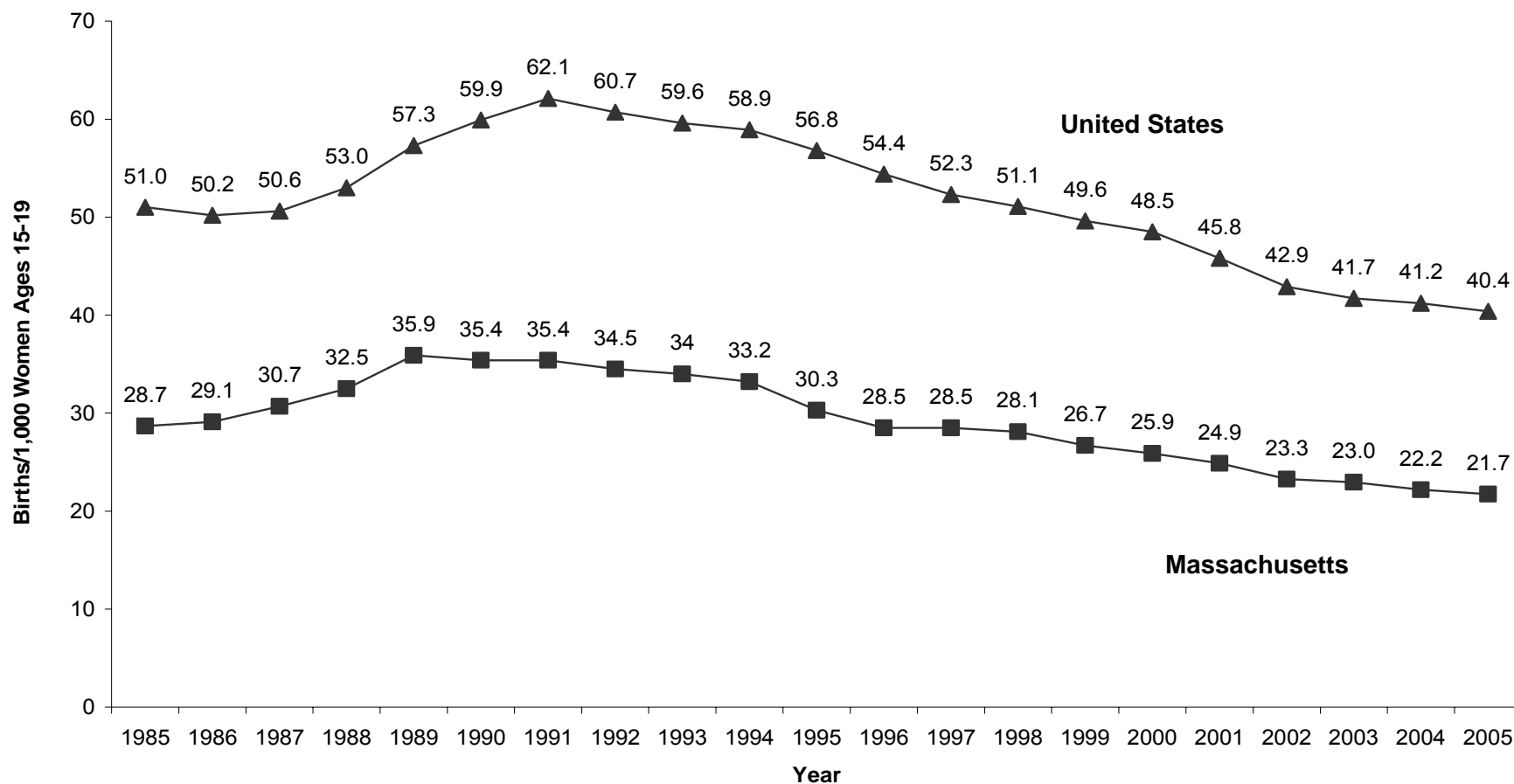
Figure 14. Comparison of Teen vs. Adult Births, Selected Characteristics, Massachusetts: 2005



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. Three age groups are used for "teen births": 10-14, 15-19, and <20. The "10-14" group, refers to young teens, and the "15-19" group is the age group referred to as teens by the Centers for Disease Control and Prevention. For this publication, "<20" is used when comparing young women with "adult" women.

Definitions: Unmarried = Includes those women who were unmarried 300 days before giving birth, Adequate Prenatal Care = based on Adequacy of Prenatal Care Utilization (APNCU) Index. See Appendix (Glossary and Technical Notes) for more details on the APNCU Index. Preterm Birth = gestational age less than 37 weeks, based on clinical estimate of gestational age. Low Birthweight = less than 2,500 grams (5.5 lbs.).

Figure 15. Trend in Birth Rates Among Women Ages 15-19, Massachusetts and the United States: 1985-2005



Teen birth rate is the number of births to women ages 15-19 per 1,000 women ages 15-19

Data sources: 1) U.S. annual natality data (NCHS) and 1990 U.S. Census data (population data used in denominators); 2) Massachusetts: annual birth data files, decennial Census counts (1990) and intercensal population estimates based on MISER (Massachusetts Institute for Social and Economic Research) population estimates for 1991 through 1998. 1999 rates are calculated using the 1999 DPH Massachusetts population estimates and Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2000-2005, released October, 2006 (see Technical Notes in Appendix). PLEASE NOTE: DIFFERENCES BETWEEN THESE RATES AND PREVIOUSLY PUBLISHED DATA REFLECT UPDATES IN POPULATION ESTIMATES.

Table 20. Resident Teen Birth Characteristics, 30 Largest Municipalities¹, Massachusetts: 2005

Municipality	Total Population Rank	Female Population, age 15-19	Number of Teen Births	Teen Birth Rate ²	Mother's Race and Hispanic Ethnicity (% of teen births)			
					White non-Hispanic	Black non-Hispanic	Hispanic	Asian or other ³
State Total		208,824	4,539	21.7	45.7	13.0	33.6	7.7
Attleboro	29	1,134	29	25.6	65.5	3.4	27.6	3.4
Barnstable	25	1,360	29	21.3	82.8	6.9	6.9	3.4
Boston	1	19,770	566	28.6	9.7	43.8	32.0	14.3
Brockton	6	3,638	148	40.7	33.1	29.1	12.8	25.0
Brookline	18	1,451	-- ⁵	-- ⁵	-- ⁵	-- ⁵	-- ⁵	-- ⁵
Cambridge	5	3,923	20	5.1	10.0	40.0	50.0	0.0
Chicopee	21	1,738	72	41.4	59.7	4.2	36.1	0.0
Fall River	9	2,829	140	49.5	68.6	10.0	12.9	8.6
Framingham	14	1,955	45	23.0	51.1	6.7	40.0	2.2
Haverhill	15	1,908	59	30.9	61.0	5.1	27.1	6.8
Lawrence	12	3,027	217	71.7	9.2	2.3	86.2	2.3
Leominster	30	1,254	22	17.5	54.6	4.5	36.4	4.5
Lowell	4	3,966	204	51.4	31.9	3.9	34.3	29.9
Lynn	8	3,084	146	47.3	21.2	13.7	50.0	15.1
Malden	17	1,430	23	16.1	56.5	4.3	26.1	13.0
Medford	22	1,776	13	7.3	61.5	15.4	15.4	7.7
Methuen	27	1,327	36	27.1	30.6	2.8	63.9	2.8
New Bedford	7	2,955	174	58.9	54.0	5.7	32.2	8.0
Newton	11	3,500	-- ⁵	-- ⁵	-- ⁵	-- ⁵	-- ⁵	-- ⁵
Peabody	24	1,432	15	10.5	80.0	0.0	6.7	13.3
Pittsfield	28	1,270	67	52.7	77.6	9.0	10.5	3.0
Plymouth	20	1,672	26	15.6	80.8	7.7	3.8	7.7
Quincy	10	2,078	48	23.1	60.4	12.5	8.3	16.7
Revere	26	1,053	48	45.6	41.7	2.1	43.8	12.5
Somerville	13	2,170	37	17.1	37.8	18.9	40.5	2.7
Springfield	3	6,074	435	71.6	12.2	19.1	65.8	2.8
Taunton	19	1,631	53	32.5	73.6	13.2	5.7	7.5
Waltham	16	2,340	22	9.4	36.4	4.5	50.0	9.1
Weymouth	23	1,452	22	15.2	90.9	0.0	0.0	9.1
Worcester	2	7,036	262	37.2	52.7	8.0	35.1	3.8

Table 20 (cont.). Resident Teen Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2005

Municipality	Public Payment for Prenatal Care ⁴ (%)	Unmarried (%)	Low Birthweight ⁶ (%)	Preterm ⁷ (%)	Adequacy of Prenatal Care ⁸			
					Adequate Intensive	Adequate Basic	Intermediate	Inadequate
State Total	77.0	92.4	10.1	9.8	32.1	37.7	10.4	19.7
Attleboro	56.0	93.1	6.9	13.8	32.1	21.4	25.0	21.4
Barnstable	65.5	82.8	3.5	0.0	20.7	58.6	3.5	17.2
Boston	77.7	96.3	12.2	11.9	28.6	46.5	9.0	15.9
Brockton	82.1	91.9	14.9	10.1	26.7	37.0	11.6	24.7
Brookline	50.0	100.0	0.0	0.0	0.0	50.0	50.0	0.0
Cambridge	70.0	100.0	15.0	10.0	42.1	36.8	5.3	15.8
Chicopee	86.1	88.9	6.9	7.0	33.3	41.7	6.9	18.1
Fall River	89.9	88.6	10.0	9.3	58.3	15.1	2.9	23.7
Framingham	76.7	86.7	11.1	8.9	35.6	44.4	0.0	20.0
Haverhill	62.7	96.6	10.2	8.5	32.2	44.1	10.2	13.6
Lawrence	85.6	94.0	10.1	11.1	23.0	40.1	22.1	14.7
Leominster	81.8	86.4	0.0	4.6	36.4	27.3	9.1	27.3
Lowell	83.3	92.6	8.4	7.4	20.7	35.0	14.3	30.0
Lynn	83.4	91.1	10.3	8.9	35.6	27.4	11.6	25.3
Malden	60.9	91.3	8.7	13.0	43.5	30.4	13.0	13.0
Medford	76.9	84.6	15.4	15.4	23.1	38.5	7.7	30.8
Methuen	57.1	91.7	8.3	5.6	25.0	41.7	19.4	13.9
New Bedford	73.7	94.8	10.4	8.1	29.2	39.8	10.5	20.5
Newton	75.0	100.0	0.0	0.0	25.0	50.0	25.0	0.0
Peabody	86.7	86.7	20.0	26.7	35.7	35.7	14.3	14.3
Pittsfield	83.3	91.0	9.0	10.4	11.9	31.3	32.8	23.9
Plymouth	53.8	92.3	0.0	0.0	26.9	30.8	7.7	34.6
Quincy	72.9	89.6	2.1	4.2	20.8	41.7	16.7	20.8
Revere	85.4	79.2	10.4	8.3	47.8	21.7	4.4	26.1
Somerville	80.6	89.2	5.4	8.1	35.1	40.5	8.1	16.2
Springfield	92.3	96.8	12.6	12.0	27.3	35.1	9.7	28.0
Taunton	80.4	96.2	11.3	5.7	26.9	46.2	15.4	11.5
Waltham	57.1	77.3	4.6	9.1	36.4	31.8	0.0	31.8
Weymouth	90.9	81.8	18.2	18.2	59.1	22.7	4.6	13.6
Worcester	75.2	93.9	8.8	12.3	30.5	46.3	10.0	13.1

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. The 30 largest municipalities are the cities and towns in Massachusetts with the largest populations according to the Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October, 2006 (see Technical Notes in Appendix). 2. Birth rates represent the number of births per 1,000 females age 15-19. 3. Mothers who designated themselves as Asian, American Indian, or Other. 4. See Glossary under "Prenatal Care Payment Source." 5. Calculations based on fewer than five teen births overall are excluded. 6. Less than 2,500 grams or 5.5 pounds. 7. Less than 37 weeks gestational age. 8. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary and Technical Notes in the Appendix for definitions of index and adequacy categories.

Table 21. Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race¹, Massachusetts: 1980-2005

INFANT MORTALITY (less than one year of age)								
Year	State Total²		White		Black		Asian/Other³	
	n	Rate⁴	n	Rate⁴	n	Rate⁴	n	Rate
1980	748	10.3	655	9.8	87	18.6	5	4.6
1981	710	9.6	616	9.1	85	18.2	8	6.1
1982	764	10.1	656	9.4	102	21.3	5	3.3
1983	682	9.0	579	8.3	89	19.0	12	7.4
1984	699	8.9	601	8.4	82	16.4	13	7.5
1985	745	9.1	608	8.1	126	23.8	11	6.1
1986	695	8.4	560	7.5	123	22.0	11	4.6
1987	608	7.2	486	6.4	110	17.5	12	4.5
1988	693	7.9	546	7.0	133	19.5	13	3.8
1989	697	7.6	549	6.8	131	17.7	17	4.8
1990	649	7.0	519	6.4	106	13.7	24	6.5
1991	577	6.5	461	6.0	102	13.8	14	3.9
1992	569	6.5	438	5.7	114	15.8	17	4.7
1993	523	6.2	423	5.7	87	12.5	13	3.5
1994	499	6.0	407	5.6	81	12.0	11	2.9
1995	419	5.1	333	4.7	65	10.3	21	5.5
1996	403	5.0	329	4.7	65	10.8	8	2.0
1997	425	5.3	349	5.0	66	10.6	10	2.4
1998	414	5.1	345	4.9	59	9.3	10	2.3
1999	418	5.2	334	4.8	75	11.4	9	1.9
2000	377	4.6	280	4.0	76	11.7	19	3.6
2001	407	5.0	314	4.5	77	11.7	16	3.0
2002	397	4.9	306	4.5	74	11.1	17	2.9
2003	383	4.8	290	4.3	78	11.8	15	2.6
2004	376	4.8	285	4.3	75	11.1	15	2.5
2005	391	5.1	308	4.8	63	9.3	20	3.5

Table 21 (cont'd). Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race¹, Massachusetts: 1980-2005

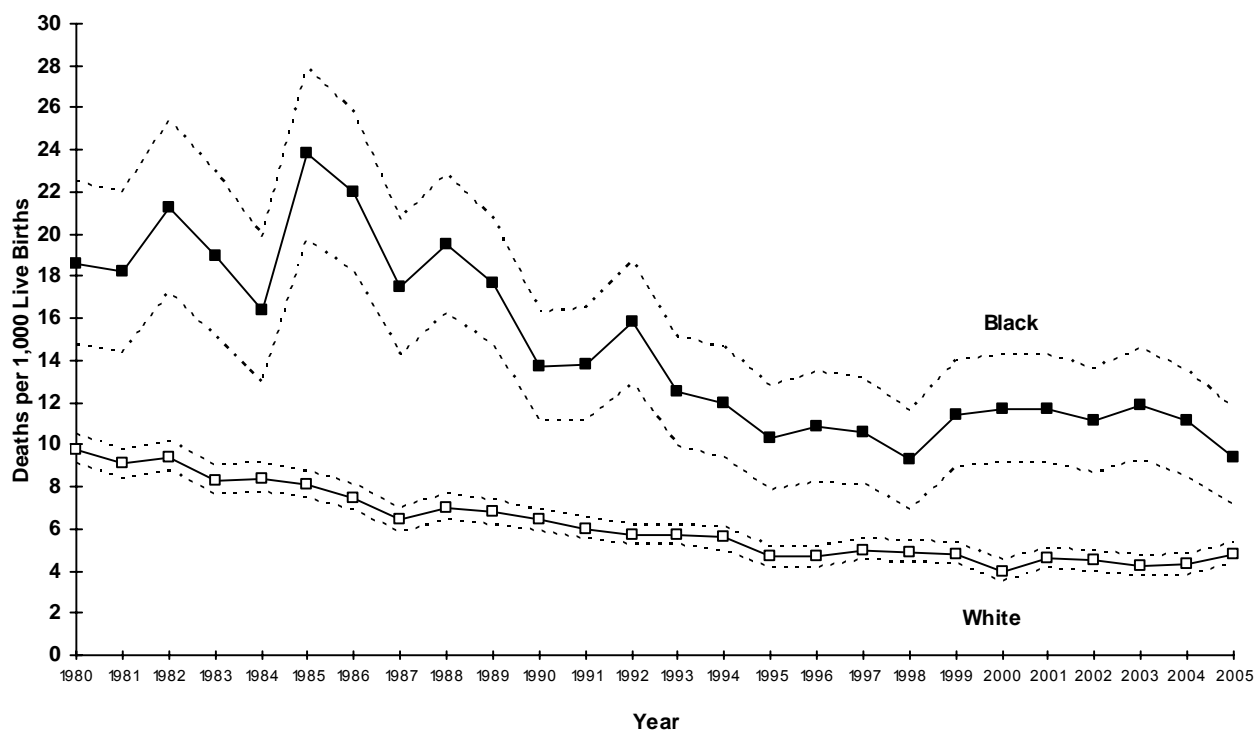
NEONATAL MORTALITY (birth to 27 days)								
Year	State Total²		White		Black		Asian/Other³	
	n	Rate⁴	n	Rate⁴	n	Rate⁴	n	Rate⁴
1980	550	7.6	483	7.2	62	13.3	5	4.6
1981	510	6.9	442	6.5	59	12.4	5	3.8
1982	573	7.6	494	7.1	75	15.7	3	-- ⁵
1983	482	6.3	411	5.9	63	13.4	7	4.3
1984	472	6.0	411	5.8	49	9.8	8	4.6
1985	538	6.6	447	6.0	85	16.0	5	2.8
1986	478	5.8	383	5.2	89	15.9	5	2.1
1987	432	5.1	343	4.6	80	12.7	9	3.4
1988	477	5.4	383	4.9	87	12.8	6	1.8
1989	479	5.2	376	4.7	95	12.8	8	2.3
1990	446	4.8	347	4.3	80	10.3	9	5.1
1991	401	4.5	319	4.1	72	9.8	10	2.8
1992	415	4.8	325	4.3	79	10.9	11	3.1
1993	375	4.4	300	4.1	66	9.5	9	2.4
1994	349	4.2	280	3.8	60	8.9	9	2.4
1995	298	3.6	237	3.3	50	7.9	11	2.9
1996	290	3.6	249	3.5	35	5.8	5	1.2
1997	323	4.0	271	3.9	45	7.2	7	1.7
1998	315	3.9	261	3.7	47	7.4	7	1.6
1999	332	4.1	265	3.8	61	9.3	6	1.3
2000	288	3.5	214	3.1	58	8.9	14	2.7
2001	308	3.8	239	3.5	59	9.0	10	1.9
2002	299	3.7	235	3.4	51	7.6	13	2.2
2003	285	3.6	217	3.2	58	8.8	10	1.8
2004	291	3.7	224	3.4	54	8.0	13	2.2
2005	282	3.7	226	3.5	45	6.6	11	1.9

Table 21 (cont'd). Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race¹, Massachusetts: 1980-2005

POST NEONATAL MORTALITY (28-364 days)								
Year	State Total²		White		Black		Asian/Other³	
	n	Rate⁴	n	Rate⁴	n	Rate⁴	n	Rate⁴
1980	198	2.7	172	2.6	25	5.3	0	0.0
1981	200	2.7	174	2.6	26	5.8	3	-- ⁵
1982	191	2.5	162	2.3	27	5.6	2	-- ⁵
1983	200	2.7	168	2.4	26	5.6	5	3.1
1984	227	2.9	190	2.6	33	6.6	5	2.9
1985	207	2.5	161	2.1	41	7.8	6	3.3
1986	217	2.6	177	2.3	34	6.1	6	2.5
1987	176	2.1	143	1.8	30	4.8	3	-- ⁵
1988	216	2.5	163	2.1	46	6.7	7	2.0
1989	218	2.4	173	2.1	36	4.9	9	2.5
1990	203	2.2	172	2.1	26	3.4	5	1.4
1991	176	2.0	142	1.8	30	4.1	4	-- ⁵
1992	154	1.8	113	1.5	35	4.8	6	1.7
1993	148	1.7	123	1.7	21	3.0	4	-- ⁵
1994	150	1.8	127	1.7	21	3.1	2	-- ⁵
1995	121	1.5	96	1.3	15	2.4	10	2.6
1996	113	1.4	80	1.1	30	5.0	3	-- ⁵
1997	102	1.3	78	1.1	21	3.4	3	-- ⁵
1998	99	1.2	84	1.2	12	1.9	3	-- ⁵
1999	86	1.1	69	1.0	14	2.1	3	-- ⁵
2000	89	1.1	66	0.9	18	2.8	5	1.0
2001	99	1.2	75	1.1	18	2.7	6	1.1
2002	98	1.2	71	1.0	23	3.4	4	-- ⁵
2003	98	1.2	73	1.1	20	3.0	5	0.9
2004	85	1.1	61	0.9	21	3.1	3	-- ⁵
2005	109	1.4	82	1.3	18	2.7	7	1.6

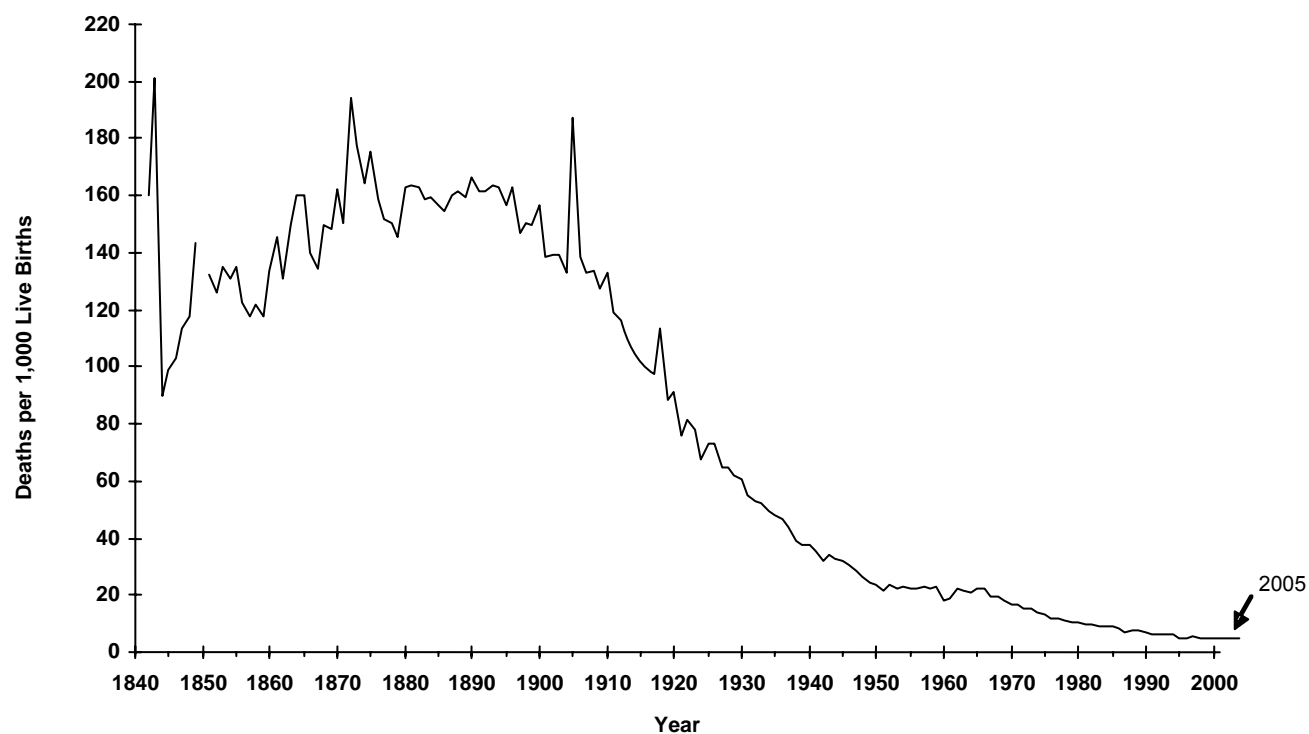
1. Hispanic origin could not be identified from the Massachusetts death certificate before 1989; thus, Hispanic trend data are not available. Most Hispanics are included in the race category of White. Hispanic infant mortality data for the years 1990 through 2005 are presented in Table 11. 2. Deaths of infants of unknown race are included in the total calculation. For rate computations, infants of unknown race are allocated into the race categories according to the distribution of births of known race. 3. Other: American Indian and Other races. 4. Rates are expressed per 1,000 live births. 5. Calculations based on fewer than five events are excluded.

**Figure 16. Infant Mortality Rates and 95% Confidence Intervals¹ by Race²,
Massachusetts: 1980-2005³**



1. See Technical Notes for explanation. 2. For rate computations, infant births of unknown race are allocated into race categories according to the distribution of the births of known race. 3. On tables and graphs which include data prior to June 1986, the race classifications do not include ethnicity; most Hispanics are included in the race category of whites.

Figure 17. Infant Mortality Rates, Massachusetts: 1842-2005¹



1. Data not available for 1850.

Figure 18. Trends in the Timing of Infant Deaths, Massachusetts: 1990-2005

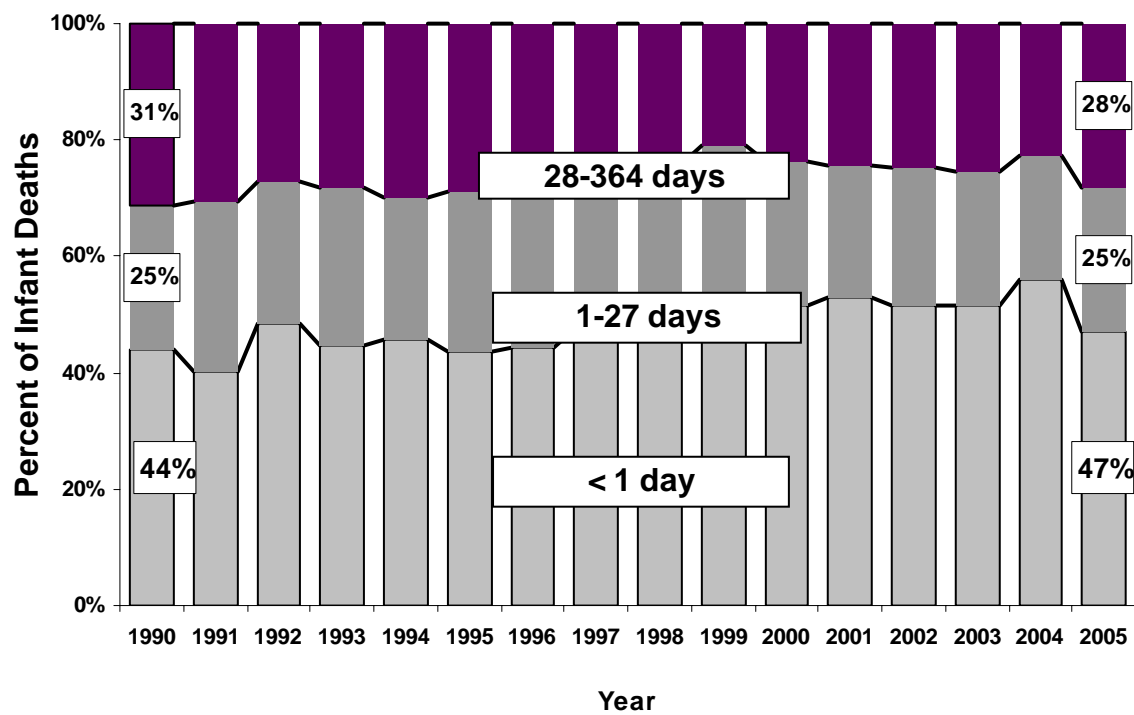
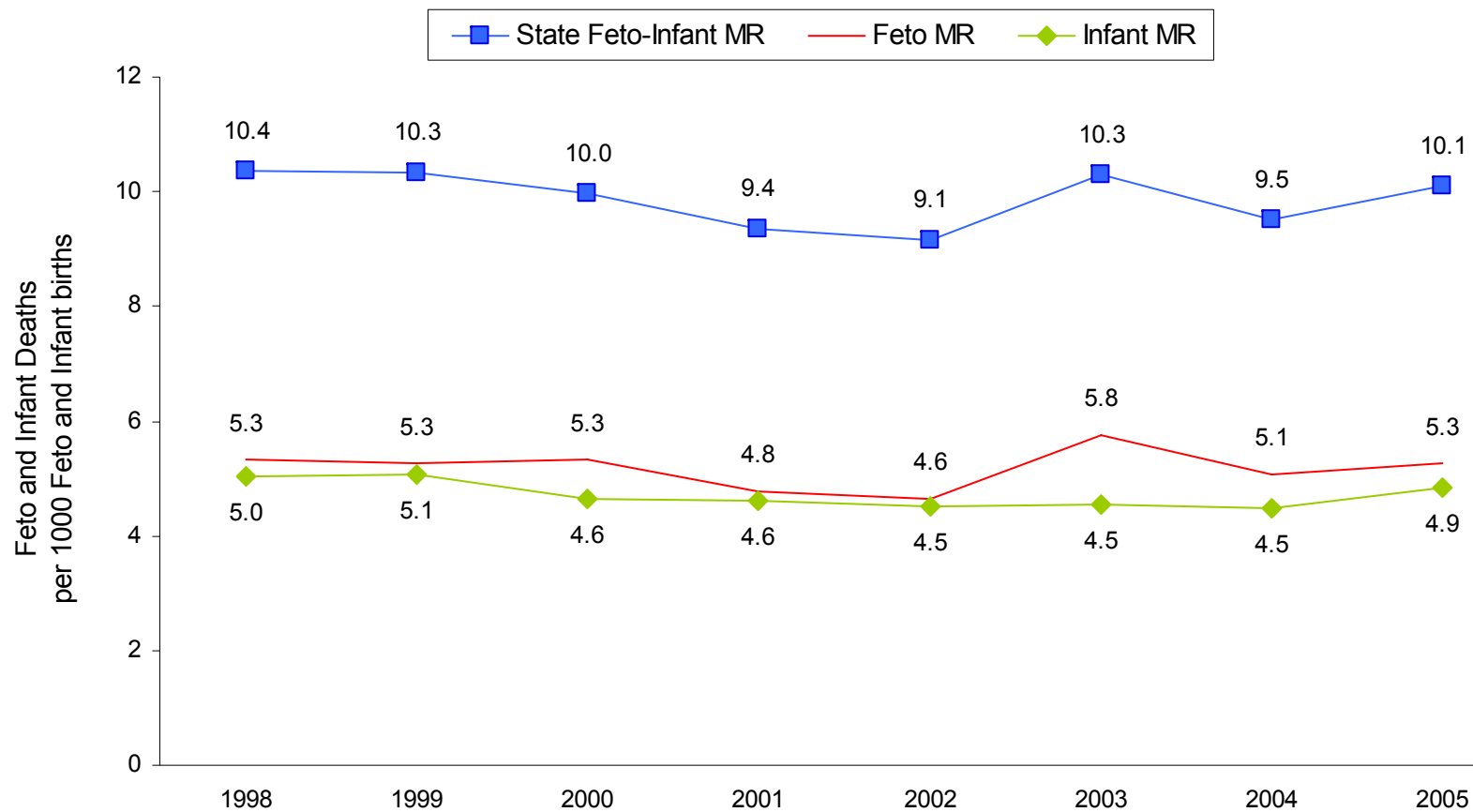


Table 22. Feto-Infant Mortality Rate¹ by Birthweight, Massachusetts: 1999-2005

Birthweight (in grams)	1999	2000	2001	2002	2003	2004	2005
<500	962.8	943.2	940.2	938.3	943.5	923.1	912.0
500-749	576.5	544.1	500.0	487.0	525.5	523.4	561.8
750-999	170.8	247.2	182.2	146.9	188.6	220.7	157.7
1,000-1,249	104.9	112.4	125.4	83.0	131.4	142.9	124.1
1,250-1,499	64.4	65.8	84.6	84.6	95.8	67.7	74.4
1,500-1,999	53.9	35.2	41.8	40.3	38.3	31.3	38.0
2,000-2,499	10.8	15.2	15.3	12.2	11.9	16.4	14.8
2,500-4,000	2.4	2.4	2.2	2.6	2.5	2.3	2.5
4,001+	1.8	2.3	1.5	1.5	1.7	2.5	1.3
Unknown birthweight (N)	(26)	(34)	(37)	(23)	(17)	(30)	(19)
State Feto-Infant Rate	10.3	9.9	9.7	9.1	10.3	9.5	10.1

¹ Fetal and Infant deaths per 1,000 live births plus fetal deaths.

Figure 19. Feto-Infant Mortality Rate, Massachusetts: 1998-2005

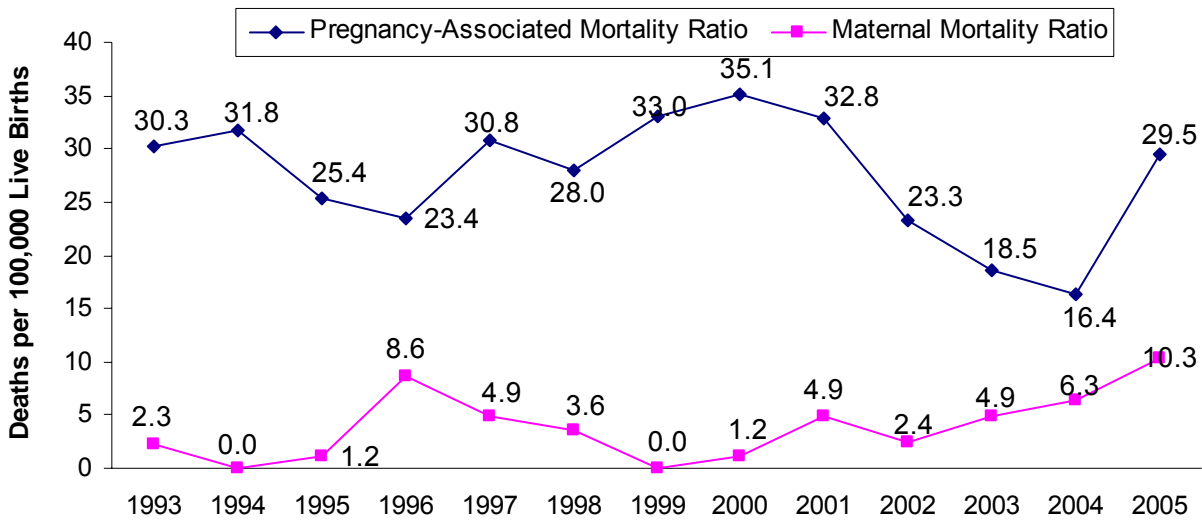


* Calculation of Infant Mortality Rate in this section differs from previous section in the inclusion of fetal deaths in the denominator.
 Note: Total Feto, Infant, and Feto-Infant Mortality Rates include cases with unknown birthweight. The Fetal Mortality Rate and Infant Mortality Rate may not add up to the Feto-Infant Mortality Rate due to rounding.

Table 23. Fetal and Infant Deaths by Birthweight and Gestational Age, Massachusetts: 1998-2005

<u>Year</u>	<u>Fetals</u> (<u><24 wks or</u> <u><500 grams</u>)	<u>Fetals</u> (<u>>=24 wks and</u> <u>>= 500 grams</u>)	<u>Infants</u> (<u><24 wks or</u> <u><500 grams</u>)	<u>Infants</u> (<u>>=24 wks and</u> <u>>= 500 grams</u>)	<u>Total</u>
1998	216 (25.5%)	219 (25.8%)	183 (21.6%)	230 (27.1%)	848 (100%)
1999	214 (25.4%)	215 (25.6%)	196 (23.3%)	216 (25.7%)	841 (100%)
2000	203 (25.1%)	234 (28.9%)	168 (20.7%)	205 (25.3%)	810 (100%)
2001	174 (22.0%)	214 (27.1%)	197 (24.9%)	206 (26.0%)	791 (100%)
2002	165 (22.3%)	210 (28.3%)	185 (25.0%)	181 (24.4%)	741 (100%)
2003	218 (26.3%)	246 (29.6%)	189 (22.8%)	177 (21.3%)	830 (100%)
2004	177 (22.7%)	240 (30.8%)	182 (23.3%)	181 (23.2%)	780 (100%)
2005	210 (26.3%)	213 (26.7%)	174 (21.8%)	201 (25.2%)	798 (100%)

Figure 20. Trends in Pregnancy-Associated¹ and Maternal Mortality², Massachusetts: 1993-2005



NOTE: Ratios shown in graph are per 100,000 live births. Ratios are based on occurrence births, not resident births.

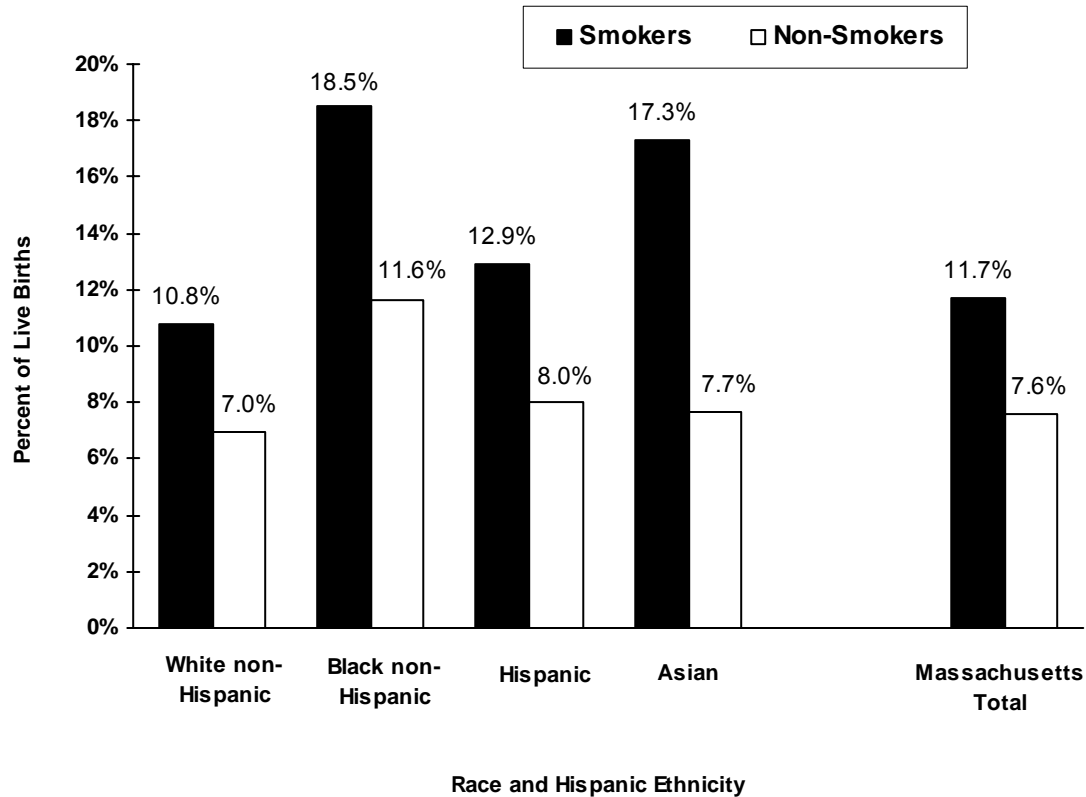
1. Pregnancy-associated death is defined as the death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause. The pregnancy-associated mortality ratio is the number of pregnancy-associated deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for further information). 2. Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes. Maternal mortality ratio is the number of maternal deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for more information.)

Table 24. Number of Pregnancy-Associated¹ and Maternal Mortality², Massachusetts: 1994-2005

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Pregnancy-Associated Deaths ¹	27	21	19	25	23	27	29	27	19	15	13	23
Maternal Deaths ²	0	1	7	4	3	0	1	4	2	4	5	8

1. Pregnancy-associated death is defined as the death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause. The pregnancy-associated mortality ratio is the number of pregnancy-associated deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for further information). 2. Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes. Maternal mortality ratio is the number of maternal deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for more information.)

Figure 21. Low Birthweight¹ Among Smoking and Nonsmoking² Mothers, by Race and Hispanic Ethnicity, Massachusetts: 2005



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. Maternal smoking is self-reported on the Parent Worksheet of the Birth Certificate; these data should be interpreted cautiously.

1. Low birthweight: less than 2,500 grams or 5.5 pounds. 2. Based on information provided on the Parent Worksheet of the Birth Certificates.

Table 25. Low Birthweight (LBW)¹ by Maternal Age, Race and Hispanic Ethnicity, Massachusetts: 2005

Mother's Age (in years)	Total LBW Infants		White non- Hispanic		Black non- Hispanic		Hispanic		Asian		Other⁴		Unknown⁵
	n	%³	n	%³	n	%³	n	%³	n	%³	n	%³	n
State Total²	6,073	7.9	3,897	7.3	731	12.0	828	8.2	409	7.8	203	10.9	6
<18	177	11.8	48	8.8	31	15.0	75	12.3	11	16.7	12	17.4	0
18-19	289	9.3	134	8.7	42	10.6	85	9.0	12	12.4	16	13.0	0
20-24	899	7.6	434	6.7	157	12.4	216	7.1	48	9.2	42	9.1	2
25-29	1,328	7.4	769	6.5	175	10.7	218	8.3	108	7.7	56	11.3	2
30-34	1,755	7.3	1,280	6.9	156	11.1	131	7.2	147	7.5	41	9.3	0
35-39	1,252	8.5	939	8.0	128	14.4	88	10.8	68	6.9	27	12.2	2
40+	372	10.6	292	10.6	41	15.2	15	7.4	15	6.9	9	15.5	0

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Low Birthweight (LBW): less than 2,500 grams or 5.5 pounds at birth. 2. State totals include women of unknown age. 3. Percentages are based upon the number of low birthweight infants divided by the total births in each age and race/ethnicity category. 4. Other races include American Indian and others not specified. 5. Race and/or mother's age unknown.

Table 26. Adequacy of Prenatal Care Utilization¹: Summary and Component Indices, Massachusetts: 2005

	Adequate Total ²		Adequate Intensive ³		Adequate Basic ³		Intermediate ³		Inadequate ³		Unknown ³
	n	%	n	%	n	%	n	%	n	%	n
<u>Summary Index⁴</u>											
Adequacy of Prenatal Care Utilization	63,748	84.0	29,633	39.0	34,115	45.0	5,722	7.5	6,424	8.5	930
<u>Component Indices⁴</u>											
Adequacy of Initiation	69,976	92.2	30,982	40.8	38,994	51.4	3,700	4.9	2,218	2.9	930
Adequacy of Received Services (Visits)	68,717	90.5	33,478	44.1	35,239	46.4	6,293	8.3	884	1.2	930

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. 2. Adequate Total is the sum of Adequate Intensive and Adequate Basic categories. 3. For definitions of these categories, please see the Technical Notes in the Appendix. 4. For an explanation of the APNCU Index (summary index) and its component indices, please see Technical Notes in the Appendix.

Table 27. Adequacy of Prenatal Care¹ by Selected Characteristics, Massachusetts: 2005

	<u>Adequate Total</u> ²		<u>Adequate Intensive</u>		<u>Adequate Basic</u>		<u>Intermediate</u>		<u>Inadequate</u>		<u>Unknown</u>
	n	%	n	%	n	%	n	%	N	%	n
State Total	63,748	84.0%	29,633	39.0%	34,115	45.0%	5,722	7.5%	6,424	8.5%	930
Age	Maternal Demographics										
<18	974	66.2%	468	31.8%	506	34.4%	139	9.4%	359	24.4%	27
18-19	2,176	71.1%	983	32.1%	1,193	39.0%	333	10.9%	550	18.0%	40
20-24	8,853	76.1%	4,050	34.8%	4,803	41.3%	1,055	9.1%	1,723	14.8%	174
25-29	14,905	83.8%	6,823	38.4%	8,082	45.4%	1,422	8.0%	1,462	8.2%	237
30-34	20,921	87.6%	9,435	39.5%	11,486	48.1%	1,645	6.9%	1,326	5.5%	248
35-39	12,872	88.3%	6,265	43.0%	6,607	45.3%	921	6.3%	785	5.4%	162
40+	3,045	87.8%	1,608	46.3%	1,437	41.4%	206	5.9%	219	6.3%	41
Educational Attainment											
< than High School	5,392	69.4%	2,681	34.5%	2,711	34.9%	806	10.4%	1,571	20.2%	180
High School	15,270	80.1%	7,061	37.0%	8,209	43.1%	1,640	8.6%	2,151	11.3%	251
Some college	14,180	84.9%	6,945	41.6%	7,235	43.3%	1,201	7.2%	1,325	7.9%	262
College	18,310	89.2%	8,106	39.5%	10,204	49.7%	1,327	6.5%	897	4.4%	116
More than college	10,513	89.8%	4,805	41.1%	5,708	48.8%	728	6.2%	462	3.9%	59
Race/Hispanic Ethnicity											
Hispanic	7,512	75.8%	3,455	34.9%	4,057	40.9%	1,047	10.6%	1,354	13.7%	148
White non-Hispanic	46,012	86.8%	21,436	40.4%	24,576	46.3%	3,697	7.0%	3,330	6.3%	430
Black non-Hispanic	4,463	76.3%	2,102	35.9%	2,361	40.4%	440	7.5%	948	16.2%	226
Asian	4,259	81.6%	1,937	37.1%	2,322	44.5%	403	7.7%	555	10.6%	34
Other	1,468	80.4%	682	37.3%	786	43.0%	133	7.3%	226	12.4%	41
Birthplace											
U.S. States/D.C.	46,442	85.8%	21,751	40.2%	24,691	45.6%	3,937	7.3%	3,769	7.0%	604
Puerto Rico/U.S. Terr.	1,527	77.2%	662	33.5%	865	43.7%	194	9.8%	258	13.0%	39
Non-U.S.-Born	15,774	79.8%	7,216	36.5%	8,558	43.3%	1,591	8.1%	2,395	12.1%	284
Parity³	Pregnancy-Related Factors										
1	28,182	83.9%	12,998	38.7%	15,184	45.2%	2,543	7.6%	2,853	8.5%	313
2-3	31,406	85.0%	14,573	39.4%	16,833	45.5%	2,763	7.5%	2,796	7.6%	403
4+	4,073	77.6%	2,034	38.8%	2,039	38.9%	410	7.8%	763	14.5%	102
Smoking⁴											
Yes	3,937	72.0%	2,028	37.1%	1,909	34.9%	542	9.9%	991	18.1%	85
No	59,732	85.0%	27,572	39.2%	32,160	45.7%	5,165	7.3%	5,414	7.7%	787
Plurality	Birth Outcomes										
Singleton	60,476	83.5%	26,815	37.0%	33,661	46.5%	5,638	7.8%	6,282	8.7%	862
Multiple birth	3,271	93.5%	2,817	80.6%	454	13.0%	84	2.4%	142	4.1%	68
Birthweight											
<500 g	105	91.3%	97	84.3%	8	7.0%	0	-. ⁵	10	8.7%	12
500-1,499 g	845	90.6%	766	82.1%	79	8.5%	13	1.4%	75	8.0%	38
1,499-2,499 g	4,173	85.8%	3,272	67.3%	901	18.5%	209	4.3%	483	9.9%	110
2,500-3,999 g	52,335	83.7%	23,131	37.0%	29,204	46.7%	4,822	7.7%	5,400	8.6%	597
4,000+ g	6,266	84.7%	2,350	31.8%	3,916	52.9%	678	9.2%	452	6.1%	73
Gestational Age											
<28 weeks	405	88.4%	376	82.1%	29	6.3%	5	1.1%	48	10.5%	32
<37 weeks	5,931	88.2%	5,202	77.3%	729	10.8%	218	3.2%	578	8.6%	198
37-42 weeks	57,680	83.6%	24,372	35.3%	33,308	48.3%	5,480	7.9%	5,809	8.4%	606

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. See Glossary and Technical Notes in Appendix for definitions of Index and its categories. 2. Adequate Total is the sum of Adequate Intensive and Adequate Basic. 3. Parity is the number of live births including this birth. 4. Smoking during pregnancy is self-reported by the mother and should be interpreted with caution. 5. Calculations based on fewer than five events are excluded.

Table 28. Adequacy of Prenatal Care Initiation¹ by Selected Characteristics, Massachusetts: 2005

	<u>Adequate Total</u> ²		<u>Adequate Intensive</u>		<u>Adequate Basic</u>		<u>Intermediate</u>		<u>Inadequate</u>		<u>Unknown</u>
	n	%	n	%	n	%	n	%	n	%	n
State Total	69,976	92.2%	30,982	40.8%	38,994	51.4%	3,700	4.9%	2,218	2.9%	930
Age	Maternal Demographics										
<18	1,122	76.2%	387	26.3%	735	49.9%	209	14.2%	141	9.6%	27
18-19	2,541	83.1%	918	30.0%	1,623	53.1%	343	11.2%	175	5.7%	40
20-24	10,012	86.1%	3,986	34.3%	6,026	51.8%	1,046	9.0%	573	4.9%	174
25-29	16,458	92.5%	7,274	40.9%	9,184	51.6%	811	4.6%	520	2.9%	237
30-34	22,701	95.0%	10,616	44.4%	12,085	50.6%	739	3.1%	452	1.9%	248
35-39	13,858	95.1%	6,308	43.3%	7,550	51.8%	430	2.9%	290	2.0%	162
40+	3,281	94.6%	1,493	43.0%	1,788	51.5%	122	3.5%	67	1.9%	41
Educational Attainment											
< than High School	6,297	81.1%	2,163	27.8%	4,134	53.2%	963	12.4%	509	6.6%	180
High School	17,064	89.5%	7,060	37.0%	10,004	52.5%	1,261	6.6%	736	3.9%	251
Some college	15,491	92.7%	6,953	41.6%	8,538	51.1%	755	4.5%	460	2.8%	262
College	19,740	96.1%	9,511	46.3%	10,229	49.8%	461	2.2%	333	1.6%	116
More than college	11,280	96.4%	5,250	44.9%	6,030	51.5%	254	2.2%	169	1.4%	59
Race/Hispanic Ethnicity											
Hispanic	8,646	87.2%	3,635	36.7%	5,011	50.5%	814	8.2%	453	4.6%	148
White non-Hispanic	50,017	94.3%	22,572	42.6%	27,445	51.7%	1,903	3.6%	1,119	2.1%	430
Black non-Hispanic	4,963	84.8%	2,192	37.5%	2,771	47.4%	513	8.8%	375	6.4%	226
Asian	4,696	90.0%	1,812	34.7%	2,884	55.3%	350	6.7%	171	3.3%	34
Other	1,618	88.6%	752	41.2%	866	47.4%	114	6.2%	95	5.2%	41
Birthplace											
U.S. States/D.C.	50,703	93.6%	22,992	42.5%	27,711	51.2%	2,228	4.1%	1,217	2.2%	604
Puerto Rico/U.S. Terr.	1,747	88.3%	690	34.9%	1,057	53.4%	150	7.6%	82	4.1%	39
Non-U.S.-Born	17,521	88.7%	7,299	36.9%	10,222	51.7%	1,321	6.7%	918	4.6%	284
Parity ³	Pregnancy-Related Factors										
1	30,898	92.0%	13,497	40.2%	17,401	51.8%	1,660	4.9%	1,020	3.0%	313
2-3	34,443	93.2%	15,548	42.1%	18,895	51.1%	1,594	4.3%	928	2.5%	403
4+	4,541	86.6%	1,867	35.6%	2,674	51.0%	445	8.5%	260	5.0%	102
Smoking ⁴											
Yes	4,537	82.9%	1,707	31.2%	2,830	51.7%	565	10.3%	368	6.7%	85
No	65,344	92.9%	29,239	41.6%	36,105	51.4%	3,128	4.4%	1,839	2.6%	787
Plurality	Birth Outcomes										
Singleton	66,614	92.0%	29,405	40.6%	37,209	51.4%	3,583	4.9%	2,199	3.0%	862
Multiple birth	3,361	96.1%	1,577	45.1%	1,784	51.0%	117	3.3%	19	0.5%	68
Birthweight											
<500 g	105	91.3%	51	44.3%	54	47.0%	3	— ⁵	7	6.1%	12
500-1,499 g	865	92.7%	470	50.4%	395	42.3%	39	4.2%	29	3.1%	38
1,499-2,499 g	4,417	90.8%	1,963	40.3%	2,454	50.4%	284	5.8%	164	3.4%	110
2,500-3,999 g	57,579	92.0%	25,357	40.5%	32,222	51.5%	3,107	5.0%	1,871	3.0%	597
4,000+ g	6,986	94.5%	3,132	42.3%	3,854	52.1%	266	3.6%	144	1.9%	73
Gestational Age											
<28 weeks	414	90.4%	218	47.6%	196	42.8%	24	5.2%	20	4.4%	32
<37 weeks	6,187	92.0%	2,984	44.4%	3,203	47.6%	343	5.1%	197	2.9%	198
37-42 weeks	63,626	92.3%	27,948	40.5%	35,678	51.7%	3,343	4.8%	2,000	2.9%	606

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Based on the Adequacy of Initiation Index, a component index of the APNCU Index. See Glossary and Technical Notes in Appendix for definitions of Index and its categories. 2. Adequate Total is the sum of Adequate Intensive and Adequate Basic. 3. Parity is the number of live births including this birth.

4. Smoking during pregnancy is self-reported by the mother and should be interpreted with caution. 5. Calculations based on fewer than five events are excluded.

Table 29. Adequacy of Prenatal Care Visits¹ by Selected Characteristics, Massachusetts: 2005

	<u>Adequate Total</u> ²		<u>Adequate Intensive</u>		<u>Adequate Basic</u>		<u>Intermediate</u>		<u>Inadequate</u>		<u>Unknown</u>
	n	%	n	%	n	%	n	%	n	%	n
State Total	68,717	90.5%	33,478	44.1%	35,239	46.4%	6,293	8.3%	884	1.2%	930
Age	<u>Maternal Demographics</u>										
<18	1,258	85.5%	669	45.4%	589	40.0%	175	11.9%	39	2.6%	27
18-19	2,609	85.3%	1,307	42.7%	1,302	42.6%	383	12.5%	67	2.2%	40
20-24	10,187	87.6%	5,055	43.5%	5,132	44.1%	1,222	10.5%	222	1.9%	174
25-29	16,022	90.1%	7,717	43.4%	8,305	46.7%	1,558	8.8%	209	1.2%	237
30-34	21,953	91.9%	10,241	42.9%	11,712	49.0%	1,744	7.3%	195	0.8%	248
35-39	13,479	92.5%	6,748	46.3%	6,731	46.2%	986	6.8%	113	0.8%	162
40+	3,207	92.4%	1,740	50.1%	1,467	42.3%	224	6.5%	39	1.1%	41
Educational Attainment											
< than High School	6,570	84.6%	3,537	45.5%	3,033	39.0%	979	12.6%	220	2.8%	180
High School	16,908	88.7%	8,327	43.7%	8,581	45.0%	1,856	9.7%	297	1.6%	251
Some college	15,231	91.2%	7,788	46.6%	7,443	44.6%	1,292	7.7%	183	1.1%	262
College	19,019	92.6%	8,677	42.3%	10,342	50.4%	1,387	6.8%	128	0.6%	116
More than college	10,897	93.1%	5,109	43.7%	5,788	49.5%	758	6.5%	48	0.4%	59
Race/Hispanic Ethnicity											
Hispanic	8,573	86.5%	4,248	42.9%	4,325	43.6%	1,178	11.9%	162	1.6%	148
White non-Hispanic	48,576	91.6%	23,454	44.2%	25,122	47.4%	3,963	7.5%	500	0.9%	430
Black non-Hispanic	5,185	88.6%	2,661	45.5%	2,524	43.1%	539	9.2%	127	2.2%	226
Asian	4,706	90.2%	2,278	43.7%	2,428	46.5%	453	8.7%	58	1.1%	34
Other	1,636	89.5%	810	44.3%	826	45.2%	157	8.6%	34	1.9%	41
Birthplace											
U.S. States/D.C.	49,266	91.0%	23,960	44.2%	25,306	46.7%	4,286	7.9%	596	1.1%	604
Puerto Rico/U.S. Terr.	1,716	86.7%	792	40.0%	924	46.7%	220	11.1%	43	2.2%	39
Non-U.S.-Born	17,728	89.7%	8,720	44.1%	9,008	45.6%	1,787	9.0%	245	1.2%	284
Parity ³	<u>Pregnancy-Related Factors</u>										
1	30,485	90.8%	14,796	44.1%	15,689	46.7%	2,766	8.2%	327	1.0%	313
2-3	33,538	90.7%	16,211	43.9%	17,327	46.9%	3,013	8.2%	414	1.1%	403
4+	4,600	87.7%	2,439	46.5%	2,161	41.2%	508	9.7%	138	2.6%	102
Smoking ⁴											
Yes	4,644	84.9%	2,582	47.2%	2,062	37.7%	647	11.8%	179	3.3%	85
No	63,985	91.0%	30,857	43.9%	33,128	47.1%	5,629	8.0%	697	1.0%	787
Plurality	<u>Birth Outcomes</u>										
Singleton	65,324	90.2%	30,555	42.2%	34,769	48.0%	6,199	8.6%	873	1.2%	862
Multiple birth	3,392	97.0%	2,922	83.6%	470	13.4%	94	2.7%	11	0.3%	68
Birthweight											
<500 g	108	93.9%	98	85.2%	10	8.7%	0	0.0%	7	6.1%	12
500-1,499 g	885	94.9%	799	85.6%	86	9.2%	15	1.6%	33	3.5%	38
1,499-2,499 g	4,525	93.0%	3,566	73.3%	959	19.7%	241	5.0%	99	2.0%	110
2,500-3,999 g	56,549	90.4%	26,372	42.2%	30,177	48.2%	5,320	8.5%	688	1.1%	597
4,000+ g	6,625	89.6%	2,626	35.5%	3,999	54.1%	717	9.7%	54	0.7%	73
Gestational Age											
<28 weeks	429	93.7%	394	86.0%	35	7.6%	5	1.1%	24	5.2%	32
<37 weeks	6,332	94.1%	5,548	82.5%	784	11.7%	259	3.9%	136	2.0%	198
37-42 weeks	62,233	90.2%	27,859	40.4%	34,374	49.8%	6,007	8.7%	729	1.1%	606

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Based on the Adequacy of Received Services (Visits) Index, a component index of the APNCU Index. See Glossary and Technical Notes in Appendix for definitions of Index and its categories. 2. Adequate Total is the sum of Adequate Intensive and Adequate Basic. 3. Parity is the number of live births including this birth. 4. Smoking during pregnancy is self-reported by the mother and should be interpreted with caution.

Table 30. Birth Characteristics by Race/Hispanic Ethnicity and Source of Prenatal Care Payment (Public/Private) -- Massachusetts: 2005

Race/Ethnicity and Payment Source	Births ¹		Teen Births				Birthweight			
	n	%	<18 Years		<20 Years		Very Low ²		Low ³	
	n	%	n	%	n	%	n	%	N	%
STATE TOTAL⁴	76,824	100.0	1,499	2.0	4,598	6.0	1,098	1.4	6,073	7.9
Public	24,499	32.6	1,117	4.6	3,485	14.2	366	1.5	2,070	8.4
Medicaid ⁵	18,200	24.2	864	4.7	2,705	14.9	276	1.5	1,576	8.7
Other Public ⁶	6,299	8.4	253	4.0	780	12.4	90	1.4	494	7.8
Private ⁷	50,000	66.5	330	0.7	985	2.0	628	1.3	3,659	7.3
White non-Hispanic	53,469	100.0	546	1.0	2,081	3.9	653	1.2	3,896	7.3
Public	11,219	21.5	334	3.0	1,415	12.6	132	1.2	884	7.9
Medicaid ⁵	8,846	17.0	289	3.3	1,183	13.4	109	1.2	712	8.0
Other Public ⁶	2,373	4.6	45	1.9	232	9.8	23	1.0	172	7.2
Private ⁷	40,453	77.6	190	0.5	601	1.5	455	1.1	2,771	6.8
Black non-Hispanic	6,077	100.0	207	3.4	604	9.9	177	2.9	731	12.0
Public	3,708	61.9	161	4.3	463	12.5	88	2.4	414	11.2
Medicaid ⁵	2,817	47.0	133	4.7	389	13.8	68	2.4	319	11.3
Other Public ⁶	891	14.9	28	3.1	74	8.3	20	2.2	95	10.7
Private ⁷	2,242	37.4	36	1.6	124	5.5	81	3.6	289	12.9
Hispanic	10,061	100.0	608	6.0	1,551	15.4	160	1.6	828	8.2
Public	7,221	72.3	523	7.2	1,342	18.6	112	1.6	568	7.9
Medicaid ⁵	4,702	47.1	353	7.5	899	19.1	67	1.4	381	8.1
Other Public ⁶	2,519	25.2	170	6.7	443	17.6	45	1.8	187	7.4
Private ⁷	2,693	27.0	74	2.7	183	6.8	37	1.4	235	8.7
Asian	5,251	100.0	66	1.3	163	3.1	47	0.9	409	7.8
Public	1,312	25.1	49	3.7	125	9.5	14	1.1	103	7.9
Medicaid ⁵	1,024	19.6	46	4.5	113	11.0	13	1.3	80	7.8
Other Public ⁶	288	5.5	3	-- ⁸	12	4.2	1	-- ⁸	23	8.0
Private ⁷	3,874	74.0	16	0.4	34	0.9	31	0.8	294	7.6
Other⁹	1,868	100.0	69	3.7	192	10.3	58	3.1	203	10.9
Public	1,018	57.5	48	4.7	135	13.3	20	2.0	100	9.8
Medicaid ⁵	793	44.8	41	5.2	116	14.6	19	2.4	84	10.6
Other Public ⁶	225	12.7	7	3.1	19	8.4	1	-- ⁸	16	7.1
Private ⁷	720	40.7	14	1.9	43	6.0	24	3.3	69	9.6

Table 30 (cont.) Birth Characteristics by Race/Hispanic Ethnicity and Source of Prenatal Care Payment (Public/Private) -- Massachusetts: 2005

Race/Ethnicity and Payment Source	Prenatal Care							
	Adequate ¹⁰		Began 1st Trimester		Cesarean Section		Breastfeeding ¹¹	
	n	%	n	%	n	%	n	%
STATE TOTAL⁴	63,748	84.0	63,410	83.2	24,732	32.3	59,845	79.3
Public	17,946	74.5	17,351	71.6	6,749	27.6	17,395	71.2
Medicaid ⁵	13,510	75.2	13,118	72.8	5,076	27.9	12,612	69.4
Other Public ⁶	4,436	72.2	4,233	68.2	1,673	26.8	4,783	76.6
Private ⁷	44,375	89.2	44,565	89.4	17,329	34.7	41,686	83.5
White non-Hispanic	46,012	86.8	46,129	86.7	17,861	33.5	40,890	78.1
Public	8,588	77.1	8,263	74.0	3,226	28.8	7,159	64.0
Medicaid ⁵	6,743	76.7	6,527	74.1	2,546	28.8	5,375	60.8
Other Public ⁶	1,845	78.6	1,736	73.6	680	28.8	1,784	75.6
Private ⁷	36,188	89.8	36,567	90.6	14,092	34.9	33,191	82.2
Black non-Hispanic	4,463	76.3	4,258	72.0	2,037	33.7	4,851	80.5
Public	2,507	70.9	2,381	66.4	1,172	31.8	2,805	76.0
Medicaid ⁵	1,987	73.3	1,893	69.2	887	31.6	2,134	75.9
Other Public ⁶	520	63.1	488	57.5	285	32.4	671	76.3
Private ⁷	1,921	87.3	1,839	83.0	838	37.5	1,987	88.7
Hispanic	7,512	75.8	7,428	74.5	2,713	27.1	8,088	80.8
Public	5,137	72.3	5,132	71.8	1,759	24.4	5,654	78.6
Medicaid ⁵	3,414	73.6	3,456	74.2	1,187	25.3	3,740	79.6
Other Public ⁶	1,723	69.8	1,676	67.2	572	22.9	1,914	76.7
Private ⁷	2,329	87.2	2,243	83.7	929	34.5	2,348	87.3
Asian	4,259	81.6	4,116	78.7	1,515	28.9	4,447	84.9
Public	925	71.4	807	62.0	271	20.7	898	68.6
Medicaid ⁵	733	72.3	627	61.7	210	20.5	683	66.9
Other Public ⁶	192	68.1	180	63.2	61	21.2	215	74.7
Private ⁷	3,298	85.4	3,280	84.8	1,227	31.7	3,505	90.5
Other⁹	1,468	80.4	1,446	78.5	586	31.6	1,544	86.7
Public	776	77.3	754	74.7	314	31.0	870	85.6
Medicaid ⁵	622	79.3	603	76.6	241	30.5	672	84.8
Other Public ⁶	154	70.0	151	68.0	73	32.7	198	88.4
Private ⁷	623	87.5	620	87.0	235	32.9	640	89.0

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. In the "Births" column, percentages are based on race/ethnicity category totals (in column). For all other characteristics, percentages are based on the total number of births for the race/ethnicity by payment source for the row. 2. Very low birthweight: less than 1,500 grams or 3.3 pounds. 3. Low Birthweight: less than 2,500 grams or 5.5 pounds. 4. Total births do not equal Public + Private because Workers' Compensation, self-paid, and other are in the state total but not shown in the table. 5. Medicaid/MassHealth. 6. Other Public: Commonwealth, Healthy Start, Medicare, other government programs, and free care. 7. Private: commercial indemnity plans or commercial managed care organizations (HMO, PPO, IPP, or IPA). 8. Calculations based on fewer than five events are excluded. 9. Other: Mothers who designated their race as American Indian or "Other." 10. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. 11. Mother was breastfeeding or intending to breastfeed at the time the birth certificate was completed.

Table 31. Cesarean Section Deliveries and Vaginal Births after Cesarean Section (VBACs) by Licensed Maternity Facility¹, All Births, Massachusetts: 2005

Facility	Occurrence Births ²	Total		Primary C-Section ²		Repeat		C-Sections VBACs ²	
		N	% ^{3,4}	N	% ^{3,5}	N	% ^{3,6}	N	% ⁷
State Total	77,841	25,189	32.5	15,802	23.5	9,387	90.5	981	9.5
Anna Jaques Hospital	710	236	33.2	151	24.8	85	85.0	15	15.0
Baystate Medical Center	4,112	1,203	30.2	742	21.6	461	84.4	85	15.6
Berkshire Medical Center	771	234	30.4	162	23.7	72	82.8	15	17.2
Beth Israel Deaconess Medical Center	4,873	2,067	42.4	1,416	34.2	651	89.4	77	10.6
Beverly Hospital	2,068	693	33.5	430	24.3	263	87.7	37	12.3
Boston Medical Center	2,290	689	30.1	454	22.2	235	95.5	11	4.5
Brigham and Women's Hospital	8,382	2,737	32.8	1,747	24.3	990	84.8	177	15.2
Brockton Hospital	1,378	479	34.8	313	26.1	166	91.7	15	8.3
Cambridge Hospital	1,180	334	28.3	202	19.8	132	82.5	28	17.5
Cape Cod Hospital	1,009	278	27.6	143	16.7	135	87.1	20	12.9
Caritas Good Samaritan Medical Center	958	368	38.4	216	27.0	152	95.6	7	4.4
Caritas Holy Family Hospital and Medical Center	1,323	545	41.2	348	30.9	197	99.5	1	-- ⁸
Caritas Norwood Hospital	557	202	36.3	125	26.5	77	90.6	8	9.4
Caritas St. Elizabeth's Medical Center of Boston	1,345	505	37.6	316	27.6	189	95.0	10	5.0
Charlton Memorial Hospital	1,647	556	33.8	342	23.9	214	99.1	2	-- ⁸
Cooley Dickinson Hospital	830	211	25.4	137	18.5	74	81.3	17	18.7
Emerson Hospital	1,168	427	36.6	255	26.0	172	91.0	17	9.0
Fairview Hospital	160	50	31.3	22	16.7	28	100.0	0	-- ⁸
Falmouth Hospital	637	204	32.3	110	20.4	94	100.0	0	-- ⁸
Franklin Medical Center	458	126	27.5	74	18.7	52	83.9	10	16.1
Harrington Memorial Hospital	424	129	30.6	74	20.4	55	94.8	3	-- ⁸
Heywood Memorial Hospital	565	122	21.6	61	12.4	61	84.7	11	15.3
Holyoke Hospital	620	126	20.3	66	11.9	60	89.6	7	10.4
Jordan Hospital	620	214	34.5	142	26.2	72	92.3	6	7.7
Lawrence General Hospital	1,739	508	29.2	254	17.3	254	93.0	19	7.0
Leominster Hospital	1,153	276	24.1	143	14.2	133	95.0	7	5.0
Lowell General Hospital	1,850	584	31.6	365	22.6	219	92.0	19	8.0
Martha's Vineyard Hospital	152	36	23.7	26	18.3	10	100.0	0	0.0
Mary Lane Hospital	188	67	35.6	36	22.9	31	100.0	0	0.0
Massachusetts General Hospital	3,500	1,115	31.9	734	24.0	381	86.4	60	13.6
Melrose-Wakefield Hospital	1,267	520	41.0	313	29.6	207	99.5	1	-- ⁸
Mercy Medical Center	1,416	317	22.6	176	14.2	141	86.5	22	13.5

Table 31 (cont.). Cesarean Section Deliveries and Vaginal Births after Cesarean Section (VBACs) by Licensed Maternity Facility¹, All Births, Massachusetts: 2005

Facility	Occurrence Births ²	Total		Primary C-Section ²		Repeat		C-Sections VBACs ²	
		N	% ^{3,4}	N	% ^{3,5}	N	% ^{3,6}	N	% ⁷
Metrowest Medical Center-Framingham Union Campus	2,018	734	36.4	465	26.6	269	99.6	1	-- ⁸
Milford Regional Medical Center	915	323	35.4	195	24.9	128	97.7	3	-- ⁸
Morton Hospital	469	177	38.1	106	27.2	71	93.4	5	6.6
Mount Auburn Hospital	1,812	441	24.4	290	17.9	151	78.6	41	21.4
Nantucket Cottage Hospital	111	31	27.9	20	20.2	11	91.7	1	-- ⁸
Newton Wellesley Hospital	3,182	1,191	37.4	736	27.2	455	95.6	21	4.4
North Adams Regional Hospital	294	78	26.5	36	14.3	42	97.7	1	-- ⁸
North Shore Medical Center - Salem Hospital	1,914	609	31.8	380	22.8	229	93.5	16	6.5
Saint Vincent Hospital	1,760	481	27.3	289	19.0	192	79.3	50	20.7
Saints Memorial Medical Center	684	237	34.7	150	25.3	87	96.7	3	-- ⁸
South Shore Hospital	3,790	1,420	37.5	902	27.9	518	93.2	38	6.8
St. Luke's Hospital	1,605	456	28.5	240	17.4	216	97.7	5	2.3
Sturdy Memorial Hospital	1,076	392	36.4	239	26.1	153	96.2	6	3.8
Tobey Hospital	496	89	18.1	54	12.1	35	79.5	9	20.5
Tufts-New England Medical Center Hospital	1,244	472	37.9	316	29.4	156	91.8	14	8.2
UMASS Memorial Medical Center - West Campus	4,462	1,223	27.4	919	22.3	304	88.9	38	11.1
Winchester Hospital	2,079	674	32.6	367	21.0	307	95.9	13	4.1

NOTES: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. A licensed maternity facility is a medical unit licensed by the Commonwealth for the care of women during pregnancy and childbirth. 2. See Glossary for definitions of occurrence births, primary and repeat Cesarean sections, and VBACs. The percentages provided in this table are based on occurrence births, and may differ from data which are based on resident births, presented elsewhere in this book. 3. The percentage of Cesarean births reported is not adjusted for risk factors such as mother's age, birthweight, or complications of labor and delivery, which would influence the number of procedures in a particular facility. Caution should be used when comparing unadjusted percentages. 4. Percentage of total Cesarean sections= (total Cesarean births/all births) x 100. 5. Percentage primary Cesarean sections= (primary Cesarean sections/all births-repeat Cesarean sections-VBACs) x 100. 6. Percentage repeat Cesarean sections= (repeat Cesarean sections/ (repeat Cesarean sections + VBACs)) x100. 7. Percentage VBACs= (VBAC deliveries/ (repeat Cesarean sections + VBAC)) x 100. 8. Calculations based on fewer than five events are excluded.

Table 32. Cesarean Section Deliveries for Singleton Births by Licensed Maternity Facility and Number of Previous Births, Massachusetts: 2005

Facility ¹	<u>First Birth</u>			<u>Second or Later Birth without prior C-section</u>			<u>Second or Later Birth with prior C-section</u>		
	Births ²	C-section n	% ³	Births ²	C-section n	% ³	Births ²	C-section n	% ³
State Total	33,272	10,494	31.5	30,729	3,126	10.2	9,773	8,815	90.2
Anna Jaques Hospital	313	106	33.9	274	25	9.1	95	80	84.2
Baystate Medical Center	1,542	429	27.8	1,650	160	9.7	518	435	84.0
Berkshire Medical Center	309	115	37.2	350	27	7.7	85	70	82.4
Beth Israel Deaconess Medical Center	2,204	913	41.4	1,596	221	13.8	681	607	89.1
Beverly Hospital	818	289	35.3	856	74	8.6	286	249	87.1
Boston Medical Center	943	255	27.0	1,037	156	15.0	242	231	95.5
Brigham and Women's Hospital	3,537	998	28.2	3,009	291	9.7	980	817	83.4
Brockton Hospital	617	222	36.0	548	67	12.2	175	160	91.4
Cambridge Hospital	663	168	25.3	349	27	7.7	156	128	82.1
Cape Cod Hospital	443	107	24.2	387	18	4.7	148	128	86.5
Caritas Good Samaritan Medical Center	369	145	39.3	409	58	14.2	153	146	95.4
Caritas Holy Family Hospital and Medical Center	589	271	46.0	500	51	10.2	186	185	99.5
Caritas Norwood Hospital	241	94	39.0	225	29	12.9	83	75	90.4
Caritas St. Elizabeth's Medical Center of Boston	611	213	34.9	461	58	12.6	186	176	94.6
Charlton Memorial Hospital	713	229	32.1	692	96	13.9	204	202	99.0
Cooley Dickinson Hospital	375	95	25.3	332	20	6.0	89	72	80.9
Emerson Hospital	507	198	39.1	444	35	7.9	181	164	90.6
Fairview Hospital	75	20	26.7	57	2	-- ⁴	23	23	100.0
Falmouth Hospital	265	78	29.4	261	24	9.2	92	92	100.0
Franklin Medical Center	178	52	29.2	200	15	7.5	59	49	83.1
Harrington Memorial Hospital	159	56	35.2	204	18	8.8	56	53	94.6
Heywood Memorial Hospital	233	46	19.7	248	13	5.2	71	60	84.5
Holyoke Hospital	285	50	17.5	260	14	5.4	67	60	89.6
Jordan Hospital	260	104	40.0	271	31	11.4	78	72	92.3
Lawrence General Hospital	673	165	24.5	759	69	9.1	267	248	92.9
Leominster Hospital	466	90	19.3	523	49	9.4	135	128	94.8
Lowell General Hospital	794	242	30.5	778	83	10.7	228	211	92.5
Martha's Vineyard Hospital	95	20	21.1	43	4	-- ⁴	10	10	100.0
Mary Lane Hospital	74	27	36.5	81	7	8.6	31	31	100.0
Massachusetts General Hospital	1,607	506	31.5	1,295	139	10.7	421	363	86.2
Melrose-Wakefield Hospital	579	229	39.6	454	66	14.5	194	193	99.5
Mercy Medical Center	535	126	23.6	684	34	5.0	161	139	86.3
Metrowest Medical Center- Framingham Union Campus	921	339	36.8	781	105	13.4	254	253	99.6
Milford Regional Medical Center	428	146	34.1	330	33	10.0	131	128	97.7
Morton Hospital	168	56	33.3	200	30	15.0	73	68	93.2
Mount Auburn Hospital	899	235	26.1	680	38	5.6	186	145	78.0
Nantucket Cottage Hospital	51	16	31.4	48	4	-- ⁴	12	11	91.7
Newton Wellesley Hospital	1,367	525	38.4	1,190	105	8.8	447	426	95.3

Table 32 (cont.). Cesarean Section Deliveries for Singleton Births by Licensed Maternity Facility and Number of Previous Births, Massachusetts: 2005

Facility ¹	<u>First Birth</u>			<u>Second or Later Birth without prior C-section</u>			<u>Second or Later Birth with prior C-section</u>		
	Births ²	C-section n	% ³	Births ²	C-section n	% ³	Births ²	C-section n	% ³
North Adams Regional Hospital	116	23	19.8	131	9	6.9	43	42	97.7
North Shore Medical Center - Salem Hospital	821	252	30.7	792	90	11.4	242	226	93.4
Saint Vincent Hospital	752	198	26.3	715	57	8.0	228	178	78.1
Saints Memorial Medical Ctr.-St. John's Campus	264	109	41.3	317	33	10.4	90	87	96.7
South Shore Hospital	1,497	578	38.6	1,512	148	9.8	530	492	92.8
St. Luke's Hospital	622	167	26.8	729	53	7.3	206	201	97.6
Sturdy Memorial Hospital	458	181	39.5	434	42	9.7	151	145	96.0
Tobey Hospital	197	36	18.3	239	14	5.9	42	33	78.6
Tufts-New England Medical Center Hospital	512	171	33.4	445	74	16.6	157	143	91.1
UMASS Memorial Medical Center - West Campus	2,124	546	25.7	1,758	233	13.3	323	285	88.2
Winchester Hospital	851	256	30.1	834	76	9.1	308	295	95.8

NOTES: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. A licensed maternity facility is a medical unit licensed by the Commonwealth for the care of women during pregnancy and childbirth. 2. See Glossary for definitions of occurrence births. 3. The percentage of Cesarean births reported is not adjusted for risk factors such as mother's age, birthweight, or complications of labor and delivery, which would influence the number of procedures in a particular facility. Caution should be used when comparing unadjusted percentages. 4. Calculations based on fewer than five events are excluded.

**Table 33. Birth Characteristics¹: Occurrence and Resident Births and Infant Deaths,
Massachusetts Municipalities: 2005**

Community	Occurrence Births²	Resident Births³	Low Birthweight⁴	Teen Births (15-19 years)	Infant Deaths⁵	Neonatal Deaths⁶	Fetal Deaths⁷
STATE TOTAL	77,841	76,824	6,073	4,539	391	282	422
Abington	0	212	20	5	2	1	0
Acton	1	207	13	-- ⁸	1	1	-- ¹⁰
Acushnet	0	92	5	-- ⁸	1	0	0
Adams	0	89	-- ¹	8	0	0	0
Agawam	0	290	16	9	2	1	-- ¹⁰
Alford	0	4	0	0	0	0	0
Amesbury	0	190	14	12	0	0	-- ¹⁰
Amherst	6	166	10	9	0	0	0
Andover	0	292	13	-- ⁸	0	0	0
Aquinnah (Gay Head)	1	2	0	0	0	0	0
Arlington	4	567	41	5	2	1	5
Ashburnham	0	65	7	-- ⁸	0	0	-- ¹⁰
Ashby	0	33	-- ¹	5	0	0	0
Ashfield	0	10	0	-- ⁸	0	0	0
Ashland	1	263	11	-- ⁸	0	0	0
Athol	1	138	11	13	0	0	-- ¹⁰
Attleboro	1,076	622	53	29	2	1	-- ¹⁰
Auburn	1	161	8	6	1	1	-- ¹⁰
Avon	0	45	7	0	0	0	0
Ayer	1	110	10	5	0	0	-- ¹⁰
Barnstable	1,010	454	28	29	3	1	-- ¹⁰
Barre	0	54	7	-- ⁸	0	0	0
Becket	0	22	-- ¹	-- ⁸	0	0	0
Bedford	0	105	5	-- ⁸	2	1	-- ¹⁰
Belchertown	1	164	15	-- ⁸	0	0	0
Bellingham	1	204	13	11	2	2	0
Belmont	0	249	18	-- ⁸	0	0	-- ¹⁰
Berkley	1	78	-- ¹	-- ⁸	0	0	-- ¹⁰
Berlin	0	30	6	0	0	0	0
Bernardston	0	17	0	0	0	0	0
Beverly	2,152	441	27	11	0	0	-- ¹⁰
Billerica	2	477	45	8	2	0	0
Blackstone	1	94	7	8	1	1	0
Blandford	0	9	0	0	0	0	0
Bolton	0	61	-- ¹	0	0	0	0
Boston	21,672	7,554	726	566	39	32	56
Bourne	1	224	18	16	1	0	0
Boxborough	0	48	-- ¹	0	0	0	0
Boxford	0	78	5	-- ⁸	0	0	0
Boylston	0	51	7	-- ⁸	0	0	0
Braintree	0	374	19	5	1	0	-- ¹⁰
Brewster	0	80	7	-- ⁸	1	0	0
Bridgewater	0	252	24	6	0	0	-- ¹⁰
Brimfield	0	27	-- ¹	-- ⁸	0	0	-- ¹⁰

Table 33 (cont.). Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2005

Community	Occurrence Births²	Resident Births³	Low Birthweight⁴	Teen Births (15-19 years)	Infant Deaths⁵	Neonatal Deaths⁶	Fetal Deaths⁷
Brockton	2,342	1,541	177	148	10	9	18
Brookfield	0	31	-- ¹	-- ⁸	0	0	0
Brookline	3	613	37	-- ⁸	4	3	
Buckland	0	8	0	0	0	0	0
Burlington	0	257	12	-- ⁸	2	2	0
Cambridge	3,105	1,027	74	20	2	1	
Canton	1	237	17	-- ⁸	1	1	
Carlisle	1	23	-- ¹	0	0	0	0
Carver	0	120	9	7	0	0	0
Charlemont	0	6	-- ¹	0	0	0	0
Charlton	1	164	10	-- ⁸	0	0	
Chatham	0	28	-- ¹	0	0	0	0
Chelmsford	1	363	27	9	1	1	
Chelsea	1	649	49	75	5	2	6
Cheshire	0	26	-- ¹	-- ⁸	0	0	
Chester	0	7	0	0	0	0	0
Chesterfield	0	7	0	0	0	0	0
Chicopee	0	608	42	72	0	0	7
Chilmark	0	6	0	0	0	0	0
Clarksburg	0	12	0	-- ⁸	0	0	0
Clinton	1	216	15	16	1	1	0
Cohasset	0	80	5	0	0	0	0
Colrain	0	15	0	-- ⁸	0	0	0
Concord	1,170	108	11	-- ⁸	0	0	0
Conway	0	18	-- ¹	0	0	0	0
Cummington	1	4	0	0	0	0	0
Dalton	0	54	6	-- ⁸	0	0	0
Danvers	1	229	17	-- ⁸	0	0	
Dartmouth	2	245	25	15	2	1	
Dedham	0	246	14	6	1	0	
Deerfield	0	42	-- ¹	0	0	0	0
Dennis	1	123	8	14	0	0	0
Dighton	0	82	5	-- ⁸	0	0	0
Douglas	0	119	6	-- ⁸	0	0	
Dover	1	46	5	0	0	0	0
Dracut	2	373	25	15	2	2	
Dudley	0	121	5	6	0	0	
Dunstable	0	34	-- ¹	-- ⁸	0	0	0
Duxbury	1	127	6	0	0	0	0
East Bridgewater	1	160	18	-- ⁸	0	0	0
East Brookfield	0	24	5	-- ⁸	0	0	0
East Longmeadow	0	151	10	-- ⁸	0	0	0
Eastham	0	35	-- ¹	5	0	0	
Easthampton	3	157	15	13	1	1	0
Easton	0	205	14	-- ⁸	0	0	0
Edgartown	0	44	-- ¹	-- ⁸	1	0	0
Egremont	0	9	-- ¹	-- ⁸	0	0	0

Table 33 (cont.). Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2005

Community	Occurrence Births²	Resident Births³	Low Birthweight⁴	Teen Births (15-19 years)	Infant Deaths⁵	Neonatal Deaths⁶	Fetal Deaths⁷
Erving	1	13	0	-- ⁸	0	0	0
Essex	1	46	8	0	0	0	0
Everett	1	587	34	35	3	2	-- ¹⁰
Fairhaven	0	167	9	12	0	0	-- ¹⁰
Fall River	1,648	1,196	94	140	9	3	-- ¹⁰
Falmouth	638	291	26	14	0	0	0
Fitchburg	0	572	50	62	4	3	6
Florida	0	4	0	-- ⁸	0	0	0
Foxborough	0	163	10	-- ⁸	0	0	-- ¹⁰
Framingham	2,019	1,005	80	45	6	5	5
Franklin	1	427	31	-- ⁸	4	3	-- ¹⁰
Freetown	0	82	9	-- ⁸	1	1	-- ¹⁰
Gardner	565	236	21	25	5	3	-- ¹⁰
Georgetown	0	88	8	0	0	0	0
Gill	0	17	-- ¹	0	0	0	0
Gloucester	0	272	15	10	0	0	-- ¹⁰
Goshen	0	7	0	0	0	0	0
Gosnold	0	2	0	0	0	0	0
Grafton	3	261	23	-- ⁸	1	1	-- ¹⁰
Granby	0	55	5	-- ⁸	0	0	0
Granville	0	16	-- ¹	-- ⁸	0	0	0
Great Barrington	165	59	-- ¹	-- ⁸	0	0	-- ¹⁰
Greenfield	462	194	16	14	4	3	0
Groton	1	88	11	-- ⁸	1	1	0
Groveland	0	63	-- ¹	-- ⁸	0	0	0
Hadley	0	42	8	-- ⁸	1	1	0
Halifax	0	80	-- ¹	9	0	0	0
Hamilton	2	110	-- ¹	0	0	0	0
Hampden	0	31	-- ¹	0	0	0	0
Hancock	0	3	0	0	0	0	0
Hanover	1	136	7	-- ⁸	0	0	0
Hanson	0	117	9	-- ⁸	0	0	0
Hardwick	0	15	-- ¹	-- ⁸	1	0	0
Harvard	0	34	-- ¹	0	0	0	0
Harwich	1	102	-- ¹	6	2	1	0
Hatfield	0	25	0	0	0	0	0
Haverhill	2	824	65	59	3	2	-- ¹⁰
Hawley	0	2	0	-- ⁸	0	0	0
Heath	0	3	-- ¹	0	0	0	0
Hingham	0	258	18	-- ⁸	1	0	-- ¹⁰
Hinsdale	0	16	-- ¹	0	0	0	0
Holbrook	0	140	8	6	0	0	-- ¹⁰
Holden	1	171	8	-- ⁸	0	0	-- ¹⁰
Holland	0	27	-- ¹	-- ⁸	0	0	0
Holliston	0	154	11	-- ⁸	2	1	-- ¹⁰
Holyoke	622	642	56	146	6	3	-- ¹⁰
Hopedale	0	75	7	-- ⁸	0	0	0

Table 33 (cont.). Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2005

Community	Occurrence Births ²	Resident Births ³	Low Birthweight ⁴	Teen Births (15-19 years)	Infant Deaths ⁵	Neonatal Deaths ⁶	Fetal Deaths ⁷
Hopkinton	2	182	12	5	0	0	-- ¹⁰
Hubbardston	1	55	8	-- ⁸	0	0	0
Hudson	0	256	24	-- ⁸	2	2	0
Hull	1	89	-- ¹	5	0	0	0
Huntington	0	18	-- ¹	0	0	0	-- ¹⁰
Ipswich	0	136	11	-- ⁸	0	0	0
Kingston	0	150	15	-- ⁸	1	1	-- ¹⁰
Lakeville	0	120	12	6	0	0	0
Lancaster	0	79	5	-- ⁸	1	0	0
Lanesborough	0	23	-- ¹	-- ⁸	0	0	0
Lawrence	1,742	1,460	131	217	11	9	7
Lee	1	57	7	-- ⁸	0	0	0
Leicester	1	109	-- ¹	7	0	0	0
Lenox	1	42	-- ¹	-- ⁸	0	0	-- ¹⁰
Leominster	1,155	514	28	22	2	2	-- ¹⁰
Leverett	1	11	0	0	0	0	0
Lexington	4	209	19	-- ⁸	2	2	0
Leyden	0	2	0	0	0	0	0
Lincoln	1	74	-- ¹	-- ⁸	0	0	0
Littleton	0	118	8	-- ⁸	0	0	-- ¹⁰
Longmeadow	0	128	12	-- ⁸	0	0	0
Lowell	2,540	1,667	153	204	11	5	8
Ludlow	0	180	14	8	0	0	-- ¹⁰
Lunenburg	1	101	-- ¹	-- ⁸	0	0	0
Lynn	4	1,480	123	146	4	4	15
Lynnfield	0	89	5	-- ⁸	1	1	0
Malden	2	792	76	23	9	9	7
Manchester-by-the-Sea	0	53	7	0	0	0	0
Mansfield	0	279	14	-- ⁸	0	0	-- ¹⁰
Marblehead	0	183	12	0	0	0	-- ¹⁰
Marion	0	39	-- ¹	-- ⁸	0	0	-- ¹⁰
Marlborough	2	599	45	24	7	6	-- ¹⁰
Marshfield	0	290	15	6	2	2	-- ¹⁰
Mashpee	1	150	9	7	1	0	-- ¹⁰
Mattapoisett	0	56	5	-- ⁸	0	0	-- ¹⁰
Maynard	1	140	9	-- ⁸	0	0	0
Medfield	0	120	10	-- ⁸	0	0	0
Medford	2	606	47	13	2	2	-- ¹⁰
Medway	0	143	12	-- ⁸	0	0	0
Melrose	1,268	285	11	-- ⁸	2	1	0
Mendon	1	47	-- ¹	0	0	0	0
Merrimac	0	60	6	-- ⁸	1	1	0
Methuen	1,323	582	38	36	2	0	0
Middleborough	1	292	23	21	1	1	-- ¹⁰
Middlefield	0	4	0	0	0	0	0
Middleton	1	65	10	-- ⁸	0	0	0
Milford	917	415	26	15	0	0	-- ¹⁰

Table 33 (cont.). Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2005

Community	Occurrence Births²	Resident Births³	Low Birthweight⁴	Teen Births (15-19 years)	Infant Deaths⁵	Neonatal Deaths⁶	Fetal Deaths⁷
Millbury	1	150	5	6	0	0	-- ¹⁰
Millis	1	108	6	0	0	0	0
Millville	0	43	-- ¹	-- ⁸	1	1	0
Milton	0	314	26	5	1	1	0
Monroe	0	0	0	0	0	0	0
Monson	0	75	-- ¹	5	0	0	-- ¹⁰
Montague	2	105	5	13	0	0	-- ¹⁰
Monterey	0	6	0	0	0	0	0
Montgomery	0	4	0	0	0	0	0
Mount Washington	0	0	0	0	0	0	0
Nahant	0	18	0	0	0	0	0
Nantucket	117	155	10	5	0	0	-- ¹⁰
Natick	3	418	30	-- ⁸	0	0	-- ¹⁰
Needham	0	298	11	-- ⁸	0	0	-- ¹⁰
New Ashford	0	3	-- ¹	0	1	1	0
New Bedford	1,610	1,391	148	174	12	7	8
New Braintree	2	11	-- ¹	0	0	0	0
New Marlborough	1	11	-- ¹	0	0	0	0
New Salem	0	6	0	0	0	0	0
Newbury	0	69	5	-- ⁸	0	0	0
Newburyport	710	210	15	12	1	1	0
Newton	3,188	788	51	-- ⁸	3	3	-- ¹⁰
Norfolk	2	116	9	-- ⁸	0	0	-- ¹⁰
North Adams	295	155	14	28	0	0	-- ¹⁰
North Andover	0	325	22	5	4	4	0
North Attleboro	3	363	18	9	0	0	-- ¹⁰
North Brookfield	0	45	-- ¹	-- ⁸	0	0	-- ¹⁰
North Reading	0	149	11	-- ⁸	0	0	0
Northampton	835	191	17	9	2	1	-- ¹⁰
Northborough	2	155	11	-- ⁸	2	0	-- ¹⁰
Northbridge	0	198	13	6	0	0	-- ¹⁰
Northfield	0	27	-- ¹	-- ⁸	0	0	-- ¹⁰
Norton	0	232	20	6	0	0	-- ¹⁰
Norwell	0	109	6	0	0	0	0
Norwood	559	364	36	14	3	3	-- ¹⁰
Oak Bluffs	152	54	-- ¹	-- ⁸	0	0	0
Oakham	0	18	-- ¹	0	0	0	0
Orange	1	78	5	8	0	0	-- ¹⁰
Orleans	1	37	-- ¹	-- ⁸	0	0	0
Otis	0	11	-- ¹	-- ⁸	0	0	0
Oxford	0	161	14	9	1	1	-- ¹⁰
Palmer	1	138	10	11	0	0	0
Paxton	0	32	-- ¹	0	0	0	0
Peabody	0	486	47	15	2	2	-- ¹⁰
Pelham	1	6	-- ¹	-- ⁸	0	0	0
Pembroke	1	202	20	7	3	1	0

Table 33 (cont.). Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2005

Community	Occurrence Births ²	Resident Births ³	Low Birthweight ⁴	Teen Births (15-19 years)	Infant Deaths ⁵	Neonatal Deaths ⁶	Fetal Deaths ⁷
Pepperell	2	124	5	5	0	0	-- ¹⁰
Peru	0	5	0	-- ⁸	0	0	0
Petersham	1	14	-- ¹	-- ⁸	0	0	-- ¹⁰
Phillipston	0	15	-- ¹	-- ⁸	0	0	0
Pittsfield	773	526	44	67	2	2	-- ¹⁰
Plainfield	0	3	0	0	0	0	0
Plainville	0	103	10	-- ⁸	0	0	0
Plymouth	624	658	56	26	3	1	8
Plympton	0	27	7	-- ⁸	1	1	0
Princeton	0	19	-- ¹	-- ⁸	0	0	-- ¹⁰
Provincetown	0	10	0	0	0	0	0
Quincy	7	1,140	83	48	5	3	-- ¹⁰
Randolph	0	356	30	14	5	2	-- ¹⁰
Raynham	0	160	13	8	2	2	0
Reading	2	301	25	-- ⁸	0	0	-- ¹⁰
Rehoboth	0	112	7	5	1	1	0
Revere	1	642	70	48	7	7	-- ¹⁰
Richmond	0	9	-- ¹	0	0	0	0
Rochester	0	41	-- ¹	0	0	0	0
Rockland	0	219	17	12	2	2	-- ¹⁰
Rockport	1	47	-- ¹	-- ⁸	0	0	0
Rowe	0	1	NA ⁹	NA ⁹	0	0	0
Rowley	0	74	5	-- ⁸	0	0	0
Royalston	0	11	0	0	0	0	0
Russell	2	18	0	-- ⁸	0	0	0
Rutland	0	98	7	-- ⁸	0	0	-- ¹⁰
Salem	1,915	542	35	25	1	1	-- ¹⁰
Salisbury	1	75	7	5	2	1	-- ¹⁰
Sandisfield	0	7	0	0	0	0	0
Sandwich	1	208	12	8	0	0	0
Saugus	0	256	17	6	2	1	0
Savoy	0	8	0	0	0	0	0
Scituate	1	175	15	-- ⁸	1	1	-- ¹⁰
Seekonk	0	101	10	-- ⁸	0	0	0
Sharon	0	144	20	-- ⁸	0	0	-- ¹⁰
Sheffield	0	35	-- ¹	0	0	0	0
Shelburne	1	15	-- ¹	0	0	0	0
Sherborn	0	33	-- ¹	0	0	0	0
Shirley	0	65	-- ¹	-- ⁸	0	0	0
Shrewsbury	1	429	34	7	0	0	-- ¹⁰
Shutesbury	8	22	-- ¹	-- ⁸	0	0	0
Somerset	0	130	5	6	0	0	0
Somerville	3	902	59	37	3	3	-- ¹⁰
South Hadley	2	133	12	5	0	0	0
Southampton	0	38	-- ¹	0	1	0	-- ¹⁰

Table 33 (cont.). Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2005

Community	Occurrence Births²	Resident Births³	Low Birthweight⁴	Teen Births (15-19 years)	Infant Deaths⁵	Neonatal Deaths⁶	Fetal Deaths⁷
Southborough	0	92	9	-- ⁸	0	0	0
Southbridge	425	241	23	36	4	3	-- ¹⁰
Southwick	0	94	10	-- ⁸	1	1	0
Spencer	0	163	12	11	0	0	-- ¹⁰
Springfield	5,537	2,369	231	435	25	19	22
Sterling	0	76	8	-- ⁸	0	0	0
Stockbridge	0	11	-- ¹	0	0	0	0
Stoneham	1	216	12	5	1	1	5
Stoughton	0	283	30	10	1	0	-- ¹⁰
Stow	1	77	-- ¹	0	0	0	-- ¹⁰
Sturbridge	1	82	-- ¹	-- ⁸	0	0	-- ¹⁰
Sudbury	0	201	15	-- ⁸	0	0	0
Sunderland	2	26	-- ¹	0	0	0	0
Sutton	0	89	5	-- ⁸	0	0	-- ¹⁰
Swampscott	1	145	-- ¹	-- ⁸	1	0	0
Swansea	0	129	-- ¹	6	1	1	0
Taunton	471	737	70	53	6	3	6
Templeton	1	63	-- ¹	-- ⁸	0	0	0
Tewksbury	0	310	19	12	1	1	-- ¹⁰
Tisbury	0	36	-- ¹	-- ⁸	0	0	0
Tolland	0	3	0	0	0	0	0
Topsfield	0	52	-- ¹	0	0	0	0
Townsend	0	73	6	-- ⁸	2	1	-- ¹⁰
Truro	0	10	0	-- ⁸	0	0	0
Tyngsborough	1	122	7	-- ⁸	2	1	0
Tyringham	0	1	NA ⁹	NA ⁹	0	0	0
Upton	0	93	10	0	0	0	-- ¹⁰
Uxbridge	0	162	15	-- ⁸	1	1	-- ¹⁰
Wakefield	1	297	10	0	0	0	-- ¹⁰
Wales	0	18	-- ¹	-- ⁸	0	0	0
Walpole	0	310	10	5	0	0	0
Waltham	2	733	58	22	0	0	5
Ware	188	120	7	13	0	0	0
Wareham	497	254	18	18	0	0	-- ¹⁰
Warren	0	69	7	8	2	2	0
Warwick	0	5	0	0	0	0	0
Washington	0	5	0	0	0	0	0
Watertown	0	392	33	-- ⁸	2	2	0
Wayland	0	105	-- ¹	-- ⁸	0	0	0
Webster	2	207	18	16	1	1	-- ¹⁰
Wellesley	74	260	12	0	0	0	0
Wellfleet	0	14	-- ¹	0	0	0	0
Wendell	0	9	-- ¹	0	0	0	0
Wenham	0	32	-- ¹	0	0	0	0
West Boylston	0	52	-- ¹	-- ⁸	0	0	0
West Bridgewater	0	73	-- ¹	-- ⁸	0	0	0

Table 33 (cont.). Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2005

Community	Occurrence Births ²	Resident Births ³	Low Birthweight ⁴	Teen Births (15-19 years)	Infant Deaths ⁵	Neonatal Deaths ⁶	Fetal Deaths ⁷
West Brookfield	0	35	0	-- ⁸	0	0	0
West Newbury	0	42	-- ¹	0	1	1	0
West Springfield	0	336	33	20	4	4	0
West Stockbridge	0	8	0	0	0	0	0
West Tisbury	0	30	-- ¹	0	0	0	0
Westborough	0	210	13	-- ⁸	1	1	-- ¹⁰
Westfield	2	433	27	24	1	1	-- ¹⁰
Westford	2	246	20	0	0	0	-- ¹⁰
Westhampton	0	13	0	0	0	0	0
Westminster	0	72	-- ¹	5	0	0	0
Weston	0	75	5	0	0	0	-- ¹⁰
Westport	1	137	7	8	1	1	0
Westwood	0	136	9	-- ⁸	0	0	0
Weymouth	3,793	701	54	22	6	5	0
Whately	0	14	0	0	0	0	0
Whitman	0	196	19	6	1	0	0
Wilbraham	0	92	-- ¹	-- ⁸	0	0	0
Williamsburg	1	27	-- ¹	-- ⁸	0	0	-- ¹⁰
Williamstown	1	49	-- ¹	-- ⁸	0	0	0
Wilmington	0	252	16	-- ⁸	0	0	-- ¹⁰
Winchendon	0	121	8	12	0	0	-- ¹⁰
Winchester	2,081	236	15	-- ⁸	0	0	0
Windsor	0	7	-- ¹	0	0	0	0
Winthrop	0	186	23	-- ⁸	1	0	-- ¹⁰
Woburn	0	457	38	18	1	0	-- ¹⁰
Worcester	6,239	2,589	215	262	36	30	20
Worthington	0	10	0	0	0	0	0
Wrentham	2	129	14	-- ⁸	1	0	-- ¹⁰
Yarmouth	0	216	12	7	0	0	0
Unknown	0	0	0	0	0	0	-- ¹⁰

-- Due to small numbers for births (n=1-4), exact count not provided.

1. Values of 1-4 for medical characteristics of communities with less than 200 births are suppressed based on Guidelines for Release of Birth Data, Ctr. for Health Information, Statistics, Research and Evaluation, Massachusetts Department of Public Health. 2. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details. 3. Births to mothers who report their usual place of residence as a particular geographical place (state, or city/town). See Glossary for more details. 4. Less than 2,500 grams (5.5 lbs.). 5. Death of a child whose age is less than one year. 6. Death of a child whose age is less than 28 days. 7. A stillbirth delivered, extracted or expelled at 20 weeks gestation or more or weighs 350 grams or more. 8. Births between 1 and 4 are suppressed. 9. Birth characteristics for towns with 1 birth not published. 10. When the number of fetal deaths is between 1 and 4, it is suppressed.

**Table 34. Birth Characteristics: Occurrence and Resident Births and Infant Deaths by County
Massachusetts: 2005**

County	Occurrence Births ¹	Resident Births ²			Deaths		
		Number	Low Birthweight ³	Teen Births (15-19 years)	Infant Deaths ⁴	Neonatal Deaths ⁵	Fetal Deaths ⁶
STATE TOTAL	77,841	76,824	6,073	4,539	391	282	422
Barnstable	1,654	1,982	132	113	8	2	7
Berkshire	1,237	1,277	109	130	3	3	8
Bristol	4,812	6,540	534	489	38	21	28
Dukes	153	174	6	-- ⁷	1	0	0
Essex	7,856	9,114	692	584	36	28	37
Franklin	478	666	41	42	4	3	-- ⁸
Hampden	6,164	5,696	478	748	39	29	37
Hampshire	1,038	1,190	95	59	5	3	5
Middlesex	15,418	17,578	1,283	574	76	57	82
Nantucket	117	155	10	5	0	0	-- ⁸
Norfolk	4,445	7,600	548	172	35	23	32
Plymouth	3,470	5,993	531	302	28	20	40
Suffolk	21,674	9,031	868	693	52	41	68
Worcester	9,325	9,828	746	624	66	52	70

1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details. 2. Births to mothers who report their usual place of residence as a particular geographical place (state, or city/town). See Glossary for more details. 3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days. 6. A stillbirth delivered, extracted or expelled at 20 weeks gestation or more or weighs 350 grams or more. 7. Births between 1 and 4 are suppressed. 8. When the number of fetal deaths is between 1 and 4, it is suppressed.

Table 35. Birth Characteristics, Occurrence and Resident Births and Infant Deaths, Massachusetts Community Health Network Areas (CHNAs), Massachusetts: 2005

Community Health Network Area	Occurrence Births ¹	Resident Births ²			Deaths		
		Number	LBW ³	Teen Births (15-19 years)	Infant ⁴	Neonatal ⁵	Fetal ⁶
STATE TOTAL	77,841	76,824	6,073	4,539	391	282	422
Community Health Network of Berkshire County	1,237	1,277	109	130	3	3	8
Upper Valley Health Web (Franklin County)	480	844	56	58	4	3	5
Partnership for Health in Hampshire County (Northampton)	1,038	1,172	94	59	5	3	-- ⁷
The Community Health Connection (Springfield)	5,540	3,754	335	493	32	25	25
Community Health Network of Southern Worcester County	429	1,415	109	109	8	7	12
Community Partners for Health (Milford)	921	2,109	151	57	9	8	17
Community Health Network of Greater Metro West (Framingham)	2,036	4,939	345	113	21	15	17
Community Wellness Coalition (Worcester)	6,247	4,005	307	294	38	32	26
Fitchburg/Gardner Community Health Network	1,730	3,003	225	184	17	11	19
Greater Lowell Community Health Network	2,548	3,592	297	252	19	10	16
Greater Lawrence Community Health Network	3,066	2,724	214	260	17	13	7
Greater Haverhill Community Health Network	713	1,773	137	97	8	6	6
Community Health Network North (Beverly/Gloucester)	2,156	1,189	81	26	0	0	-- ⁷
North Shore Community Health Network	1,921	3,428	260	201	11	9	22
Greater Woburn/Concord/Littleton Community Health Network	3,258	2,094	144	39	8	6	11
North Suburban Health Alliance (Medford/Malden/Melrose)	1,277	3,233	226	81	17	15	19
Greater Cambridge/Somerville Community Health Network	3,112	3,137	225	64	9	7	13
West Suburban Health Network (Newton/Waltham)	3,265	2,582	165	35	4	3	11
Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	21,677	9,644	905	695	56	44	71
Blue Hills Community Health Alliance (Greater Quincy)	4,362	4,341	331	122	24	16	18
Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	624	1,888	140	250	7	4	12
Greater Brockton Community Health Network	2,343	3,107	319	187	14	10	22
South Shore Community Partners in Prevention (Plymouth)	627	2,126	165	76	12	8	15
Greater Attleboro-Taunton Health & Education Response	1,552	3,178	249	149	12	8	14
Partners for a Healthier Community (Fall River)	1,649	1,592	110	160	11	5	-- ⁷
Greater New Bedford Health & Human Services Coalition	2,109	2,367	226	226	16	9	14
Cape and Islands Community Health Network	1,924	2,311	148	122	9	2	8

1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details. 2. Births to mothers who report their usual place of residence as a particular geographical place (state, city/town). See Glossary for more details. 3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days. 6. A stillbirth delivered, extracted or expelled at 20 weeks gestation or more or weighs 350 grams or more. 7. When the number of fetal deaths is between 1 and 4, it is suppressed.

TECHNICAL NOTES

1. DATA AVAILABILITY

This publication and other Department of Public Health publications and materials can be accessed on the Internet at:

<http://www.state.ma.us/dph/pubstats.htm>

Detailed information on 2005 births in Massachusetts, as well as access to other Department of Public Health data, is available on the Department's free, Internet-accessible data warehouse, **MassCHIP**. To register as a user, visit the MassCHIP website at <http://masschip.state.ma.us>, or call 1-888-MASCHIP (within MA only) or 617-624-5629.

2. DATA CAUTIONS

Limitations of small numbers:

Cells in some tables in this publication, and particularly those tables specific to the individual cities and towns, contain small numbers. Rates and proportions based on less than five observations are suppressed, and trends based upon small numbers should be interpreted cautiously.

Differences with previously published data

Numbers and rates in this publication may differ from those contained in previous reports because of updates of birth and death certificate files, or release of the most up-to-date population estimates for a given year (see Technical Note #4 for details on population files).

Self-reported data

Many items used in this publication, such as maternal smoking, education, and race/ethnicity are self-reported, and are subject to the usual limitations of this type of information.

3. CHANGES IN THE COLLECTION OF RACE AND ETHNICITY INFORMATION

Assignment of an Infant's Race/Ethnicity

Prior to 1989, the race/ethnicity of an infant was assigned by combining information on the race/ethnicity of the mother and the race/ethnicity of the father. Since 1989, Massachusetts has followed the recommendation of the National Center for Health Statistics of classifying births according to the self-reported race/ethnicity of the mother. Therefore, beginning in 1989, the race/ethnicity of an infant is identical to the self-reported race/ethnicity of the infant's mother.

Addition of Information on Hispanic Ethnicity

Beginning in 1986, an identifier for Hispanic ethnicity was added to the birth certificate; in 1989, an identifier for Hispanic ethnicity was added to the death certificate. Prior to these changes, most infants and mothers of Hispanic ethnicity were included with whites and it was not possible to accurately calculate Hispanic-specific rates of natality and mortality.

The ethnicity categories available on the Parent Worksheet for birth certificate are:

- Puerto Rican
- Dominican
- Mexican
- Cuban
- Colombian
- Salvadoran
- Other Central American
- Other South American
- Other Hispanic
- Chinese
- Vietnamese
- Cambodian
- Asian Indian
- Korean
- Filipino
- Japanese
- Laotian
- Pakistani
- Thai
- Hawaiian
- Other Asian/Pacific Islander
- Cape Verdean
- Brazilian
- Other Portuguese
- Haitian
- Jamaican
- Barbadian
- Other West Indian/Caribbean Islander
- African American
- Nigerian
- Other African
- Lebanese
- Iranian
- Israeli
- Other Middle Eastern
- Native American
- European
- American
- Other

4. POPULATION ESTIMATES

We calculated the proportion of the county total that each Massachusetts city/town contributed by age, sex, five-race group from the MRACE file and applied those proportions to the 2005 MARS files to create the Massachusetts Modified Age Race Sex 2005 estimates (MMARS05) file.

The MRACE file was derived from the Census 2000 file by allocating persons who indicated “some other race” or multiple races to the conventional DPH race categories: “White”, “Black or African American”, “Asian,” “Native American,” and “Hispanic.” In Census 2000, unlike previous censuses, respondents were able to classify themselves by Hispanic ethnicity and by single or multi-race categories, including “some other race.” In order to make the DPH population 2000 file consistent with previous years’ population files, the MRACE file maintains the prior mutually exclusive race and Hispanic categories.

In this year’s report, we are using the most up-to-date population estimates for the calculation of population-based rates such as the teen birth rate. In the next paragraphs, the methods used in calculating these estimate are explained.

Note: Population-based statistics presented in this report for the years 2000-2005 will differ from previous publications due to the use of new population estimates for these years.

MDPH Census Year 2000 Estimates

MDPH estimated the population for the years since the 2000 Census using the MDPH 2000 population estimates file, the Massachusetts Race Age Census Estimates (MRACE) file. The MRACE file is a modification of the Census 2000 population counts for Massachusetts. In Census 2000, respondents could select one or more races for the race question. The Census Bureau reported the results by single race and two or more races, for example, in Massachusetts, the race population counts were:

Race	Population
Total:	6,349,097
Population of one race:	6,203,092
White alone	5,367,286
Black or African American alone	343,454
American Indian and Alaska Native alone	15,015
Asian alone	238,124
Native Hawaiian and Other Pacific Islander alone	2,489
Some other race alone	236,724
Population of two or more races:	146,005
Specific combinations...	

Source: Table P3. Census 2000 Summary File 1 (SF1).

Hispanic was considered an ethnicity, and not a race. Therefore, persons of any race could be Hispanic. This new Census reporting system made it difficult in Massachusetts to compare 2000 rates with previous years' rates in which there were five race categories: white non-Hispanic, black non-Hispanic, Asian non-Hispanic, American Indian non-Hispanic, and Hispanic. The MRACE file reallocated (also known as, "bridging") the "Some other race alone" and "Two or more race" persons to the traditional five race categories used at the Department. This was done using an algorithm developed by the Massachusetts Institute of Social and Economic Research (MISER), in which those populations were redistributed at the city/town level according to the proportion of single race populations.

Postcensal Years

The MRACE file was used to calculate the population-based rates in the births reports from 2000 through 2004.

Every year the Population Estimates Program of the U.S. Census Bureau in collaboration with the National Center for Health Statistics (NCHS) produces bridged race files for the states and counties. These estimates are known as the Modified Age Race Sex (MARS) estimates. In

previous years, we have not used these estimates since they are not available at the city/town level.

Methodology for New MDPH 2000 - 2005 Population Estimates

In the years since Census 2000, the distribution of Massachusetts residents has changed by age, race/ethnicity, and race. In 2006, because these changes were significant, MDPH decided to produce new population estimates by age, race/ethnicity, and sex at the city/town level.

These estimates were created using the city/town age, race/ethnicity, and sex proportions of their counties in the MRACE estimates and applying these to the MARS county estimates. The resulting estimates were called the Massachusetts Department of Public Health Modified Age, Race, & Sex 200x Estimates (MMARS0x), where x = year. Estimates were produced for 2000, 2001, 2002, 2003, 2004, and 2005.

The MMARS05 estimates were used to calculate the population-based rates in this year's report.

The MMARS00, MMARS01, MMARS02, MMARS03, and MMARS04 estimates were used to recalculate the population-based rates for births. **This means that trends from 2000-2005 presented in this report will differ from the previous years' reports.**

Population-based rates between 1991 and 1999 in this publication were calculated as follows:

- 1991-1998: Massachusetts Institute for Social and Economic Research (MISER) Population Estimates;
- 1999: Massachusetts Dept. of Public Health 1999 Population Estimate, which is a linear interpolation between the preliminary DPH Population 2000 file and the MISER 1998 Population Estimate.

5. DEFINITION AND IDENTIFICATION OF PREGNANCY-ASSOCIATED AND MATERNAL DEATHS

There are various ways to categorize a woman who dies during pregnancy, childbirth, or in the postpartum period. Two components are included in every definition of maternal death: (1) the timing of death in relation to the pregnancy and birth; and (2) the causes of death. Two definitions are used in this report: maternal death and pregnancy-associated death.

The traditional definition of maternal death can be found in the World Health Organization's *International Classification of Diseases* (ICD). WHO defines maternal deaths as women who died during pregnancy or within 42 days of delivery from causes related to pregnancy, childbirth or its management. Deaths from accidental or incidental causes are excluded. The National Center for Health Statistics uses the WHO definition to conduct surveillance on maternal death in the US. Maternal deaths are deaths of women whose underlying causes of death were coded with ICD-9 codes 630-676 (from 1990-1998), or with ICD-10 codes O00-O99 (1999 forward).

The definition of a pregnancy-associated death was developed in 1986 by the Maternal Mortality Study Group, which is jointly chaired by American College of Obstetrics and Gynecology (ACOG) and the Center for Disease Control and Prevention (CDC). Pregnancy-associated

deaths differ from maternal deaths in two fundamental ways: all deaths are included irrespective of cause, and deaths that occurred between 42 and 364 days after delivery also are included. Thus, maternal deaths are a subset of pregnancy-associated deaths.

6. CHANGE IN MEASUREMENT OF ADEQUACY OF PRENATAL CARE

Change in Adequacy of Prenatal Care Indicator since *Massachusetts Births 2001*:
(This discussion is based on excerpts from “An Overview of the APNCU Index” by Milton Kotelchuck, Sept. 1994, available online at:
http://www.mchlibrary.info/databases/HSNRCPDFs/Overview_APCUIndex.pdf. Accessed December 2003).

Beginning with *Massachusetts Births 2001*, adequacy of prenatal care is being measured using a new method. The Adequacy of Prenatal Care Utilization (APNCU) Index, developed by Dr. Milton Kotelchuck, has replaced the Kessner Index, which had been used in the *Advanced Data Births* and *Massachusetts Births* series. The APNCU Index is the standard used in Healthy People 2010 and by the majority of states. It improves upon the Kessner Index in various ways, the most important being the ability to distinguish between inadequate prenatal care due to the timing of initiation and inadequate care due to insufficient prenatal care visits. The APNCU Index also improves upon the Kessner Index by correcting some of its principal faults. First, the APNCU Index more accurately assesses adequacy of visits for term pregnancies; the Kessner Index characterizes 9 or more visits as adequate, due to an early computer database limitation, which only allowed for a single-digit number to record prenatal care visits. Other faults of the Kessner Index include its bias towards measurement of adequacy of initiation of care, and its various computational algorithms due to inadequate initial documentation.

Table 1 of this report provides a comparison of data on adequacy of prenatal care from 1996-2004 as measured by these two separate indices. Below are the definitions for the APNCU Index categories and its two component indices (initiation and received services), and the definition of the Kessner Index categories. Also below is a short summary of the major differences in classification of adequacy of prenatal care using the Kessner Index and the APNCU Index.

The APNCU Index characterizes prenatal care (PNC) utilization by measuring two distinct components of prenatal care -- adequacy of initiation and adequacy of received services (visits). Each of these components is measured as an independent index, and the APNCU Index is a summary of these 2 component indices. As with the Kessner Index, the APNCU Index does not assess quality of the prenatal care that is delivered, only its utilization.

Adequacy of Prenatal Care Utilization (APNCU) Index: Definition of Categories

Category	Month Prenatal Care Began	% of Expected ¹ Prenatal Care Visits
Adequate Intensive	1, 2, 3, or 4	110% or more
Adequate Basic	1, 2, 3, or 4	80 – 109%
Intermediate	1, 2, 3, or 4	50 – 79%
Inadequate	Month 5 or later	Less than 50%
Unknown	Prenatal care information not recorded	

Component Indices of the APNCU Index: Definitions of Categories

Component Indices and Summary Index

The first component index is "Adequacy of Initiation," which describes the adequacy of when prenatal care began during pregnancy. The assumption underlying this scale is that the earlier PNC begins the better. The month or trimester prenatal care begins is widely used as a measure to assess the adequacy of timing of initiation of PNC, since it accurately and succinctly describes when PNC begins. The APNCU Index uses this measure to determine the "adequacy of initiation."

The second component index, "Adequacy of Received Services" (visits), characterizes the adequacy of received PNC visits during the time period after prenatal care is begun until the delivery. This component attempts to characterize if the woman received the appropriate number of prenatal care visits for the time period in which she received PNC services. [The appropriate number of visits is based on recommendations of the American College of Obstetricians and Gynecologists for an uncomplicated pregnancy. For example, a woman beginning prenatal care during the first month of pregnancy who delivers during the 40th week of gestation (and has no complications with her pregnancy) should receive 14 visits].

The two component indices are measured independently from one another, and can be used as separate indices, since the policy and practice issues underlying whether women are beginning care early and whether they are receiving the recommended amount of visits may be quite distinct. However, because of the popularity and utility of using one overall adequacy of PNC index, the two component indices are combined into a single summary index – the "Adequacy of Prenatal Care Utilization (APNCU) Index."

Index Categories

Both component indices and the summary index (APNCU Index) characterize PNC as one of five categories: "adequate intensive," "adequate basic," "intermediate," "inadequate," or "unknown." The category "adequate basic" refers to the minimum recommended level of care (for a pregnancy with no complications), while "adequate intensive" refers to a level of care exceeding recommended standards. The sum of the "adequate basic" and "adequate intensive" categories is the total adequacy score. In addition, the "inadequate" category can be subdivided to isolate those women who received no PNC. [For definitions of categories, please see the Technical Notes in the Appendix.]

[For more detail on the methodology of the APNCU Index, please call the Center for Health Information, Statistics, Research & Evaluation at 617-624-5600].

Adequacy of Initiation Index

Category	Month Prenatal Care Began
Adequate Intensive	1 or 2
Adequate Basic	3 or 4
Intermediate	5 or 6
Inadequate	Month 7 or later, or no PNC
Unknown	Prenatal care initiation information not recorded

Adequacy of Received Services (Visits) Index

Category	% of Expected Prenatal Care Visits
Adequate Intensive	110% or more
Adequate Basic	80 – 109%
Intermediate	50 – 79%
Inadequate	Less than 50%
Unknown	Information on prenatal care visits not recorded

Kessner Index of Adequacy of Prenatal Care: Definition of Categories

Category	Trimester Care Began	Number of Visits
Adequate	1	9 or more
Intermediate	1	5-8
	2	5 or more
Inadequate	1	1-4
	2	1-4
	3	1 or more
No prenatal care	--	0
Unknown	Unknown	Unknown

NOTE: The number of “expected” visits is determined based on standards set by the American College of Obstetricians and Gynecologists (ACOG).

Summary of Major Differences in Categorization of Adequacy of Prenatal Care between the Kessner Index and the APNCU Index

The two different methods used in the Kessner Index and APNCU Index to calculate adequacy of prenatal care can result in differences in how each one classifies adequacy of prenatal care. These differences only occur under certain conditions, not in all cases (see "Explanation" column).

The Kessner Index classifies prenatal care as...	... but the APNCU Index classifies prenatal care as ...	Explanation
Intermediate	Adequate Basic	This is primarily due to the fact that the APNCU Index allows for prenatal care in the 4 th month of pregnancy to be considered adequate if the mother received 80-109% of expected visits, whereas the Kessner Index only allows for care begun in the first trimester (months 1-3) to be considered adequate.
Intermediate	Inadequate	This is primarily due to the fact that the APNCU categorizes any prenatal care beginning after month 4 as "inadequate" whereas the Kessner Index allows for care beginning in months 5 or 6 with 5 or more visits to be "intermediate."
Adequate	Intermediate	This is primarily due to the consideration of "expected" visits (based on when the mother initiated care and the length of gestation) using the APNCU Index, which bases expected visits on the ACOG recommendations, which can be as high as 14 visits if a gestational period is 40 weeks, whereas the Kessner Index considers 9 visits sufficient in all cases.
Adequate	Adequate Intensive	The APNCU Index added an "Adequate Intensive" category, which is not used in the Kessner Index. This allows analysis of situations in which more than normal care is received (e.g. women with high risk conditions, pregnancy complications).

Tests of Statistical Significance

Beginning with this year's report, statistics presented in the text section have been tested to determine whether they differ significantly from a target statistic. For example, the number of births in 2005 was compared with the number of births in 2004, to determine whether their difference was unlikely to have occurred by chance. When a difference is unlikely to have occurred by chance it is referred to as "significant."

Note that with respect to statistical difference, the language of this year's report differs from the language of past reports, and caution must be used when comparing the text of previous reports with this year's report.

In testing for statistical significance, we have used the testing methods from the National Center for Health Statistics (NCHS). These methods are presented in the following document:

National Vital Statistics Reports, Volume 52, Number 10

Births: Final Data for 2002

by Joyce A. Martin, M.P.H.; Brady E. Hamilton, Ph.D.; Paul D. Sutton, Ph.D.; Stephanie J. Ventura, M.A.; Fay Menacker, Dr. P.H.; and Martha L. Munson, M.S.;

From the Division of Vital Statistics, NCHS.

Technical Notes, "Significance testing" section beginning on page 110.

This document is available from the following website:

<http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/52/52-23.htm>

For comparisons of more than 100 events, whether they are rates, proportions, or numbers, the binomial distribution is assumed, and confidence intervals are examined to see whether they overlap (Refer to the "Confidence Intervals and Infant Mortality Rates" section in this Appendix for an explanation of using confidence intervals to determine statistical significance.) When the number of events is less than 100, a Poisson distribution is assumed, and confidence intervals are constructed based upon the Poisson distribution. For more details and exact formulas for calculating confidence intervals or other tests of statistical significance, refer to the publication listed above.

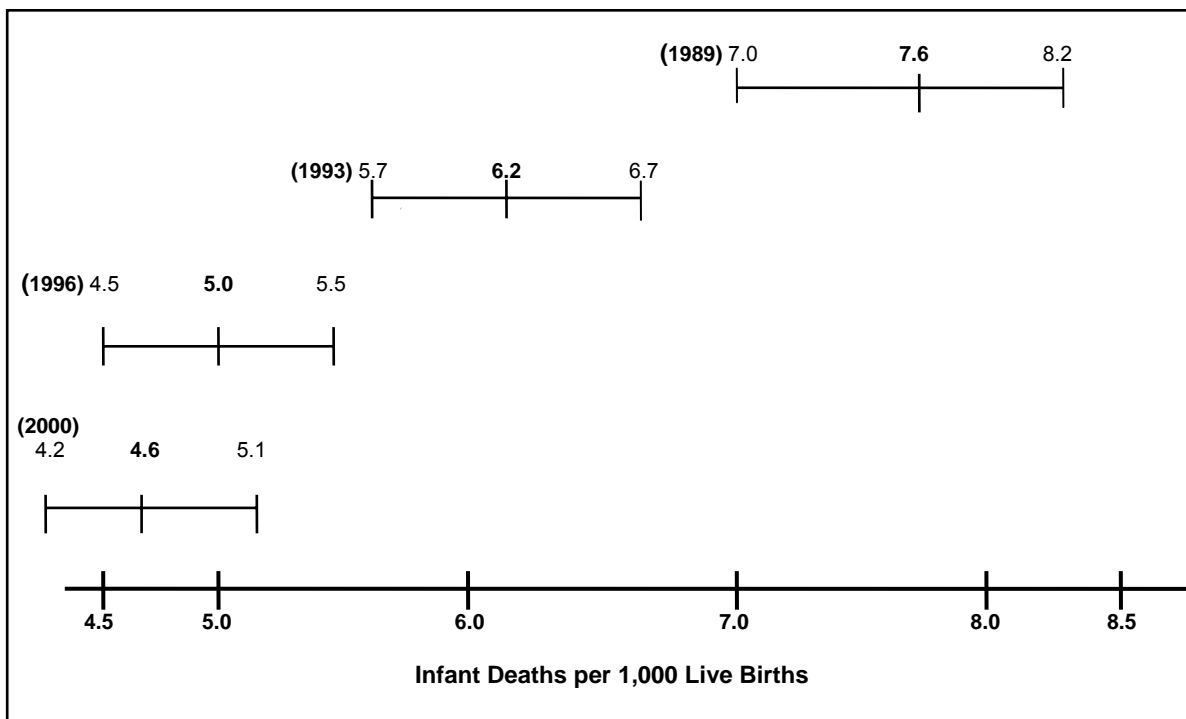
When two statistics are determined to differ significantly, then they are referred to in the text with language expressing differences, such as, "higher" and "lower", or "increased" and "decreased". Otherwise, differences which are not significant are reported as having "no change" or "no statistical difference."

CONFIDENCE INTERVALS AND INFANT MORTALITY RATES

Beginning with the 1992 Advance Data: Births publication, 95% confidence intervals were added to the calculation of infant mortality rates (IMRs). The confidence interval (CI) provides a measure of stability of the IMR and a basis for comparing rates to determine if they are statistically different. Rates can be compared for the same group in different years, or for different groups in the same year. The width of the CI reflects the stability of the IMR. For example, a narrow CI reflects high stability, and a wide interval reflects low stability. If the CIs around two IMRs being compared do not overlap, the difference between the two rates is statistically significant. The following table and chart illustrate the concept of statistically significant differences using actual data from 1989, 1993, 1996, and 2000.

Comparison of Infant Mortality Rates and Confidence Intervals for Selected Years

<u>Year</u>	<u>IMR (per 1,000 births)</u>	<u>95% Confidence Interval</u>
1989	7.6	(7.0-8.2)
1993	6.2	(5.7-6.7)
1996	5.0	(4.5-5.5)
2000	4.6	(4.2-5.1)



The difference between the 1993 IMR and 1996 IMR is statistically significant – the confidence intervals do not overlap. The same is true for the differences between the 1989 IMR and each annual IMR for 1993, 1996, and 2000. However, the difference between the 1996 and 2000 IMRs is not statistically significant, since their confidence intervals overlap.

Table 36. 95% Confidence Intervals for Infant Mortality Rates, by Race and Hispanic Ethnicity, Massachusetts: 1990-2005

Year	n	Total¹ Rate² (95% CI)	White non-Hispanic n Rate² (95% CI)	Black non-Hispanic n Rate² (95% CI)	Hispanic n Rate² (95% CI)	Asian n Rate² (95% CI)
1990	649	7.0 (6.5, 7.5)	442 6.1 (5.5, 6.7)	98 13.7 (11.0, 16.4)	77 9.1 (7.1, 11.1)	24 7.0 (4.2, 10.0)
1991	577	6.5 (6.0, 7.0)	381 5.5 (4.9, 6.1)	101 15.0 (12.1, 17.9)	80 9.4 (7.3, 11.5)	14 4.2 (2.0, 6.4)
1992	569	6.5 (6.0, 7.0)	371 5.5 (4.9, 6.1)	110 16.4 (13.4, 19.4)	67 7.9 (6.0, 9.8)	16 4.9 (2.5, 7.3)
1993	523	6.2 (5.7, 6.7)	346 5.3 (4.7, 5.9)	84 13.1 (10.3, 15.9)	77 9.3 (7.2, 11.4)	13 3.9 (1.8, 6.0)
1994	499	6.0 (5.4, 6.5)	343 5.3 (4.7, 5.9)	79 12.6 (9.8, 15.4)	64 7.6 (5.7, 9.4)	8 2.4 (0.7, 4.0)
1995	419	5.1 (4.6, 5.6)	275 4.4 (3.8, 4.9)	65 11.1 (8.4, 13.8)	58 7.2 (5.3, 9.0)	19 5.5 (3.0, 8.0)
1996	403	5.0 (4.5, 5.5)	289 4.7 (4.1, 5.2)	63 11.4 (8.6, 14.2)	40 5.1 (3.5, 6.7)	8 2.2 (0.7, 3.7)
1997	425	5.3 (4.8, 5.8)	294 4.8 (4.2, 5.3)	64 11.7 (8.8, 14.5)	55 6.7 (4.9, 8.4)	10 2.6 (1.0, 4.2)
1998	414	5.1 (4.6, 5.6)	294 4.6 (4.1, 5.2)	64 10.6 (7.9, 13.3)	55 6.7 (5.0, 8.4)	10 2.7 (1.0, 4.3)
1999	418	5.2 (4.7, 5.7)	285 4.7 (4.2, 5.3)	72 12.3 (9.5, 15.1)	49 5.5 (4.0, 7.1)	8 1.9 (0.6, 3.3)
2000	377	4.6 (4.2, 5.1)	232 3.8 (3.4, 4.3)	74 12.8 (9.9, 15.7)	48 5.2 (3.7, 6.6)	19 4.1 (2.2, 5.9)
2001	407	5.0 (4.5, 5.5)	245 4.1 (3.6, 4.7)	71 12.1 (9.3, 14.9)	69 7.3 (5.6, 9.1)	15 3.1 (1.6, 4.7)
2002	397	4.9 (4.4, 5.4)	239 4.1 (3.6, 4.6)	69 11.6 (8.9, 14.3)	67 7.0 (5.3, 8.7)	16 3.0 (1.5, 4.5)
2003	383	4.8 (4.3, 5.3)	235 4.1 (3.6, 4.6)	75 12.7 (9.8, 15.5)	55 5.6 (4.1, 7.1)	14 2.7 (1.3, 4.1)
2004	376	4.7 (4.3, 5.3)	210 3.8 (3.3, 4.3)	70 11.5 (8.9, 14.2)	75 7.6 (5.9, 9.4)	15 2.7 (1.4, 4.1)
2005	391	5.1 (4.6, 5.6)	230 4.3 (3.7, 4.9)	57 9.4 (7.0, 11.8)	78 7.8 (6.0, 9.5)	18 3.4 (1.8, 5.0)

1. Deaths of infants of unknown race are excluded except for the total calculation. For rate computations, births of infants of unknown race are allocated into the race categories according to the distribution of births of known race. 2. Rates are expressed per 1,000 live births.

In 2005, the black non-Hispanic infant mortality rate was 9.4 deaths per 1,000 live births (95% CI: 7.0, 11.8), which was two times greater than the white non-Hispanic infant mortality rate of 4.3 (95% CI: 3.7, 4.9). The difference in these two rates was statistically significant. The rate of infant mortality for black non-Hispanics was also significantly elevated compared with Asians (95% CI: 1.8, 5.0) in 2005.

DEFINITION OF RATES AND RATIOS

Age-Specific Birth Rate

The number of children born to women in a specific age group divided by the population of women in that specific age group, multiplied by 1,000.

$$\text{Age-Specific Birth Rate} = \frac{\text{Number of births to females ages X to Y years}}{\text{Number of females ages X to Y years in the population}} \times 1,000$$

Birth Rate

(See Age-Specific Birth Rate, Crude Birth Rate, Fertility Rate, and Teen Birth Rate)

Cesarean Section Rates

$$\text{Total C-section Rate} = \frac{\text{Number of C-section births}}{\text{Number of occurrence births}} \times 100$$

$$\text{Primary C-section Rate} = \frac{\text{Number of primary C-section births}}{[\text{Number of occurrence births} - (\text{number of repeat C-section births} + \text{VBACs})]} \times 100$$

$$\text{Repeat C-section Rate} = \frac{\text{Number of repeat C-section births}}{(\text{Number of repeat C-section births} + \text{number of VBACs})} \times 100$$

$$\text{VBAC Rate} = \frac{\text{Number of VBACs}}{(\text{Number of repeat C-section births} + \text{number of VBACs})} \times 100$$

Crude Birth Rate

$$\text{Crude Birth Rate} = \frac{\text{Number of resident live births}}{\text{Total resident population}} \times 1,000$$

Fertility Rate (sometimes referred to as "Birth Rate")

$$\text{Fertility Rate} = \frac{\text{Number of births to females ages 15-44 years}}{\text{Number of females ages 15-44 years in the population}} \times 1,000$$

Fetal Mortality Rate

$$\text{Fetal Mortality Rate} = \frac{\text{Number of fetal deaths}}{\text{Number of fetal deaths plus live births in the same year}} \times 1,000$$

Feto-Infant Mortality Rate

$$\text{Feto-Infant Mortality Rate} = \frac{\text{Number of fetal deaths} + \text{Number of infant deaths}}{\text{Number of fetal deaths} + \text{live births in the same year}} \times 1,000$$

(Refer to the definitions of Fetal Mortality Rate and Infant Mortality Rate for more details.)

Infant Mortality Rate (IMR)

The death rate among infants less than one year old per 1,000 live births.

$$\text{Infant Mortality Rate} = \frac{\text{Number of resident deaths of infants less than one year old in a year}}{\text{Number of resident live births in the same year}} \times 1,000$$

Inter-pregnancy Interval (IPI)

Inter-pregnancy interval is the time, in months, between the date of last menstrual period of current pregnancy and the date of previous live birth. IPI is calculated for each mother currently giving birth to their second or later child.

$$\% \text{Short IPI} = \frac{\text{Number of mothers giving birth to their 2}^{\text{nd}} \text{ or later child with IPI} < 12 \text{ months}}{\text{Number of mothers giving birth to their 2}^{\text{nd}} \text{ or later child in the same year}} \times 100$$

$$\% \text{ IPI } 12 \text{ to } 35 \text{ months} = \frac{\text{Number of mothers giving birth to their 2}^{\text{nd}} \text{ or later child with IPI between 12 and 35 months}}{\text{Number of mothers giving birth to their 2}^{\text{nd}} \text{ or later child in the same year}} \times 100$$

$$\% \text{ IPI } 36+ \text{ months} = \frac{\text{Number of mothers giving birth to their 2}^{\text{nd}} \text{ or later child with IPI } \geq 36 \text{ months}}{\text{Number of mothers giving birth to their 2}^{\text{nd}} \text{ or later child in the same year}} \times 100$$

Maternal Mortality Ratio (MMR)

The number of maternal deaths per 100,000 live occurrence births. The term "ratio" is used instead of "rate" in this report because the numerator includes some maternal deaths that were not related to live-born infants and thus were not included in the denominator.

$$\text{Maternal Mortality Ratio (MMR)} = \frac{\text{Number of maternal deaths}}{\text{Number of occurrence live births in the same year}} \times 100,000$$

Neonatal Mortality Rate (NMR)

The death rate among infants less than 28 days of age per 1,000 live births.

$$\text{Neonatal Mortality Rate} = \frac{\text{Number of resident deaths of infants less than 28 days of age in a year}}{\text{Number of resident live births in the same year}} \times 1,000$$

Perinatal Mortality Rate

$$\text{Perinatal Mortality Rate} = \frac{\text{Number of fetal deaths from 28 weeks gestation plus infant deaths (less than 7 days old)}}{\text{Number of fetal deaths plus live births in the same year}} \times 1,000$$

Post Neonatal Mortality Rate

The death rate among infants 28 days of age to less than one year old per 1,000 live births.

$$\text{Post Neonatal Mortality Rate} = \frac{\text{Number of resident deaths of infants 28 days of age to less than one year of age in a year}}{\text{Number of resident live births in the same year}} \times 1,000$$

Pregnancy-Associated Mortality Ratio (PAMR)

The number of pregnancy-associated deaths per 100,000 live occurrence births. The term "ratio" is used instead of rate in this report because the numerator includes some maternal deaths that were not related to live-born infants and thus were not included in the denominator.

$$\text{Pregnancy-Associated Mortality Ratio (PAMR)} = \frac{\text{Number of pregnancy-associated deaths}}{\text{Number of occurrence live births in the same year}} \times 100,000$$

Teen Birth Rate

$$\text{Teen birth rate} = \frac{\text{Number of births to females ages 15-19 years old}}{\text{Number of females ages 15-19 years old in the population}} \times 1,000$$

Total Rate of Change

Total rate of change between two numbers or rates is expressed as a percentage in this report (e.g. The Massachusetts birth rate decreased by 12% from 1990 to 1996.):

$$\frac{P_n - P_o}{P_o} \times 100$$

where, P_n = rate during later time period
 P_o = rate during earlier time period

Table A1. Population Estimates¹ for Massachusetts Communities: 2005

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Abington	Plymouth	22	16,305	Concord	Middlesex	15	16,858
Acton	Middlesex	15	20,539	Conway	Franklin	2	1,902
Acushnet	Bristol	26	10,535	Cummington	Hampshire	3	986
Adams	Berkshire	1	8,456	Dalton	Berkshire	1	6,697
Agawam	Hampden	4	28,547	Danvers	Essex	14	25,999
Alford	Berkshire	1	400	Dartmouth	Bristol	26	31,371
Amesbury	Essex	12	16,617	Dedham	Norfolk	18	23,681
Amherst	Hampshire	3	34,721	Deerfield	Franklin	2	4,786
Andover	Essex	11	32,838	Dennis	Barnstable	27	15,914
Aquinnah (Gay Head)	Dukes	27	362	Dighton	Bristol	24	6,648
Arlington	Middlesex	17	41,273	Douglas	Worcester	6	7,861
Ashburnham	Worcester	9	5,970	Dover	Norfolk	18	5,634
Ashby	Middlesex	9	2,926	Dracut	Middlesex	10	28,805
Ashfield	Franklin	2	1,824	Dudley	Worcester	5	10,787
Ashland	Middlesex	7	15,431	Dunstable	Middlesex	10	3,142
Athol	Worcester	2	11,690	Duxbury	Plymouth	23	14,655
Attleboro	Bristol	24	43,364	East Bridgewater	Plymouth	22	13,832
Auburn	Worcester	8	16,393	East Brookfield	Worcester	5	2,111
Avon	Norfolk	22	4,345	East Longmeadow	Hampden	4	14,845
Ayer	Middlesex	9	7,212	Eastham	Barnstable	27	5,550
Barnstable	Barnstable	27	47,902	Easthampton	Hampshire	3	15,994
Barre	Worcester	9	5,375	Easton	Bristol	22	22,995
Becket	Berkshire	1	1,783	Edgartown	Dukes	27	3,934
Bedford	Middlesex	15	12,486	Egremont	Berkshire	1	1,355
Belchertown	Hampshire	3	13,897	Erving	Franklin	2	1,542
Bellingham	Norfolk	6	15,735	Essex	Essex	13	3,342
Belmont	Middlesex	17	23,453	Everett	Middlesex	16	37,100
Berkley	Bristol	24	6,352	Fairhaven	Bristol	26	16,223
Berlin	Worcester	9	2,683	Fall River	Bristol	25	92,117
Bernardston	Franklin	2	2,237	Falmouth	Barnstable	27	33,620
Beverly	Essex	13	39,833	Fitchburg	Worcester	9	40,514
Billerica	Middlesex	10	39,812	Florida	Berkshire	1	666
Blackstone	Worcester	6	9,051	Foxborough	Norfolk	7	16,288
Blandford	Hampden	4	1,266	Frammingham	Middlesex	7	65,651
Bolton	Worcester	9	4,428	Franklin	Norfolk	6	30,748
Boston	Suffolk	19	558,435	Freetown	Bristol	26	8,963
Bourne	Barnstable	27	19,355	Gardner	Worcester	9	20,955
Boxborough	Middlesex	15	5,032	Georgetown	Essex	12	8,023
Boxford	Essex	12	8,162	Gill	Franklin	2	1,392
Boylston	Worcester	8	4,253	Gloucester	Essex	13	30,671
Braintree	Norfolk	20	33,658	Goshen	Hampshire	3	956
Brewster	Barnstable	27	10,242	Gosnold	Dukes	27	86
Bridgewater	Plymouth	22	25,769	Grafton	Worcester	8	16,783
Brimfield	Hampden	5	3,627	Granby	Hampshire	3	6,332
Brockton	Plymouth	22	100,366	Granville	Hampden	4	1,644
Brookfield	Worcester	5	3,096	Great Barrington	Berkshire	1	7,440
Brookline	Norfolk	19	56,422	Greenfield	Franklin	2	17,888
Buckland	Franklin	2	1,995	Groton	Middlesex	9	10,396
Burlington	Middlesex	15	23,265	Groveland	Essex	12	6,591
Cambridge	Middlesex	17	101,529	Hadley	Hampshire	3	4,820
Canton	Norfolk	20	21,481	Halifax	Plymouth	23	7,805
Carlisle	Middlesex	15	4,823	Hamilton	Essex	13	8,334
Carver	Plymouth	23	11,552	Hampden	Hampden	4	5,312
Charlemont	Franklin	2	1,387	Hancock	Berkshire	1	1,018
Charlton	Worcester	5	12,447	Hanover	Plymouth	23	14,077
Chatham	Barnstable	27	6,833	Hanson	Plymouth	23	9,915
Chelmsford	Middlesex	10	33,728	Hardwick	Worcester	9	2,655
Chelsea	Suffolk	19	34,128	Harvard	Worcester	9	6,116
Cheshire	Berkshire	1	3,356	Harwich	Barnstable	27	12,673
Chester	Hampden	21	1,320	Hatfield	Hampshire	3	3,280
Chesterfield	Hampshire	3	1,271	Haverhill	Essex	12	60,032
Chicopee	Hampden	21	54,599	Hawley	Franklin	2	345
Chilmark	Dukes	27	944	Heath	Franklin	2	805
Clarksburg	Berkshire	1	1,663	Hingham	Plymouth	20	21,470
Clinton	Worcester	9	13,997	Hinsdale	Berkshire	1	1,811
Cohasset	Norfolk	20	7,219	Holbrook	Norfolk	22	10,765
Colrain	Franklin	2	1,858	Holden	Worcester	8	16,571

Table A1 (cont.). Population Estimates¹ for Massachusetts Communities: 2005

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Holland	Hampden	5	2,529	New Marlborough	Berkshire	1	1,522
Holliston	Middlesex	7	13,830	New Salem	Franklin	2	986
Holyoke	Hampden	21	41,089	Newbury	Essex	12	6,990
Hopedale	Worcester	6	6,234	Newburyport	Essex	12	17,395
Hopkinton	Middlesex	7	14,048	Newton	Middlesex	18	83,346
Hubbardston	Worcester	9	4,340	Norfolk	Norfolk	7	10,506
Hudson	Middlesex	7	18,847	North Adams	Berkshire	1	14,031
Hull	Plymouth	20	11,279	North Andover	Essex	11	27,137
Huntington	Hampshire	21	2,180	North Attleboro	Bristol	24	28,078
Ipswich	Essex	13	13,285	North Brookfield	Worcester	5	4,812
Kingston	Plymouth	23	12,435	North Reading	Middlesex	16	13,930
Lakeville	Plymouth	24	10,618	Northampton	Hampshire	3	28,803
Lancaster	Worcester	9	7,069	Northborough	Worcester	7	14,652
Lanesborough	Berkshire	1	2,951	Northbridge	Worcester	6	14,184
Lawrence	Essex	11	81,591	Northfield	Franklin	2	3,226
Lee	Berkshire	1	5,882	Norton	Bristol	24	19,106
Leicester	Worcester	8	10,953	Norwell	Plymouth	20	10,382
Lenox	Berkshire	1	5,149	Norwood	Norfolk	20	28,472
Leominster	Worcester	9	42,120	Oak Bluffs	Dukes	27	3,794
Leverett	Franklin	2	1,769	Oakham	Worcester	9	1,892
Lexington	Middlesex	15	30,452	Orange	Franklin	2	7,659
Leyden	Franklin	2	815	Orleans	Barnstable	27	6,459
Lincoln	Middlesex	15	7,935	Otis	Berkshire	1	1,391
Littleton	Middlesex	15	8,561	Oxford	Worcester	5	13,710
Longmeadow	Hampden	4	15,556	Palmer	Hampden	4	12,895
Lowell	Middlesex	10	105,749	Paxton	Worcester	8	4,556
Ludlow	Hampden	21	21,835	Peabody	Essex	14	50,954
Lunenburg	Worcester	9	10,008	Pelham	Hampshire	3	1,415
Lynn	Essex	14	92,186	Pembroke	Plymouth	23	18,069
Lynnfield	Essex	14	11,540	Pepperell	Middlesex	9	11,386
Malden	Middlesex	16	56,730	Peru	Berkshire	1	836
Manchester	Essex	13	5,332	Petersham	Worcester	2	1,282
Mansfield	Bristol	24	22,933	Phillipston	Worcester	2	1,753
Marblehead	Essex	14	20,285	Pittsfield	Berkshire	1	43,949
Marion	Plymouth	26	5,316	Plainfield	Hampshire	3	600
Marlborough	Middlesex	7	37,163	Plainville	Norfolk	7	7,994
Marshfield	Plymouth	23	24,879	Plymouth	Plymouth	23	54,781
Mashpee	Barnstable	27	14,159	Plympton	Plymouth	23	2,777
Mattapoisett	Plymouth	26	6,477	Princeton	Worcester	9	3,520
Maynard	Middlesex	7	10,221	Provincetown	Barnstable	27	3,444
Medfield	Norfolk	7	12,328	Quincy	Norfolk	20	90,458
Medford	Middlesex	16	53,801	Randolph	Norfolk	20	32,552
Medway	Norfolk	6	12,780	Raynham	Bristol	24	13,428
Melrose	Middlesex	16	26,366	Reading	Middlesex	16	23,161
Mendon	Worcester	6	5,743	Rehoboth	Bristol	24	11,229
Merrimac	Essex	12	6,350	Revere	Suffolk	19	45,551
Methuen	Essex	11	44,532	Richmond	Berkshire	1	1,618
Middleborough	Plymouth	24	21,153	Rochester	Plymouth	26	5,295
Middlefield	Hampshire	3	549	Rockland	Plymouth	23	17,842
Middleton	Essex	11	9,077	Rockport	Essex	13	7,761
Milford	Worcester	6	27,523	Rowe	Franklin	2	350
Millbury	Worcester	8	13,443	Rowley	Essex	12	5,832
Millis	Norfolk	7	7,949	Royalston	Worcester	2	1,366
Millville	Worcester	6	2,938	Russell	Hampden	4	1,723
Milton	Norfolk	20	26,243	Rutland	Worcester	9	7,406
Monroe	Franklin	2	100	Salem	Essex	14	41,647
Monson	Hampden	4	8,744	Salisbury	Essex	12	8,264
Montague	Franklin	2	8,416	Sandisfield	Berkshire	1	830
Monterey	Berkshire	1	959	Sandwich	Barnstable	27	20,707
Montgomery	Hampden	4	743	Saugus	Essex	14	26,867
Mt. Washington	Berkshire	1	135	Savoy	Berkshire	1	724
Nahant	Essex	14	3,591	Scituate	Plymouth	20	18,119
Nantucket	Nantucket	27	10,095	Seekonk	Bristol	24	13,660
Natick	Middlesex	7	31,895	Sharon	Norfolk	20	17,269
Needham	Norfolk	18	28,445	Sheffield	Berkshire	1	3,360
New Ashford	Berkshire	1	247	Shelburne	Franklin	2	2,054
New Bedford	Bristol	26	94,502	Sherborn	Middlesex	7	4,220
New Braintree	Worcester	9	1,090	Shirley	Middlesex	9	7,361

Table A1 (cont.). Population Estimates¹ for Massachusetts Communities: 2005

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Shrewsbury	Worcester	8	33,171	Warwick	Franklin	2	763
Shutesbury	Franklin	2	1,843	Washington	Berkshire	1	546
Somerset	Bristol	25	18,564	Watertown	Middlesex	17	32,255
Somerville	Middlesex	17	75,372	Wayland	Middlesex	7	13,015
South Hadley	Hampshire	3	17,071	Webster	Worcester	5	16,853
Southampton	Hampshire	3	5,828	Wellesley	Norfolk	18	26,975
Southborough	Worcester	7	9,511	Wellfleet	Barnstable	27	2,821
Southbridge	Worcester	5	17,503	Wendell	Franklin	2	1,035
Southwick	Hampden	4	9,512	Wenham	Essex	13	4,643
Spencer	Worcester	5	12,087	West Boylston	Worcester	8	7,708
Springfield	Hampden	4	156,358	West Bridgewater	Plymouth	22	6,819
Sterling	Worcester	9	7,761	West Brookfield	Worcester	5	3,896
Stockbridge	Berkshire	1	2,256	West Newbury	Essex	12	4,301
Stoneham	Middlesex	16	21,594	West Springfield	Hampden	4	27,938
Stoughton	Norfolk	22	26,782	West Stockbridge	Berkshire	1	1,450
Stow	Middlesex	7	6,159	West Tisbury	Dukes	27	2,666
Sturbridge	Worcester	5	8,825	Westborough	Worcester	7	18,781
Sudbury	Middlesex	7	17,035	Westfield	Hampden	21	40,432
Sunderland	Franklin	2	3,853	Westford	Middlesex	10	21,369
Sutton	Worcester	6	8,974	Westhampton	Hampshire	3	1,566
Swampscott	Essex	14	14,283	Westminster	Worcester	9	7,358
Swansea	Bristol	25	16,243	Weston	Middlesex	18	11,591
Taunton	Bristol	24	56,348	Westport	Bristol	25	15,053
Templeton	Worcester	9	7,474	Westwood	Norfolk	18	13,902
Tewksbury	Middlesex	10	28,990	Weymouth	Norfolk	20	53,708
Tisbury	Dukes	27	3,819	Whately	Franklin	2	1,584
Tolland	Hampden	4	446	Whitman	Plymouth	22	14,424
Topsfield	Essex	13	6,178	Wilbraham	Hampden	4	13,960
Townsend	Middlesex	9	9,273	Williamsburg	Hampshire	3	2,433
Truro	Barnstable	27	2,162	Williamstown	Berkshire	1	8,276
Tyngsborough	Middlesex	10	11,297	Wilmington	Middlesex	15	21,431
Tyringham	Berkshire	1	352	Winchendon	Worcester	9	10,085
Upton	Worcester	6	6,374	Winchester	Middlesex	15	21,139
Uxbridge	Worcester	6	12,377	Windsor	Berkshire	1	858
Wakefield	Middlesex	16	24,553	Winthrop	Suffolk	19	17,067
Wales	Hampden	5	1,818	Woburn	Middlesex	15	37,074
Walpole	Norfolk	7	23,067	Worcester	Worcester	8	179,839
Waltham	Middlesex	18	59,564	Worthington	Hampshire	3	1,291
Ware	Hampshire	3	9,988	Wrentham	Norfolk	7	11,066
Wareham	Plymouth	26	21,274	Yarmouth	Barnstable	27	24,663
Warren	Worcester	5	5,040				

1. Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October, 2006.

Table A2. Population Estimates¹ for Massachusetts Community Health Network Areas (CHNA) and Counties: 2005

CHNA	POPULATION	COUNTY	POPULATION
1. Community Health Network of Berkshire County	131,965	Barnstable	226,505
2. Upper Valley Health Web (Franklin County)	88,506	Berkshire	131,965
3. Partnership for Health in Hampshire County (Northampton)	151,801	Bristol	547,711
4. The Community Health Connection (Springfield)	299,490	Dukes	15,605
5. Community Health Network of Southern Worcester County	119,141	Essex	750,463
6. Community Partners for Health (Milford)	160,521	Franklin	72,415
7. Community Health Network of Greater Metro West (Framingham)	379,658	Hampden	466,739
8. Community Wellness Coalition (Worcester)	303,669	Hampshire	153,981
9. Fitchburg/Gardner Community Health Network	261,369	Middlesex	1,464,179
10. Greater Lowell Community Health Network	272,893	Nantucket	10,095
11. Greater Lawrence Community Health Network	195,176	Norfolk	656,472
12. Greater Haverhill Community Health Network	148,557	Plymouth	497,687
13. Community Health Network North (Beverly/Gloucester)	119,378	Suffolk	655,181
14. North Shore Community Health Network	287,352	Worcester	787,943
15. Greater Woburn/Concord/Littleton Community Health Network	209,597		
16. North Suburban Health Alliance (Medford/Malden/Melrose)	257,235	STATE	6,436,940
17. Greater Cambridge/Somerville Community Health Network	273,883		
18. West Suburban Health Network (Newton/Waltham)	253,138		
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	711,603		
20. Blue Hills Community Health Alliance (Greater Quincy)	372,309		
21. Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	161,454		
22. Greater Brockton Community Health Network	242,404		
23. South Shore Community Partners in Prevention (Plymouth)	188,787		
24. Greater Attleboro-Taunton Health & Education Response	252,919		
25. Partners for a Healthier Community (Fall River)	141,977		
26. Greater New Bedford Health & Human Services Coalition	199,955		
27. Cape and Islands Community Health Network	252,204		

1. Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October, 2006.

GLOSSARY

Adequacy of Prenatal Care Utilization (APNCU) Index

The Adequacy of Prenatal Care Utilization Index, developed by Dr. Milton Kotelchuck, is the measure used in this publication to classify the adequacy of prenatal care received by Massachusetts resident mothers. (*Please note: Prior to the *Births 2001* publication, the Kessner Index was used to measure adequacy of prenatal care; please see definition for Kessner Index below.*) The APNCU Index has five categories (adequate intensive, adequate basic, intermediate, inadequate, and unknown), based on the month of pregnancy in which prenatal care begins and the percent of expected prenatal care visits for the time period during which a woman receives prenatal care services. Please see Technical Notes for more details.

Birthweight

The weight of an infant recorded at the time of delivery. It may be recorded in either pounds/ounces or grams. If recorded in pounds/ounces, it is converted to grams for use in this report.

1 pound = 453.6 grams

1,000 grams = 2 pounds and 3 ounces

Birthweight Categories

Normal birthweight (NBW):	An infant's weight of 2,500 grams (approximately 5.5 pounds) or more recorded at birth.
Low birthweight (LBW):	An infant's weight of less than 2,500 grams (5.5 pounds) recorded at birth.
Very low birthweight (VLBW):	An infant's weight of less than 1,500 grams (3.3 pounds) recorded at birth.

Cesarean Section or C-Section

Primary: A mother's first Cesarean section delivery.

Repeat: A Cesarean delivery that has been preceded by at least one Cesarean delivery.

Community Health Network Areas (CHNAs)

The Department of Public Health, in collaboration with health service providers, coalition members, and interested citizens, has designated 27 areas for community health planning. It is the Department's intention to foster in each of these areas the development of Community Health Networks – consortia of health care providers, human service agencies, schools, churches, youth, parents, elders, advocacy groups, and individual consumers – to address the health needs of the community. These community coalitions will participate in monitoring outcomes and progress of strategies and responses to those health needs.

It is hoped the Networks will mobilize around key health issues impacting the community, promote prevention efforts, enhance access to care, provide opportunities for more collaboration among agencies, and create a client-centered, outcome-oriented health service delivery system. Community Health Networks will also promote efficiency in service delivery by working to reduce duplication and overlap, and by identifying gaps in service.

A Community Health Network Area (CHNA) is defined as an aggregation of cities and towns. In

the current publication, we have presented some data by CHNA. To determine which cities and towns make up a particular CHNA, Table A1 provides the appropriate CHNA code for each city and town. The data published in this volume reflect the definitions of CHNAs instituted in January 1997 and the corresponding CHNA names.

Confidence Intervals

The confidence interval (CI) for the infant mortality rate (IMR) is a range of values that has a 95% chance of including the underlying risk of an infant death. Observed rates are subject to statistical variation; even if the underlying risk of infant death is identical in two subpopulations, the observed IMRs for the subpopulations may differ because of random variation. The confidence interval describes the precision of observed IMR as an estimate of the underlying risk of infant death, with a wider interval indicating less certainty about this estimate. The width of the interval reflects the size of the subpopulation and the number of infant deaths; smaller subpopulations with fewer infant deaths lead to wider confidence intervals.

Death Cohort Linked File or Linked Birth and Infant Death File – Death Cohort

All infant deaths occurring in a specific year have been linked to their corresponding birth certificates, whether the birth occurred during the same year or in the previous one. This is in contrast to a birth cohort linked file, in which infant deaths may have occurred in the same year as, or in the year following the year of birth.

Delivery

A delivery may consist of one or more live born or stillborn fetuses. The number of deliveries in a given period will be equal to or less than the number of births because multiple births (twins, triplets or higher-order births) are counted as single deliveries.

EOHHS Regions

The six regions delineated by the commonwealth's Executive Office of Health and Human Services and used by the Department of Public Health for statistical, care coordination and administrative purposes. The regions - Western, Central, Northeast, Metro West, Boston and Southeast - are based on geographical groupings of cities and towns.

Ethnicity

See the section in the Technical Notes of the Appendix entitled: "Changes in the Collection of Race and Ethnicity Information."

Fetal Death

A stillbirth delivered, extracted or expelled at 20 weeks gestation or more or weighs 350 grams or more.

Feto-Infant Mortality Rate

The combined number of fetal deaths and infant deaths per 1000 live births and fetal deaths.

Healthy Start

A Massachusetts-funded program providing services and financing for prenatal care to low-income pregnant women who lack health insurance, but do not qualify for Medicaid.

Infant

A child whose age is less than one year (365 days).

Infant Death

Death of a child whose age is less than one year.

Kessner Index (Adequacy of Prenatal Care)

A measure of adequacy of prenatal care, used in *Advance Data: Births and Massachusetts Births* publications prior to 2001. The Kessner Index classifies prenatal care as one of 5 categories (adequate, intermediate, inadequate, no prenatal care, and unknown), based on the trimester in which prenatal care began and the number of prenatal visits. The classification adjusts for gestational age to allow for proper classification of premature births, and is as follows:

Category	Trimester Care Began	Number of Visits
Adequate	1	9 or more
Intermediate	1	5-8
	2	5 or more
	1	1-4
Inadequate	2	1-4
	3	1 or more
No prenatal care	--	0
Unknown	Unknown	Unknown

Live Birth

A live birth is any infant who breathes or shows any other evidence of life (such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles) after separation from the mother's uterus, regardless of the duration of gestation.

Low Birthweight (LBW)

See Birthweight Categories.

Maternal Death

The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes.

Mother's Birthplace

In this publication, birth characteristics are presented according to mother's birthplace: those who were born in the 50 states and District of Columbia, or "U.S. States / D.C."; those who were born in Puerto Rico, the US Virgin Islands, and Guam, or "Puerto Rico/U.S. Territories"; and those who were born outside of the U.S. and Puerto Rico/U.S. territories, or "Non-U.S.-Born".

Neonatal

Infants under 28 days of age.

Neonatal Death

Death of a child whose age is less than 28 days.

Non-U.S.-Born Women

See Mother's Birthplace.

Occurrence Birth

A birth occurring in the Commonwealth of Massachusetts, regardless of the residency of the mother. For individual cities/towns, an occurrence birth represents any birth occurring in that city/town, regardless of the residence of the mother. See Resident Birth.

Parity

The total number of live infants ever born to a woman, including the current birth.

Perinatal

Referring to the time period immediately before and after birth (28 weeks of gestation to 7 days after birth).

Perinatal Death

Death to a fetus of 28 weeks gestation or older or a live-born infant less than 7 days old.

Plurality

The number of births to a woman produced in the same gestational period. A singleton is the birth of one infant; twins represent the births of two infants, etc.

Post Neonatal

A child whose age is at least 28 days, but less than one year.

Post Neonatal Death

Death of a child whose age is at least 28 days, but less than one year.

Prenatal Care Source of Payment

Categories used in this publication include:

Public = Government programs including Commonwealth, Healthy Start, Medicaid/MassHealth, and Medicare (may be HMO or managed care), or free care;

Private = Commercial indemnity plan, commercial managed care (HMO, PPO, IPP, IPA, and other), or other private insurance;

Other = Worker's Compensation and other sources;

Self-paid.

Pregnancy-Associated Death

The death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause.

Race

See the section in the Technical Notes in the Appendix entitled: "Changes in the Collection of Race and Ethnicity Information."

Resident Birth

The birth of an infant whose mother reports that her usual place of residence is in Massachusetts. In Massachusetts, a resident is a person with a permanent address in one of the 351 cities or towns. Vital statistics data may be presented in terms either of residence or occurrence. All data in this publication are resident data unless otherwise stated. Resident data include all events that occur to residents of the Commonwealth, wherever they occur. Occurrence data include all events that occur within the state, whether to residents or nonresidents. There is an exchange agreement among the 50 states, District of Columbia,

Puerto Rico, Virgin Islands, Guam, and Canadian provinces that provides for exchange of copies of birth and death records. These records are used for statistical purposes only, and allow each state or province to track the births and deaths of its residents.

Vaginal Birth After Cesarean (VBAC)

A vaginal delivery of an infant to a mother who has had at least one prior Cesarean section delivery.

Very Low Birthweight (VLBW)

An infant's weight of less than 1,500 grams (3.3 pounds) recorded at birth.

Massachusetts Birth Certificate: 2005

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The Commonwealth of Massachusetts
DEPARTMENT OF PUBLIC HEALTH
REGISTRY OF VITAL RECORDS AND STATISTICS
STANDARD CERTIFICATE OF LIVE BIRTH

STATE USE ONLY

1. RECORD NUMBER 768283 1A. CERTIFICATE NUMBER (DPH USE ONLY)	CHILD	3C. CITY/TOWN							3D. REGISTERED NUMBER
		3B. COUNTY							
2. FACILITY NUMBER	D	NAME		4A. FIRST	4B. MIDDLE	4C. LAST			
		5. SEX	6A. PLURALITY	6B. BIRTH ORDER	7. TIME	8. DATE OF BIRTH (Month, Day, Year)			
22A. SOCIAL SECURITY CARD	CERTIFIER	9A. NAME							
		9C. CERTIFIER TYPE							
		9E. NUMBER AND STREET						9H. ZIP CODE	
		NAME		10A. FIRST	10A. MIDDLE	10A. LAST		10A. AIDEN SURNAME	
INITIALS	MOTHER	BIRTHPLACE		11A. CITY/TOWN	11B. STATE/COUNTRY		12. DATE OF BIRTH (Month, Day, Year)		
		RESIDENCE (Do not use mailing address)		13A. NUMBER AND STREET	13B. CITY/TOWN	13C. COUNTY	13D. STATE	13E. ZIP CODE	
22B. RESIDENT COPY	FATHER	NAME		14A. FIRST	14B. MIDDLE	14C. LAST			
		BIRTHPLACE		15A. CITY/TOWN	15B. STATE/COUNTRY		16. DATE OF BIRTH (Month, Day, Year)		
INITIALS	INFORMANT	17A. I (WE) CERTIFY THAT THE PERSONAL INFORMATION APPEARING ABOVE IS TRUE AND CORRECT.						17B. RELATIONSHIP TO CHILD	
		17C. DATE SIGNED (Month, Day, Year)		17D. MAILING ADDRESS (If different from item # 13 above)		NUMBER AND STREET		CITY	STATE
1. OCCURRENCE	CLERK	18. DATE OF RECORD (Month, Day, Year)		19. SUPPLEMENT FILED (Month, Day, Year)		20. CLERK/REGISTRAR			
		21. DPH USE ONLY							



Massachusetts Births 2005 Evaluation Form

TO OUR READERS:

In an attempt to better serve our users, we are enclosing this evaluation form. Please take the time to complete this questionnaire and return it to the address at the bottom of the page. Thank you.

What tables and charts do you find most useful?

What tables and charts do you find least useful?

**Are there other tables and charts that you would like added to this publication?
If yes, please describe them in detail.**

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Dr. James K. West

Division of Research and Epidemiology

Ctr. for Health Information, Statistics, Research and Evaluation

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250 Washington Street, 6th floor, Boston, MA 02108

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stamp
here**

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