



MetroWest Birth Report

Prepared by:
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Boston University School of Public Health &
Principal, SigmaWorks

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METROWEST
COMMUNITY
HEALTH CARE
FOUNDATION

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METROWEST COMMUNITY HEALTH CARE FOUNDATION

This report is made possible by the MetroWest Community Health Care Foundation as part of its mission to promote a healthy MetroWest.

The MetroWest Community Health Care Foundation meets the health care needs of our region's residents by supporting community-based and community-driven programs. From preventative and responsive care to programs that serve infants to elders, the Foundation provides over \$5 million in annual financial support that helps residents and their families lead healthier lives. In our work on issues such as youth substance abuse, nurse recruitment and retention, racial and ethnic disparities in health, and childhood obesity, we look to develop and support programs that have a positive impact on the health of the twenty-five communities in the MetroWest area of Massachusetts.

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Analysis and opinions expressed are solely those of the author.

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Executive Summary

The 2002 *MetroWest Health Data Book* contained birth data through 1999, and the 2005 *MetroWest Health Data Book and Atlas* contained MetroWest and Massachusetts birth data through 2002. This 2006 report, which examines 2003 and 2004 data from the Massachusetts Registry of Vital Records and Statistics, explores in depth:

- the age distribution of women by race, ethnicity, and origin, in order to better understand disparities in birth rates
- the social and health context of birth—including marital status and paternity acknowledgment—and the adequacy, types, and sites of prenatal care afforded to women in MetroWest
- detailed analyses of teen-birth data
- birth outcomes, including maternal and infant mortality, pre-term birth, and low birthweight, and differences in birth method (i.e., vaginal or caesarian section)

Summary of Findings

- Key positives are that for most of the indicators examined, MetroWest fares better than Massachusetts or the United States as a whole.
- Key opportunities for improvement for MetroWest are rates of teen birth; disparities in teen prenatal care; high rates of Hispanic teen birth, especially of second births before age 20; and low rates of marriage and paternity acknowledgment, especially for Black and Hispanic young mothers, and most specifically for Black teens.

Recommendations

Each of the major findings of this study can be translated into potential interventions.

- Public schools, community groups, and health care providers could be involved in addressing many of the problems involved in teen pregnancy and birth. Avoidance of second births before age 20 is particularly vital.
- Health care providers could be involved in responding to issues of inadequate care and the apparent lack of, or lack of use of, midwifery services that in other parts of Massachusetts serve young Black and Hispanic women who are at risk for inadequate prenatal services.
- Methods could be developed to obtain better town-specific counts of Brazilian teens, especially in Framingham, Marlborough, and Milford. These counts would be valuable in assessing teen birth rates for this group.

Summary of Findings from the 2005 MetroWest Health Data Book and Atlas

Birth-related findings from the 2005 Data Book include the following:

- The teen birth rate for MetroWest in 1998-2002 was lower than for Massachusetts as a whole.
- Both Massachusetts and MetroWest teen birth rates declined between 1989 and 2002.
- In both Massachusetts and MetroWest, in 1998-2002, Hispanic teen birth rates were significantly higher than Black, non-Hispanic teen birth rates, which in turn were significantly higher than White, non-Hispanic teen birth rates. White teen birth rates were significantly higher than Asian, non-Hispanic teen birth rates for MetroWest and slightly but significantly lower in Massachusetts as a whole.
- In Massachusetts and MetroWest in 1998-2002, Hispanic and Black, non-Hispanic mothers had a lower percentage with “adequate” or “adequate intensive” prenatal care than did White or Asian, non-Hispanic mothers.

This follow-up report replicates the above findings with more recent data and considerably extends the analysis of births in MetroWest.

MetroWest Towns and Regions

MetroWest comprises 25 cities and towns, centered in the Framingham/Natick area. For analytic purposes, three sub-areas have been created: Eastern, NorthWest, and SouthWest. In addition, statistical analysis has revealed two kinds of communities that we have labeled as “more commercial and more residential.” The communities are listed in Table 1.

Table 1: MetroWest Towns, Regions, and Kinds of Communities

City or Town	Sub-Region	Kind of Community
Dover	Eastern	More Residential
Medfield	Eastern	More Residential
Millis	Eastern	More Residential
Natick	Eastern	More Commercial
Needham	Eastern	More Residential
Norfolk	Eastern	More Residential
Sherborn	Eastern	More Residential
Sudbury	Eastern	More Residential
Wayland	Eastern	More Residential
Wellesley	Eastern	More Residential
Framingham	NorthWest	More Commercial
Hudson	NorthWest	More Commercial
Marlborough	NorthWest	More Commercial
Northborough	NorthWest	More Residential
Southborough	NorthWest	More Residential
Westborough	NorthWest	More Commercial
Ashland	SouthWest	More Commercial
Bellingham	SouthWest	More Residential
Franklin	SouthWest	More Residential
Holliston	SouthWest	More Residential
Hopedale	SouthWest	More Residential
Hopkinton	SouthWest	More Residential
Medway	SouthWest	More Residential
Mendon	SouthWest	More Residential
Milford	SouthWest	More Commercial

Source: *MetroWest Health Data Book and Atlas*, 2005

Details on the methods used in creating the “kind of community” typology are available in the 2002 *MetroWest Health Data Book*. In addition, some data are provided in the current report for “peer towns,” other Massachusetts cities and towns that are “most like” one or more of the MetroWest towns. Methods for determining peer town similarity are also described in the 2002 report.

Demographic Profiles of Women and Birth Mothers in MetroWest

Race- and Ethnicity-Specific Birth Rates Race- and ethnicity-specific crude birth rates vary considerably within the MetroWest region, as shown in Table 2. The major comparisons between Massachusetts and MetroWest are pictured in Figure 1.

Eastern Region

The crude rate for White, non-Hispanic women is higher than for Black, non-Hispanic women. No other differences are statistically significant.

SouthWest Region

The crude rate for Asian, non-Hispanics is significantly higher than for White, non-Hispanics. No other differences are statistically significant.

NorthWest Region

The crude rate for Asian, non-Hispanics is significantly higher than for all other groups.

Residential/Commercial Comparison

There is virtually no difference between White, non-Hispanic crude birth rates in the Commercial and Residential communities. For the other race/ethnicity groups, however, the crude birth rates in the more commercial communities are consistently higher than for the more residential communities, as a group.

MetroWest Total

Asian and Hispanic crude birth rates are higher than for Whites and Blacks.

Massachusetts

Hispanic crude birth rates are significantly higher than those for Asians and Blacks, who in turn have significantly higher crude rates than those of Whites.

MetroWest/Massachusetts Comparison

Crude birth rates for White, non-Hispanic mothers and Asian mothers are significantly higher in MetroWest, and crude rates for Black, non-Hispanic mothers are significantly lower when compared to Massachusetts crude rates.

Table 2: Crude Birth Rates by Race/Ethnicity and Region

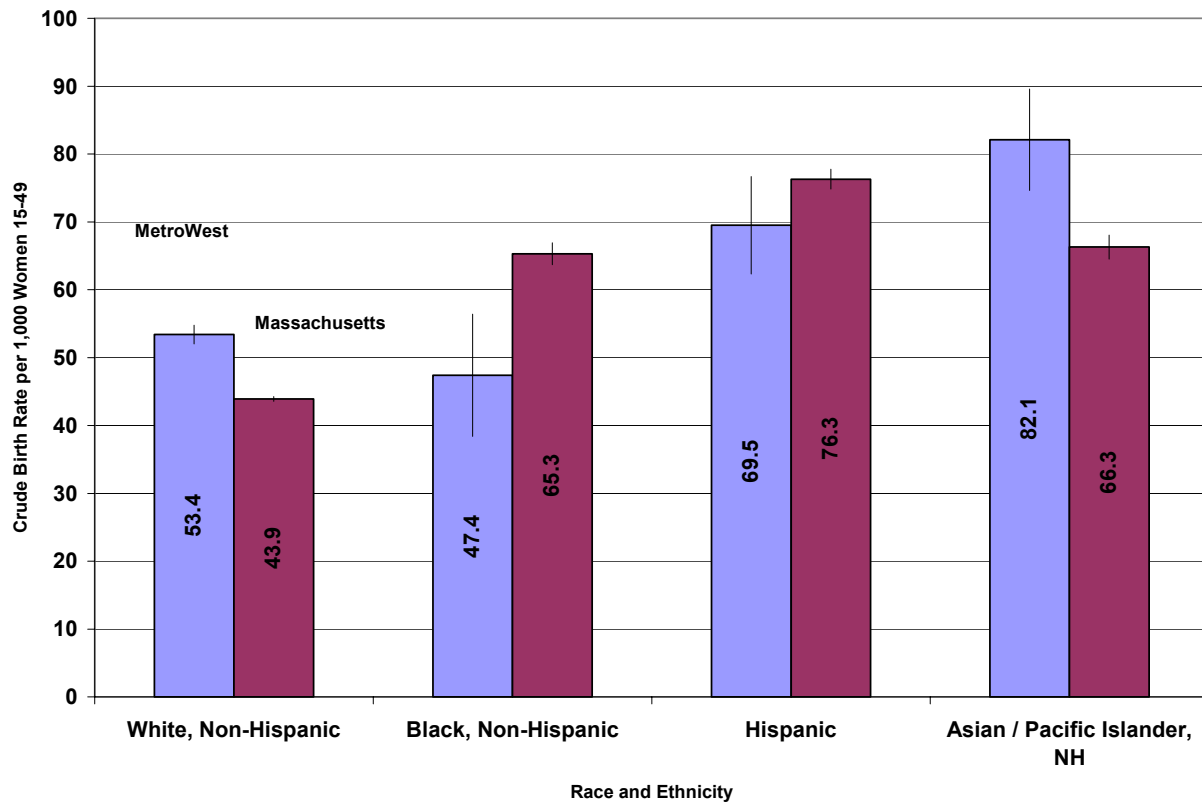
Region	Race/Ethnicity	Births 2000-2004	Female 15-49 Population 2000	Female 15-49 Annual Rate/1,000	ME*
Eastern	White, Non-Hispanic	9,181	34,636	53.0	2.4
	Black, Non-Hispanic	73	491	29.7	15.0
	Hispanic	182	756	48.1	15.3
	Asian/Pacific Islander, NH	612	2,185	56.0	9.6
SouthWest	White, Non-Hispanic	9,301	33,417	55.7	2.5
	Black, Non-Hispanic	91	348	52.3	23.4
	Hispanic	308	769	80.1	19.2
	Asian/Pacific Islander, NH	378	642	117.8	24.9
NorthWest	White, Non-Hispanic	8,803	34,225	51.4	2.3
	Black, Non-Hispanic	341	1,294	52.7	12.2
	Hispanic	1,181	3,284	71.9	8.8
	Asian/Pacific Islander, NH	1,139	2,360	96.5	11.9
MetroWest	White, Non-Hispanic	27,285	102,278	53.4	1.4
	Black, Non-Hispanic	505	2,133	47.4	9.0
	Hispanic	1,671	4,809	69.5	7.2
	Asian/Pacific Islander, NH	2,129	5,187	82.1	7.5
Commercial	White, Non-Hispanic	12,281	46,264	53.1	2.0
	Black, Non-Hispanic	406	1,556	52.2	11.1
	Hispanic	1,385	3,840	72.1	8.2
	Asian/Pacific Islander, NH	1,384	2,740	101.0	11.3
Residential	White, Non-Hispanic	15,004	56,014	53.6	1.9
	Black, Non-Hispanic	99	577	34.3	14.9
	Hispanic	286	969	59.0	14.8
	Asian/Pacific Islander, NH	745	2,447	60.9	9.5
Peers	White, Non-Hispanic	55,499	233,972	47.4	0.9
	Black, Non-Hispanic	1,664	4,448	74.8	7.7
	Hispanic	3,730	9,774	76.3	5.3
	Asian/Pacific Islander, NH	3,293	8,438	78.1	5.7
Massachusetts	White, Non-Hispanic	290,138	1,321,327	43.9	0.3
	Black, Non-Hispanic	29,469	90,281	65.3	1.6
	Hispanic	47,576	124,637	76.3	1.5
	Asian/Pacific Islander, NH	25,410	76,696	66.3	1.8

*Margin of error

NH indicates non-Hispanic.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Figure 1: MetroWest and Massachusetts Birth Rates, by Race/Ethnicity, 2000-2004



NH indicates non-Hispanic.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

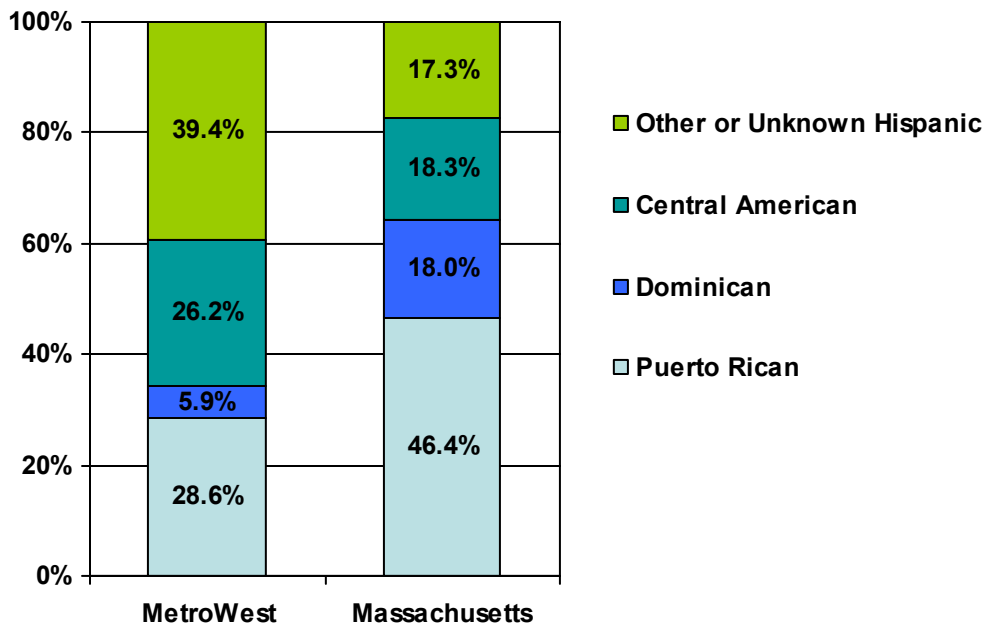
Further detail is available on the specific backgrounds of birth mothers in MetroWest, as compared with Massachusetts. For example, among Black, non-Hispanics, a smaller percentage of mothers in MetroWest identify as Haitian (12.7%) than for Massachusetts as a whole (18.0%). Among Hispanics, fewer in MetroWest identify as Puerto Rican (28.6%) than in Massachusetts (46.4%), and conversely, more identify as Central American or “other” Hispanic. Among Asians, more mothers in MetroWest identify as Chinese or Asian Indian, and fewer as Vietnamese or Cambodian. Among those who identify as “Other, Non-Hispanic,” more identify as “Other Portuguese and Brazilian” in MetroWest (57.5%) than in Massachusetts (18.5%). Further detail on specific backgrounds is available in Appendix A, and a summary table of birth statistics is reported in Appendix B.

Data Note: The denominators used here are from the U.S. Census 2000 population. To the extent that the female population in the relevant age groups shifted during the period 2000-2004, this would produce slight differences in the birth rates, because if the population (and births) increases, the latter fact would be captured by the Vital Registry, but the underlying population shift would not be captured for the years beyond 2000, until the next census in 2010.

Births to Hispanic Mothers

The Birth Registry reports several subgroups of Hispanic-ethnicity mothers, including Puerto Rican, Dominican, Central American, and other Hispanic groups.

Figure 2: Origin of Hispanic Ethnicity Mothers, 2000-2004



Source: Mass-CHIP v3.00 r314, Massachusetts Department of Public Health

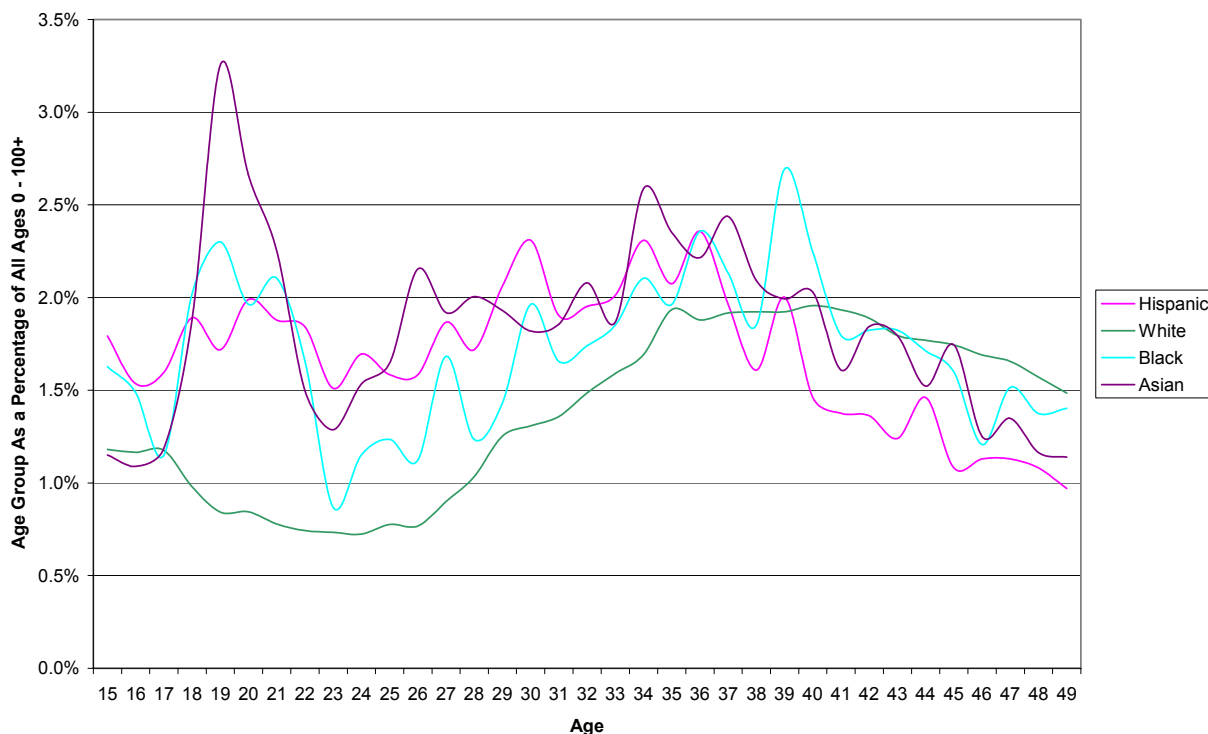
The ethnicity of the Hispanic mothers giving birth in MetroWest differs from the state as a whole. In the state, Puerto Rican and Dominican mothers combined make up almost two-thirds of the Hispanic births in the state; however, in MetroWest, these populations comprise slightly more than one-third of Hispanic births. Almost two in five births to Hispanic mothers in MetroWest were to mothers in the “Other and unknown” Hispanic category.

Female Age Distributions in MetroWest

The interpretation of race and ethnicity differences in birth counts and rates must take into account the differing age distributions of women who are of child-bearing age. For example, Hispanic birth counts in the younger age ranges are large relative to those in older age ranges, in contrast to the White, non-Hispanic population. But this statistic could occur for two different reasons:

(1) Hispanic women tend to give birth at a younger age than White, non-Hispanics, or (2) more Hispanics are “at risk” for giving birth because Hispanic females have a younger age distribution than White, non-Hispanics. Either or both of these factors could be implicated in the birth-count patterns.

Figure 3: Female Age Distribution (Smoothed), MetroWest, 2000



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Figure 3 illustrates the large differences in age distributions for MetroWest Hispanic, White, Black, and Asian females of reproductive age. White, non-Hispanic women are much older than Black, non-Hispanic; Asian, non-Hispanic; and Hispanic women. The “spike” in Asian women in the age range 17-22 is due almost entirely to the large number of young Asian women in Wellesley—students at Wellesley College. These differences in age distribution require the calculation and presentation of age-specific birth rates, rather than crude rates that might overstate the birth rates for younger populations.

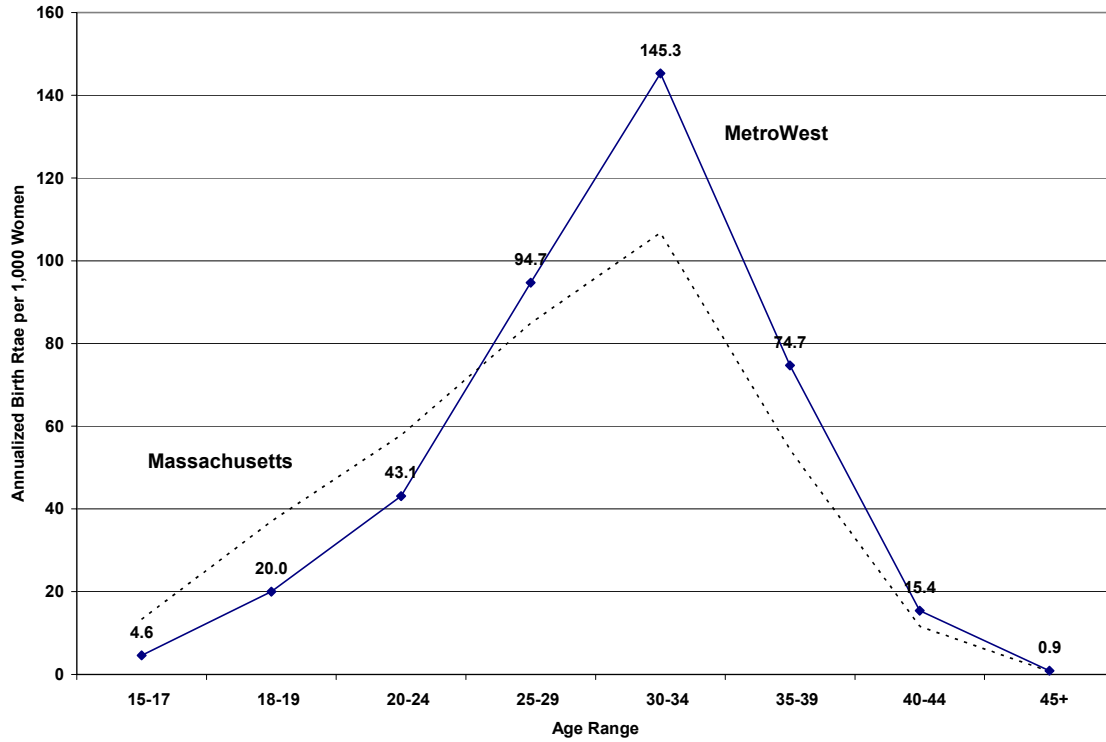
So that the differences in age distribution can be “discounted” in the analysis of birth patterns, we use age-specific birth rates for each group. We have calculated MetroWest and Massachusetts rates for age groups <15, 15-17, 18-19, 20-25, 25-29, 30-34, 35-39, 40-44, and 45-49, based on the Census 2000 denominators and the 2000-2004 births. These are standard age categories used by the Massachusetts Vital Records and Statistics Registry and the Federal government for reporting birth rates. A very small number of births (7) to teens under 15 in MetroWest occurred in 2000-2004, all to residents of Framingham, Marlborough, Natick, and Milford. Given their small number, these births have been dropped from further statistical analysis.

Age-Specific Birth Rates

MetroWest birth rates, overall, are slightly higher than for Massachusetts as a whole, as illustrated in Figure 4. The annualized 2000-2004 rate per 1,000 women is 54.8 for MetroWest and 48.4 for Massachusetts. However, the overall rates obscure a dramatic difference in the age distribution of the mothers. For ages 15-24, MetroWest rates are lower than for Massachusetts as a whole, while for

ages 25-49, MetroWest rates are higher. This pattern may reflect a postponement of child-bearing for women of higher education and income levels—characteristics of those who reside in MetroWest—in comparison with Massachusetts.

Figure 4: Age-Specific Birth Rates, MetroWest and Massachusetts, 2000-2004



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Birthplace of Mother

A mother’s place of birth, taken from Massachusetts birth certificates, may have implications for the interpretation of birth data including—in a later section—the adequacy of prenatal care.

Table 3: Percent of Births 2000-2004 by Race/Ethnicity and Birthplace of Mother

Race/Ethnicity	Birthplace of Mother	Age Range			
		15-19	20-24	25-34	35 and up
White, NH	50 States	79.4	70.4	87.3	90.3
	PR	0.0	0.4	0.1	0.1
	Other	20.6	29.1	12.6	9.6
Black, NH	50 States	78.3	63.2	35.7	43.5
	PR	NA	NA	0.0	0.0
	Other	NA	35.3	64.3	56.6
Hispanic	50 States	35.0	27.4	22.7	15.7
	PR	24.8	14.6	9.6	13.2
	Other	40.1	58.0	67.7	71.1
Asian, NH	50 States	40.0	6.1	10.2	17.2
	PR	0.0	NA	NA	0.0
	Other	60.0	93.9	89.4	82.6

NA indicates data not available due to suppression of small counts; NH indicates non-Hispanic; PR indicates Puerto Rico.

Data Notes: (1) Table 3 captures only a part of the Brazilian population, since many Brazilians identify as “other race, non-Hispanic.” Other Brazilians identify as “White, non-Hispanic” and are in Table 3. (2) Some groups may not total 100% due to unknown birthplace being deleted from Table 3, or due to data suppression.

The data in Table 3 illustrate that the population of Asian and Hispanic mothers in MetroWest is by far the most likely to have been born outside the 50 states. The influence of changes in the immigration laws, particularly those targeted to refugees and those with special occupational skills, must be considered in examining the race and ethnicity background and economic status of immigrants, especially in the suburban areas.¹

Black mothers in the older age ranges tend to be born outside the United States whereas younger mothers are likely to have been born in the continental U.S. White mothers in the younger age ranges are more likely to be born *outside* the U.S. than are older White mothers, in contrast to the pattern among Black mothers. This situation may represent recent immigration trends, e.g., an influx of young Brazilian or Russian women.

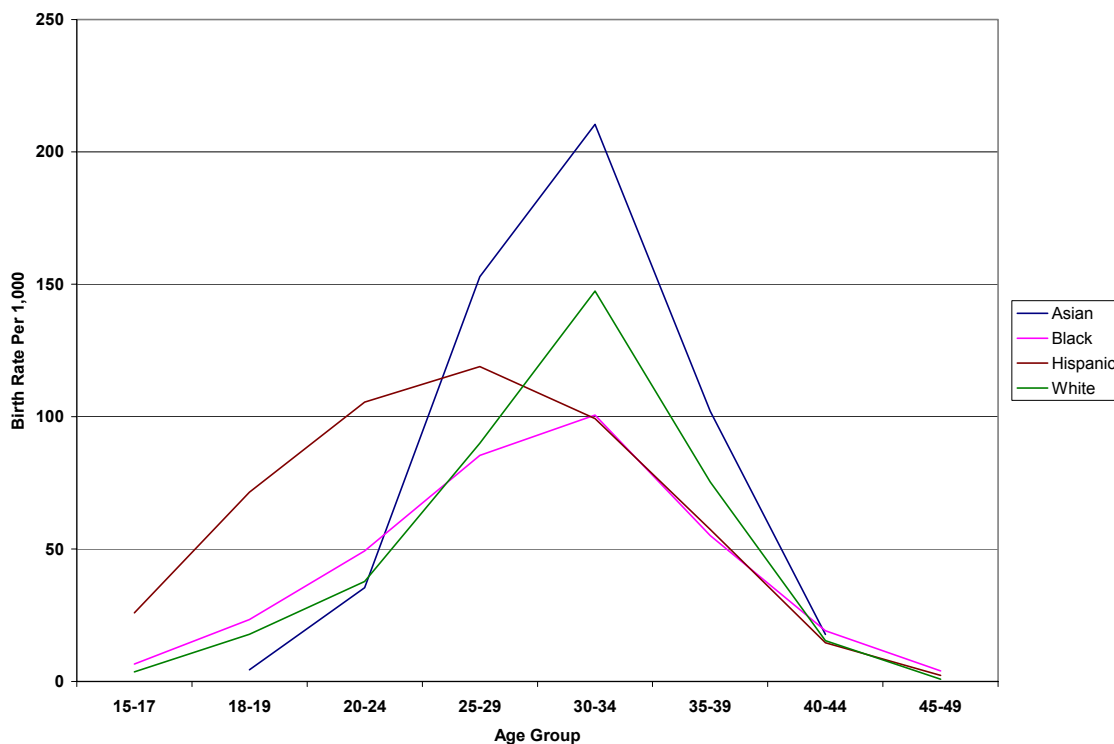
Hispanic mothers in the older age range tend to be born *outside* the continental U.S. or Puerto Rico (71.1%), in contrast to younger Hispanic mothers, who are less likely (40.1%) to be born outside the continental U.S. or Puerto Rico.

Age-Specific Birth Rates by Race and Ethnicity

There are highly significant differences in age distribution that contribute to the crude rate patterns in Table 2 principally, MetroWest Asian and Hispanic women of child-bearing age are considerably younger than White women of child-bearing age, as we saw in Figure 3.²

Figure 5 clarifies the differences in birth rates by race and ethnicity group. The White, Black, and Asian groups have very low birth rates until age 25-29, and each of these groups peaks in the age group 30-34. Hispanics show a very different pattern, with the highest group birth rates for age ranges 15-17, 18-19, and 20-24. In fact, the Hispanic rates peak at 25-29 and then decline. These differences in age distribution have implications for programming around pregnancy and birth. One could argue that the Black, Asian, and White rates in MetroWest show a *postponement of birth*, possibly for educational or economic reasons, or alternatively, that the Hispanic rates show *early birth*, perhaps due to other cultural or life circumstances. This phenomenon is of special concern in the youngest age groups, 15-17 and 18-19; many of these young women have not attained an educational level that could help them become economically self-sufficient.

Figure 5: MetroWest Birth Rates, by Age and Race/Ethnicity



Data Note: Asian birth counts for ages 15-17 and 45-49 are extremely small and are suppressed by the Massachusetts Department of Public Health.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Births to Brazilian Mothers

While population data is inadequate to determine true birth rates for Brazilian women, it is possible to determine their counts and what percentage of births were to teen mothers.

Table 4 indicates a substantial number of Brazilian births in MetroWest (1,731 over the period 2000-2004). Of these, 5.8 percent were births to teenagers. Most Brazilian births are accounted for by two communities—Framingham and Marlborough—and a smaller number in Milford.

Table 4: Births to Brazilian Mothers in MetroWest and Massachusetts, 2000-2004

Region	Births to All	Births to Teens
Eastern	84	NA
NorthWest	1,392	80
SouthWest	285	NA
Commercial	1640	95
Residential	91	5
MetroWest	1,731	100
Peers	410	20
State	7,321	415
Framingham	864	53
Marlborough	359	20

NA indicates data not available, due to suppression of small counts.

Source: Massachusetts Registry of Vital Records and Statistics

Data Notes: (1) Small counts of Brazilian teen births in the Eastern and SouthWest regions of MetroWest have resulted in suppression of these data. (2) There is a distinction in the data sets between the categories “Other Portuguese and Brazilian” and “Brazilian.” The standard tables in MassCHIP report “Other Portuguese and Brazilian.” Special requests to the Birth Registry have resulted in data for the more precise category: Brazilian.

Teen Births

Social consequences of teen birth

The discussion in the 2005 *MetroWest Health Data Book and Atlas* of the problems associated with teen birth is unchanged.

Teenage childbearing is a serious problem that affects the outcomes of the children and the mothers. Infants of adolescent mothers are more likely to face adverse health outcomes, including low birthweight, pre-term birth, and infant mortality. In addition to the effects on health, teenage childbearing has profound social and economic consequences.

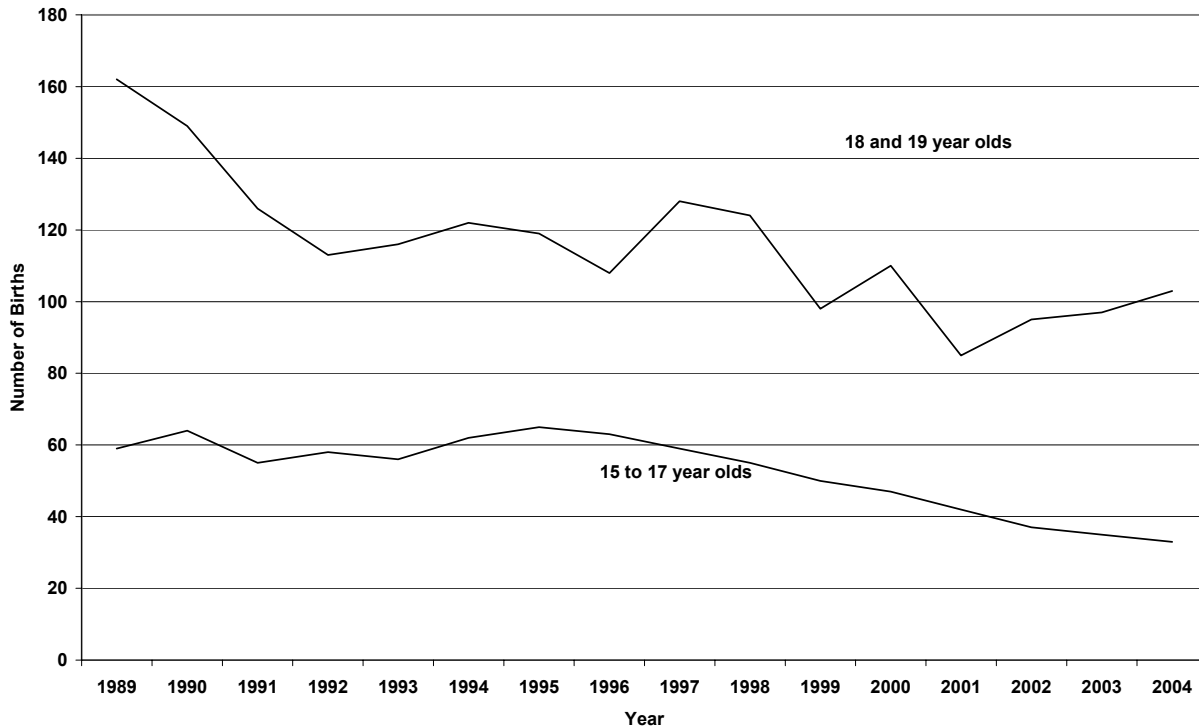
These effects are especially serious for women under age 18 who give birth, because most of them are unmarried and have not completed high school. Eight to 12 years after birth, a child born to an unmarried teenage high-school dropout is 10 times more likely to be living in poverty than a child born to a mother with none of these three characteristics. Children born to single mothers are also much more likely to drop out of high school, have a child in their teens, and be neither employed nor in school in their late teens.

Teenage childbearing is associated with a number of other health risk behaviors, such as drinking and drug use.³

Trends and Comparisons

Teen (age 15-19) birth rates have declined significantly in the last decade at the national, state, and local levels. The teen rate in Massachusetts dropped from 35.1 per 1,000 in 1990 to 22.2 per 1,000 in 2004, a 37% decline.⁴ The comparable drop nationally was 61.8 per 1,000 in 1991 to 41.2 per 1,000 in 2004, a 33% decline.⁵ In 2004, the teen birth rate for MetroWest was lower still, at 10.2 per 1,000.⁶

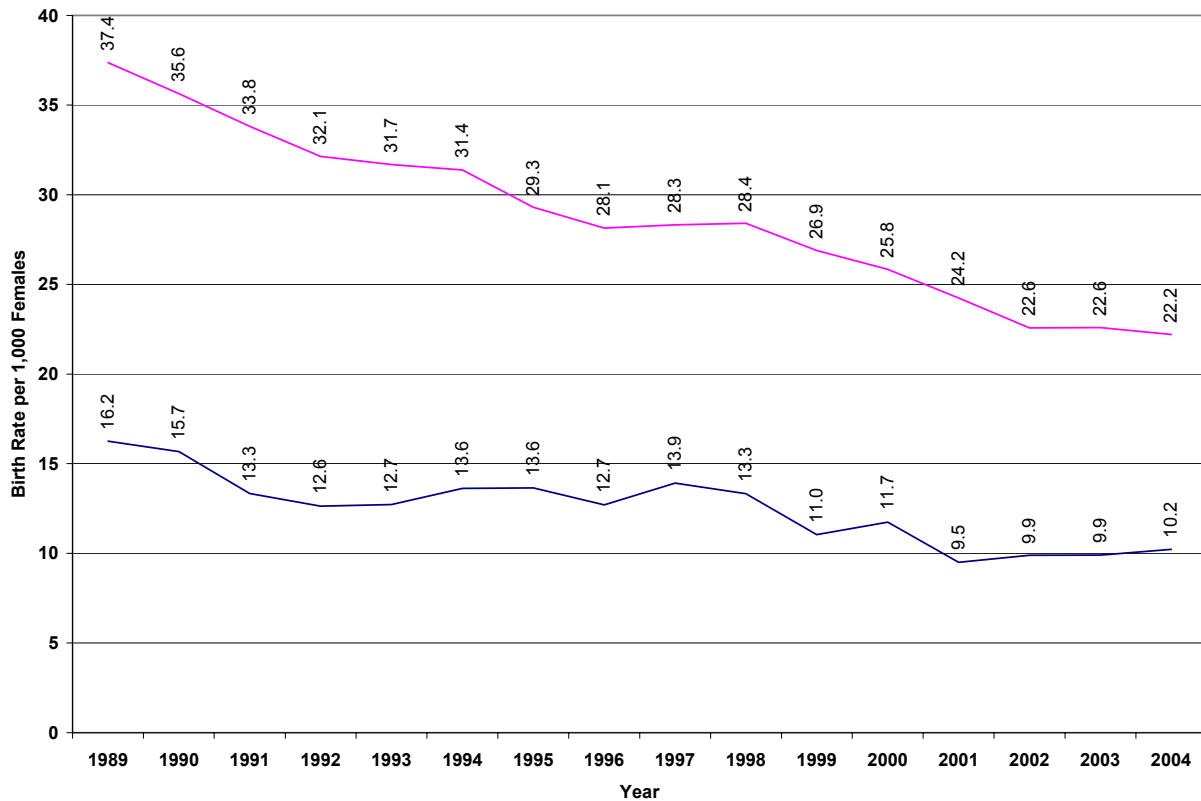
Figure 6: Number of Teen Births 15-17, 18-19, MetroWest 1989-2004



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Counts show some variation from year to year, but with a downward trend, although births to 18- and 19-year-olds show a slight trend upward since 2001. This finding is duplicated in the birth-rate data as shown in Figure 7. Overall, there were 634 births to MetroWest resident teens (15-19) in the period 2000-2004, for an average annual count of 127 per year.

Figure 7: Teen (15-19) Birth Rates, Massachusetts and MetroWest, 1989-2004



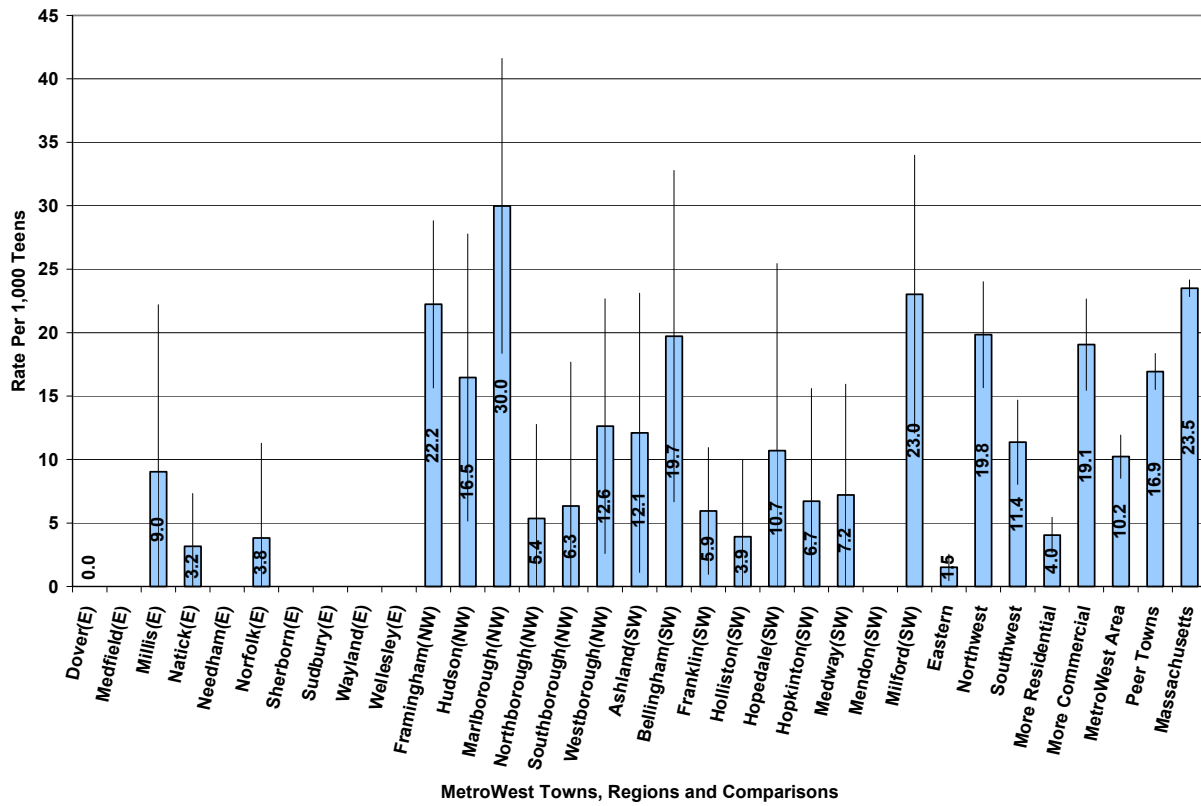
Data Note: Upper line is Massachusetts, lower line is MetroWest.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

The teen birth rate in the MetroWest area was significantly lower than the rate for Massachusetts—a very positive finding, as the state rate is also relatively low compared to that of the nation. However, the decline noted for the period from 1989 to 2001 seems to have leveled off since 2001, and a slight rise is now apparent for MetroWest while the comparable state rate has continued to decline slowly.

Data for individual MetroWest towns is reported in Figure 8, although the rates for many towns have been suppressed by the Vital Registry due to low counts. Marlborough, Framingham, and Milford are significantly above the MetroWest average.

Figure 8: MetroWest Teen (15-19) Births by Towns and Regions, 2000-2004

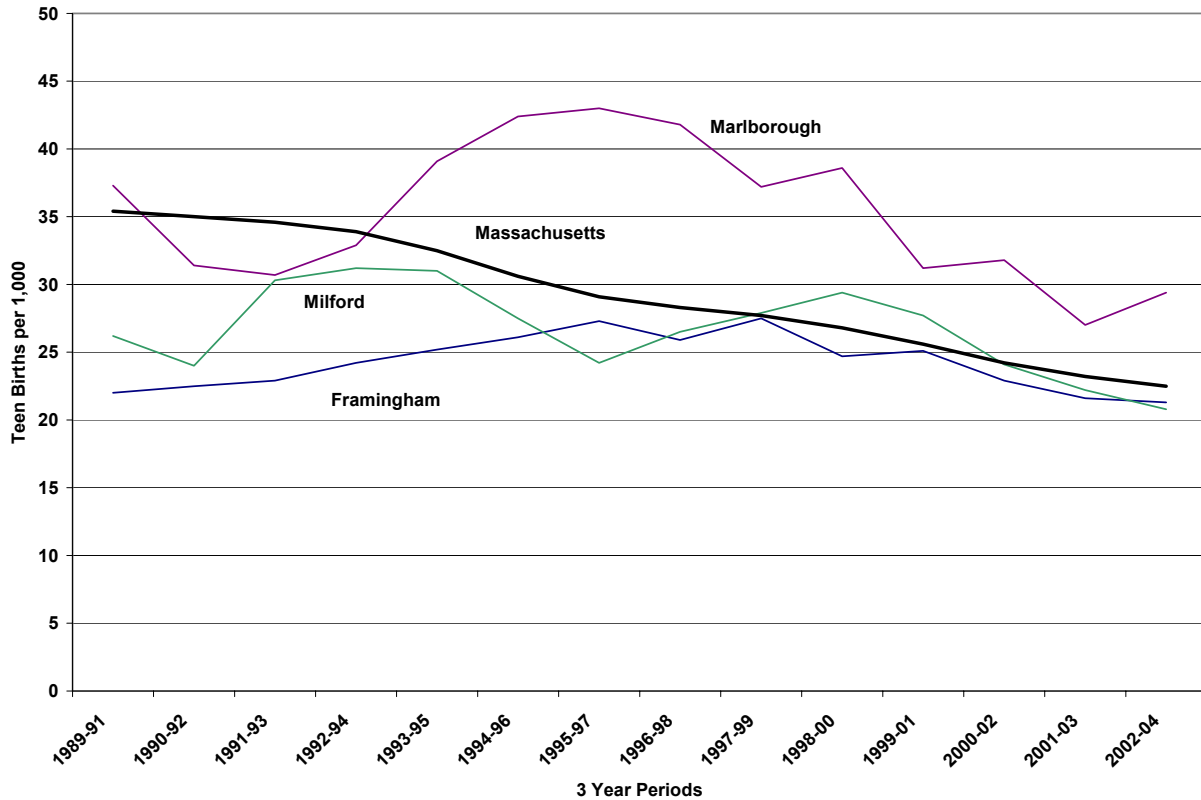


Data Note: Teen birth counts for Medfield, Sherborn, Sudbury, Wayland, Wellesley, and Mendon were suppressed due to low counts. Their counts appear in their sub-regions, however.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

The three communities in MetroWest that are significantly higher than the MetroWest average—Framingham, Marlborough and Milford—show different patterns over time, with Marlborough consistently above the Massachusetts average and Framingham consistently below, as shown in Figure 9. However, the rate has been declining rapidly in Marlborough in recent years so that the 2004 rate (25.4 per 1,000) is now close to the state rate for 2004 (22.1 per 1,000).

Figure 9: Teen (15-19) Birth Rates, Three-Year Moving Averages, 1989-2004, Framingham, Marlborough, Milford and Massachusetts



Data Note: Three-year “moving averages” are used to smooth out the excessive variation from year to year.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Teen Birth Key Issues

Before planning interventions for teens, it is necessary to know details about race and ethnicity, parity, marriage, paternity acknowledgment, prenatal care, and other factors addressed in subsequent sections. Specifically, the following questions are pertinent:

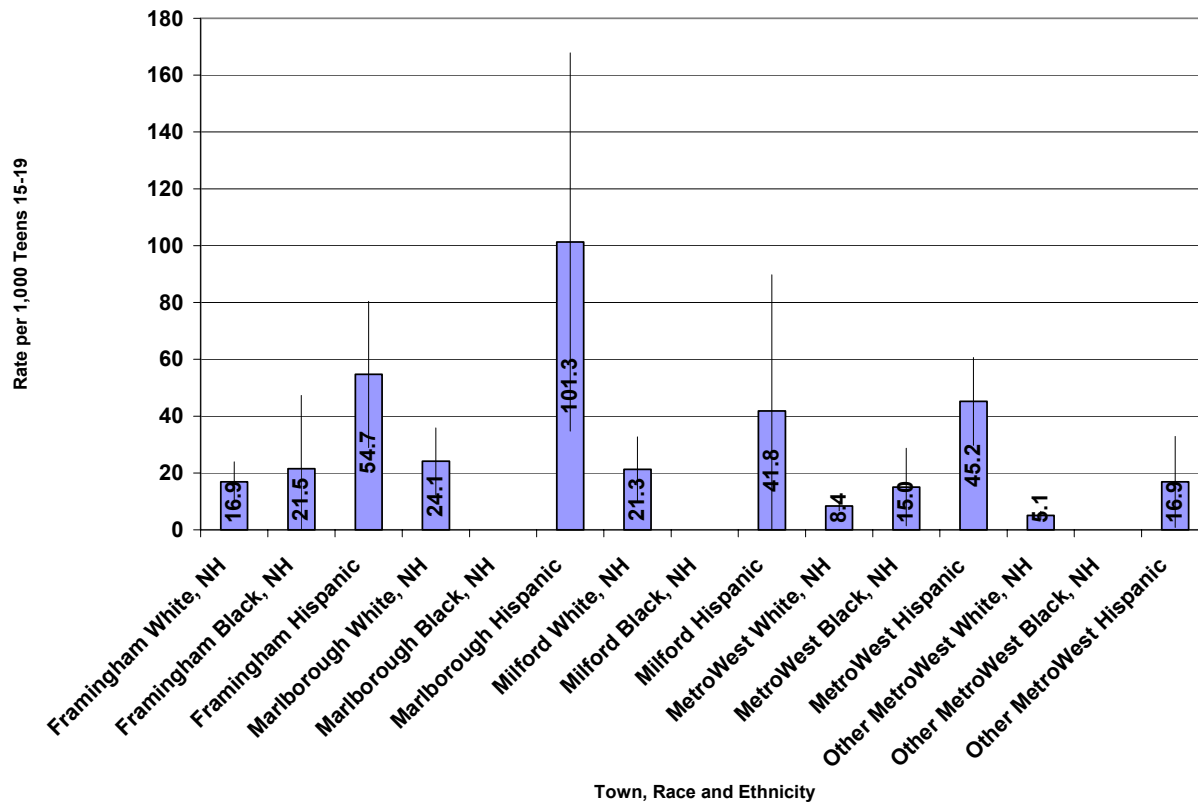
- To what extent does the label “Hispanic” represent too broad a brush that might hide important differences in birth rates for young women? For example, differing social networks and norms between Puerto Rican and non-Puerto Rican Hispanic populations might necessitate programs tailored to specific groups.
- To what extent do the birth rates for young women represent repeat births—that is, two births in rapid succession with a short interbirth interval?

- To what extent do the birth rates for young women represent unmarried births, or births for which paternity is not acknowledged, which put young women at risk for a lifetime of poverty and the potential risk of intergenerational poverty?
- To what extent does the birth process for young women take place in a context of inadequate prenatal care?
- Who are the service providers providing prenatal care for young women?

Teen Birth in Framingham, Marlborough, and Milford

In Framingham, Marlborough, and Milford, teen birth rates are significantly above the MetroWest average. A close look at these births, as shown in Figure 10, reveals that the principal factor driving the higher overall teen rates in Framingham and Milford is the higher rate of births for Hispanic teens than for White, non-Hispanic teens in these communities, coupled with a significant Hispanic teen population. The other factor driving the overall teen rates in Framingham and Milford is that White, non-Hispanic rates are *also* elevated significantly in these towns. As Figure 10 indicates, the *White*, non-Hispanic rates are significantly lower in MetroWest, once Framingham, Marlborough, and Milford are taken out of the data. The rates also decrease for MetroWest Hispanic births. Thus, one must conclude that something about the “context” of these communities drives higher teen birth rates, particularly (in the case of Framingham and Marlborough) Hispanic teen birth rates, and that “something” might be amenable to intervention.

Figure 10: Teen Birth Rates in Framingham, Marlborough, and Milford, by Race and Ethnicity, 2000-2004



Data Note: Data for Black teens in Marlborough and Milford and for Asian teens in all three towns was suppressed due to small counts.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Unfortunately, town- and age-specific population data for the Puerto Rican Hispanic teen population does not exist to further analyze the Puerto Rican versus non-Puerto Rican population birth rates in the three key communities. Percentages of births only are available. In the five-year period 2000-2004, of 82 Hispanic births in Framingham, 51 (62.2%) were to teens of Puerto Rican ethnicity; of 40 births in Milford, 15 (37.5%) were to teens of Puerto Rican ethnicity; and of 14 births in Milford, 10 (71.4%) were to teens of Puerto Rican ethnicity. The source of these differences in birth counts is unknown; it could be the underlying teen population sizes, or differential birth rates.

Teen Birth Parity

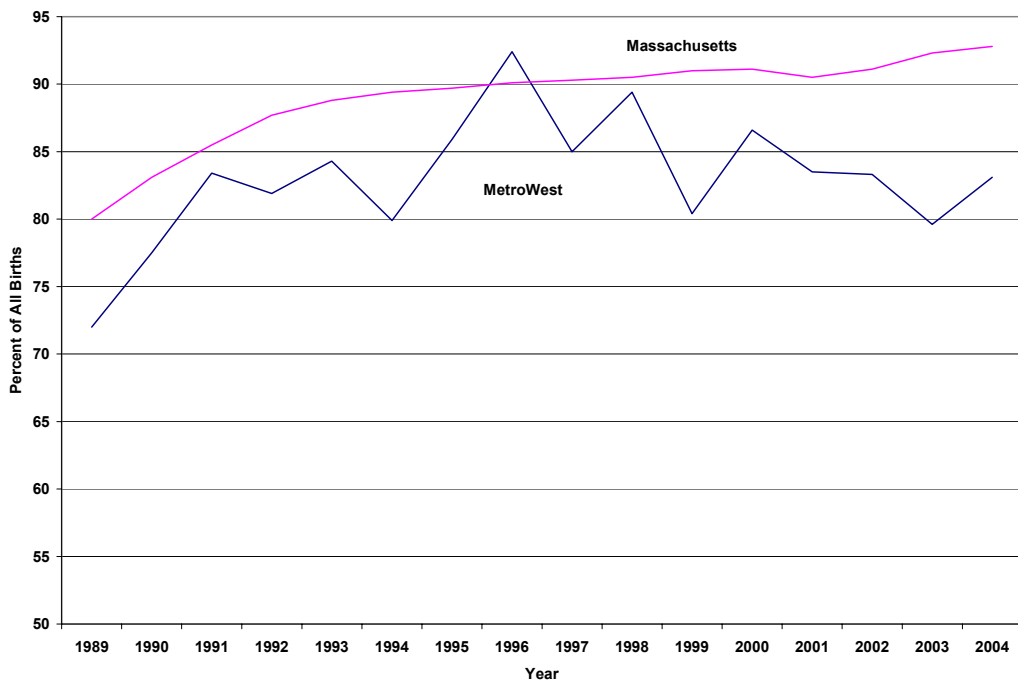
A factor exacerbating the problem of teen birth is that of parity. A significant number of teens, particularly those who are Hispanic, give birth a second time before age 20. Of births to Hispanic 15- to 17-year-olds, 9.6% are a second birth. Of births to Hispanic 18- to 19-year-olds, fully 31.4% are a second birth. Thus, a very significant portion of the higher birth rates among Hispanic teens is a consequence of second births. In contrast, for White, non-Hispanic teens age 15 to 17, 4.5% of

births are second births, and among 18- to 19-year-olds, 13.6% are second births. Asian and Black teen parity counts are too low in number to provide reliable estimates.

Teen Birth and Marriage

Teen birth has negative consequences, particularly in the absence of marriage or other supportive partnership. The topic of birth and marriage is discussed broadly in the next section. Figure 11 illustrates that lack of marriage is an increasing problem for teen mothers in Massachusetts: the birth rate for unmarried teens has been more than 90% in each year in the past decade, and is a significant problem in MetroWest at more than 80% for most years since 1991.

Figure 11: Percent of Teen (15-19) Births to Unmarried Mothers, 1989-2004, MetroWest and Massachusetts



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

The topic of teen marriage and birth is part of a broader discussion of the social and health care context of birth.

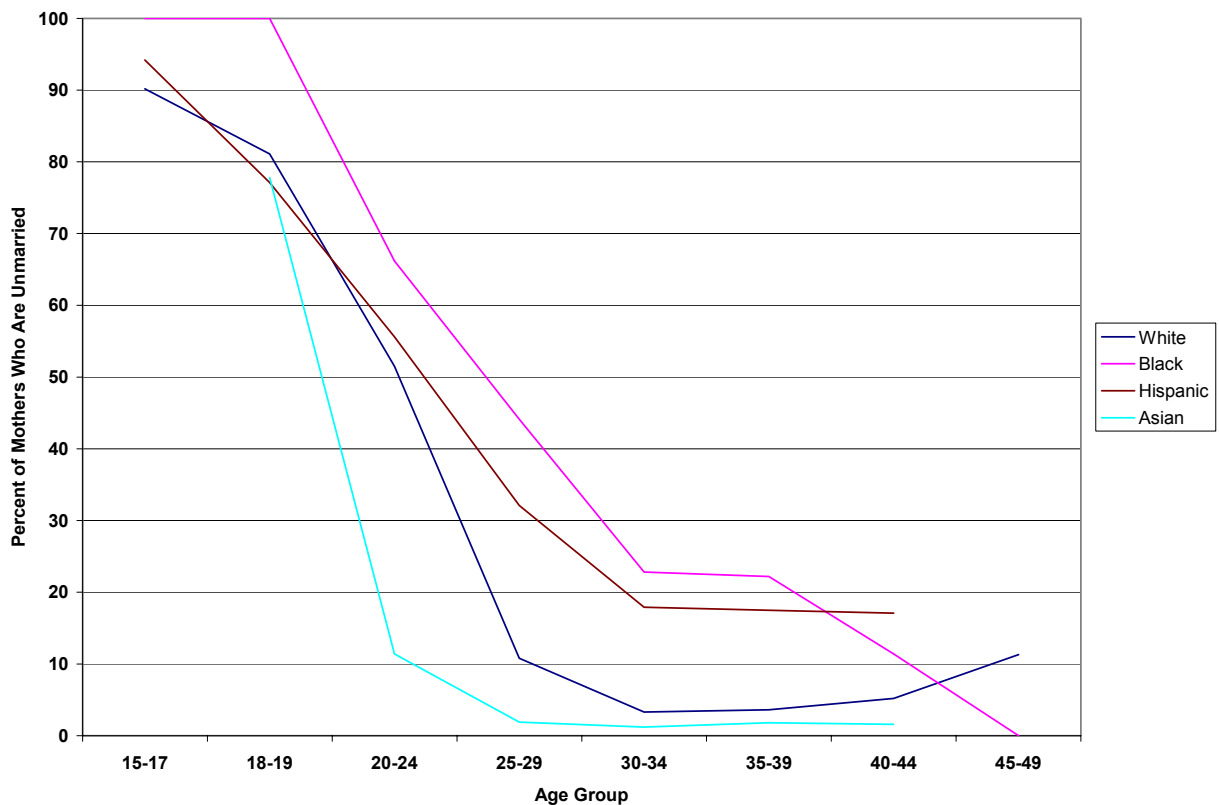
The Social and Health Care Context of Birth

Marriage and Birth

Research has indicated that pregnancy and birth in the teen years, without a high school diploma and without marriage, vastly increases the probability of a lifetime of poverty—sometimes reaching into successive generations. On the whole, the percentage of births to unmarried teens has been lower in MetroWest than in Massachusetts, though both rates are still above 80%. Therefore, it is of critical

interest to determine the patterns as well as the rate of marriage associated with childbirth. The data indicate that the “broad brush” approach to race and ethnicity differences does not tell the whole story. For each race and ethnicity group, the percentage of unmarried mothers plummets with age, and race and ethnicity differences remain at each age level. The rate of unmarried Asian mothers drops to 10% and under after age 20. The rate of unmarried White mothers drops to a similar point, but only after age 25. By age 30, the rate of unmarried Black and Hispanic mothers drops to approximately 20%, and the rate of unmarried Black mothers continues to decline. Thus, the key groups to be concerned about are Black and Hispanic teens, but especially Hispanic teens, due to the high level of unmarried Hispanic teens giving birth, and the relatively high level who are giving birth for the second time (see section on parity). Thus, further study about the dynamics of pregnancy and birth and possible interventions for Hispanic teens, particularly among those who have already given birth once, would be indicated.

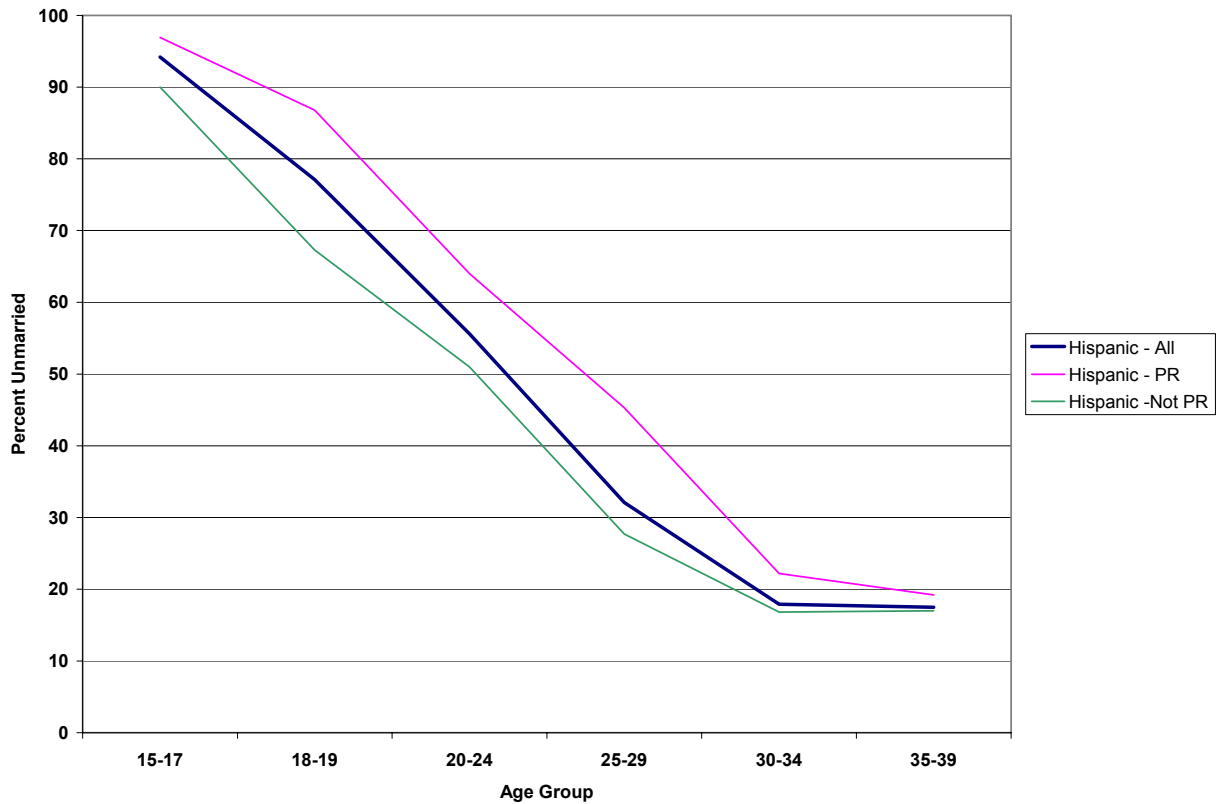
Figure 12: Percent of Births to Unmarried Mothers, by Age and Race/Ethnicity, MetroWest 2000-2004



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Data Notes: The pattern in Figure 12 could reflect generational differences, or different patterns of unmarried and married women migrating to or from MetroWest. Current data do not permit analysis to separate out these factors. Rates for Asian women ages 15-17 and 45 and over, and for Hispanic women 45 and over, are suppressed in the data reports, due to small counts.

Figure 13: MetroWest Puerto Rican and non-Puerto Rican Percent of Births to Unmarried Mothers, 2000-2004



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

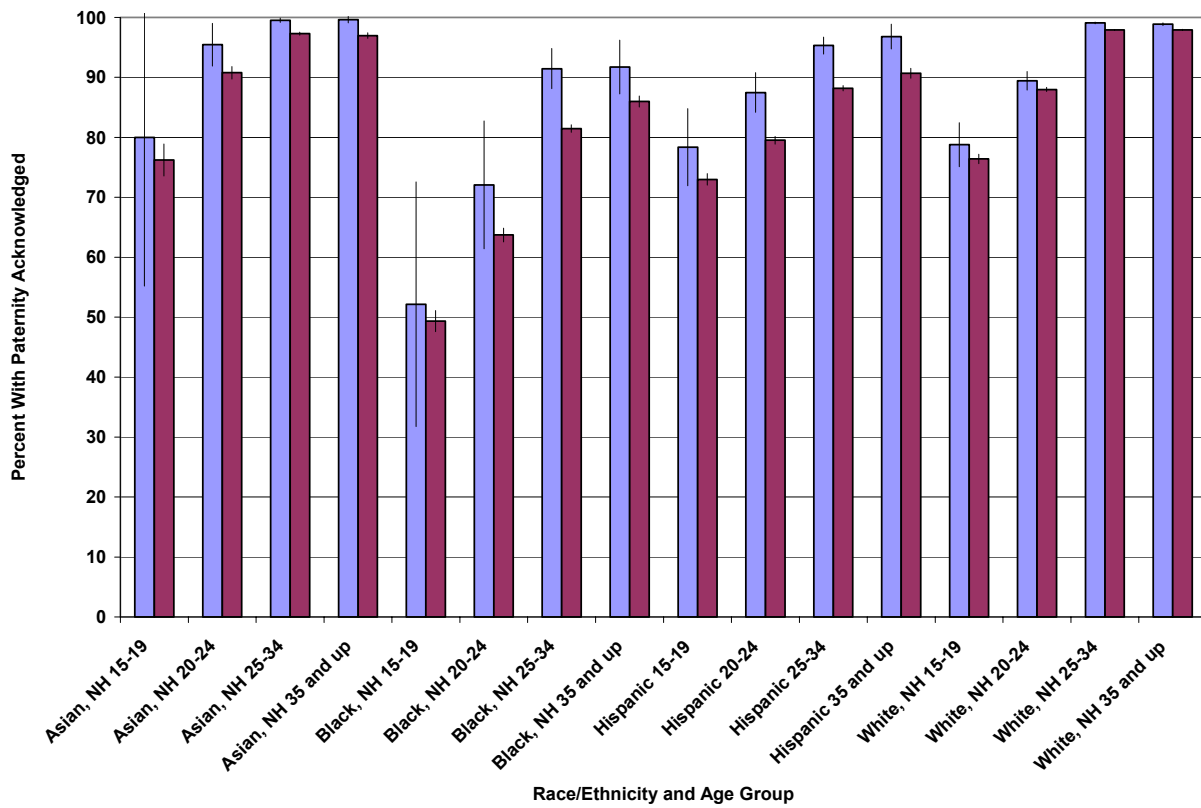
Figure 13 shows that the “broad brush” approach to analysis does not work well for Hispanic births, since there are significant differences between unmarried Puerto Rican mothers and unmarried non-Puerto Rican Hispanic mothers. At each age level, a larger percentage of births to Puerto Rican mothers are to unmarried women than is true for non-Puerto Rican Hispanic mothers. These differences are minimal in the oldest age group available for examination, 35- to 39-year-olds.

Paternity Acknowledgment

Related to marriage is the problem of paternity acknowledgment. Recognizing that it often takes more than one adult to “raise” a child, paternity acknowledgment is an important aspect of fertility. Without such acknowledgment, a family’s financial resources may be strained, and a lifetime of poverty more likely. In addition, paternity acknowledgment may be of psychological importance for child development.⁷

Significant disparities in paternity acknowledgment by age and race are presented in Figure 14.

Figure 14: Percent of Births With Paternity Acknowledgment, by Age, Race, and Ethnicity



Data Note: The first bar in each pair is MetroWest; the second bar is Massachusetts.

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

The results for paternity acknowledgment show several distinct patterns: First, there is increasing acknowledgment up to age 25. Second, the paternity acknowledgment rate is slightly higher in MetroWest than it is in Massachusetts as a whole. Third, paternity acknowledgment may be a “leading indicator” of relationship stability, since increases in paternity acknowledgment come earlier in age than does marriage. Finally, there are systematic race and ethnicity differences: Asian women are most likely to list paternity, followed by White, Hispanic, and Black women. It is of special concern that Black teen paternity acknowledgment is so low (about 50%), for both Massachusetts and MetroWest. This low rate suggests both problems in family formation for the future of these teens and the possibility of their having been sexually victimized, as has been indicated by Joycelyn Elders, former Surgeon General of the United States.⁸

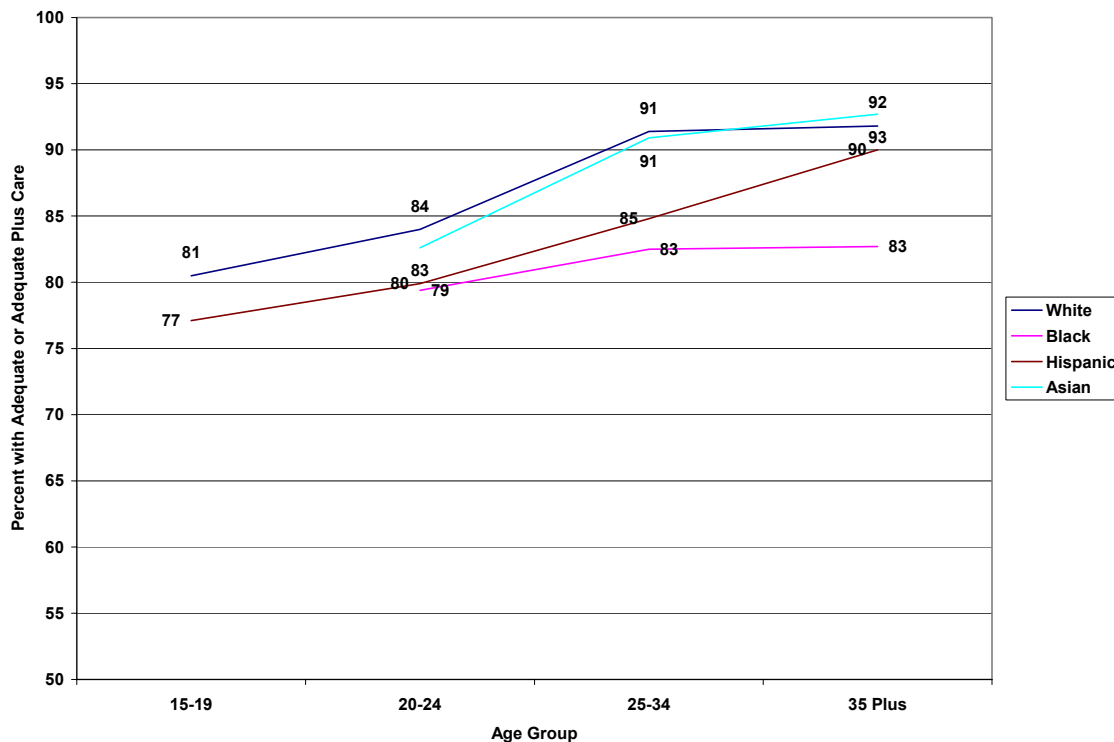
Smoking During Pregnancy

Smoking during pregnancy has many negative effects necessitating specific warnings for pregnant women on cigarette packs. Smoking during pregnancy is relatively rare for MetroWest mothers (3.9%), while for Massachusetts mothers the rate is 8.4% and for the United States as a whole it is 10.2%.

Prenatal Care Adequacy

A key indicator, with implications for intervention, is that of prenatal care. The “Kotelchuk Index” was developed to measure the adequacy of prenatal care, and is described in more detail in the 2005 *MetroWest Data Book and Atlas*. The two highest levels of care are called “adequate” and “adequate intensive” (in some reports called “adequate plus”). The proportion of mothers in MetroWest with at least adequate prenatal care has been consistently higher than that of the state as a whole. In 2000-2004, 90.2% of MetroWest mothers received at least adequate care, compared to 83.4% statewide. These figures vary widely by subgroup, however, as can be seen in Figure 15, which shows the change in adequacy of prenatal care with age.

Figure 15: Percent of Women with Adequate or “Adequate Intensive” Prenatal Care, by Race/Ethnicity, 2000-2004



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Data Note: Black and Asian births in the 15-19 year age range were too few to provide reliable estimates.

In the 20-24 year age range there were no significant race and ethnicity differences. For the age group 25-34 White and Asian mothers had significantly more adequate or adequate plus care than Black and Hispanic mothers, a pattern continuing for Black mothers in the age group 35 and over.

The interpretation of such differences is somewhat problematic, since the calculation of the rates takes into account when prenatal care was started, and the degree to which it is sustained. Thus,

newcomers to the MetroWest area may have received less than adequate care from outside the area, or even outside the country. Data on the initiation of prenatal care is presented in the next section.

Data Notes on location of birth and prenatal care: Inadequacy of prenatal care among residents of MetroWest does not imply inadequacy of care for women giving birth *in* MetroWest birthing hospitals. For example, births to MetroWest resident teen mothers at MetroWest Medical Center take place in a context of a possibly higher level of prenatal care than those births taking place in non-MetroWest Medical Center settings. Of 369 births at MetroWest Medical Center whose prenatal care status is known, 83.2% received adequate or adequate intensive prenatal care. Of 309 births to MetroWest resident teen mothers using non-MetroWest Medical Center hospitals, 75.1% received adequate or adequate intensive care. The difference is borderline statistically significant.

Prenatal Care in the First Trimester

The Kotelchuk Index includes the extent to which prenatal care was initiated in the first trimester of pregnancy. Such care was provided in 90.9% of cases in MetroWest (2000-2004), as compared with 83.1% in Massachusetts (2000-2004) and 83.9% in the United States (2004).

Prenatal Care Providers

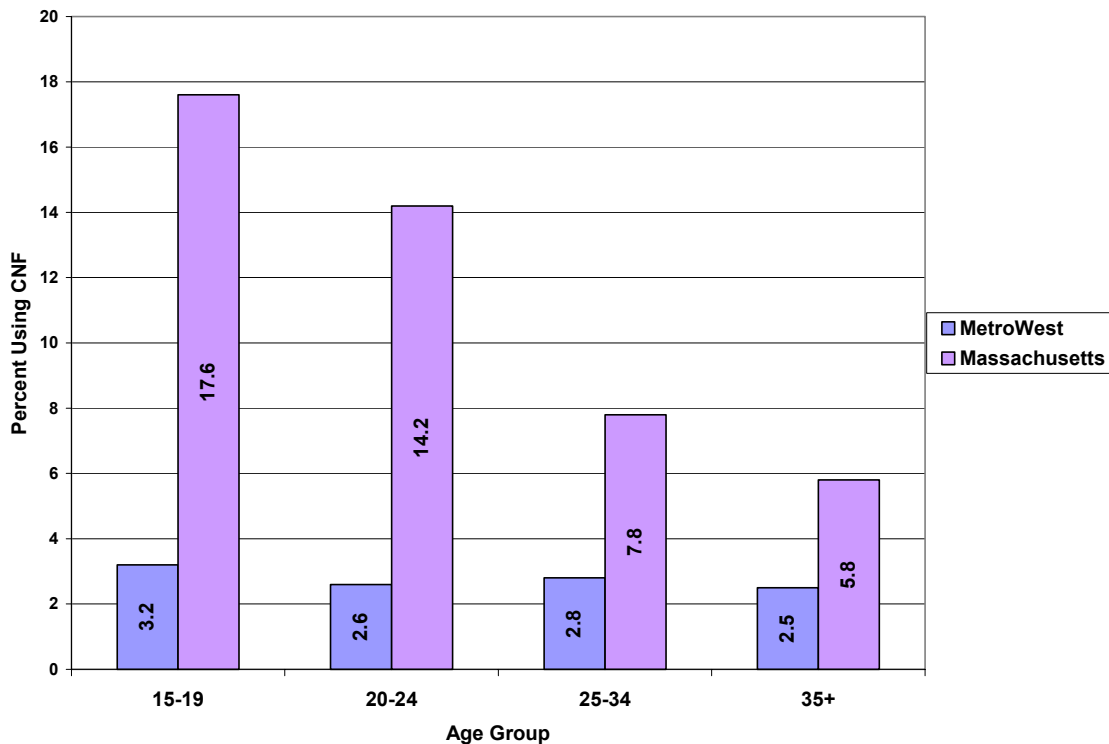
The Vital Statistics Registry reports data on the providers of prenatal care. Results in Table 5 indicate small race/ethnicity differences in the percentages receiving care from an MD/DO.

Table 5: Percent Receiving Prenatal Care from an MD/DO

Race/Ethnicity	15-19	20-24	25-34	35+
White, NH	93.5	95.6	95.5	95.7
Black, NH	95.7	97.1	94.1	98.6
Hispanic	97.5	95.6	96.5	96.1
Asian, NH	90.0	97.0	97.8	97.5
All Other	88.9	93.3	91.6	80.5

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health
 NH indicates non-Hispanic.

Figure 16: Percent of Mothers Using Certified Nurse Midwife for Prenatal Care, MetroWest and Massachusetts, 2000-2004



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Certified nurse midwives (CNM) play a significant role in the provision of prenatal care in Massachusetts; 9% of mothers report that they received their prenatal care from a CNM from 2000-2004. However, only 3% of mothers in MetroWest relied on a midwife for their prenatal care. The age-specific differences are seen even more clearly in Figure 16. The greatest differences are among younger mothers, about 1 in 6 of whom rely on a CNM in Massachusetts compared to about 1 in 30 in MetroWest.

Prenatal Care Sites

The heavier MetroWest reliance on physicians noted above may also be reflected in a greater likelihood of receiving prenatal care in a private office. Mothers in MetroWest (87%) were far more likely than mothers statewide (73%) to receive their prenatal care from a private office. This difference is consistent across all age and race/ethnicity groups, but particularly pronounced among younger, non-White mothers. For example, among teen mothers, only 33% of Black, non-Hispanic, 38% of Hispanic, and 43% of Asian mothers in Massachusetts received their prenatal care in a private office, while in MetroWest the comparable figures for teens were 83% (Black, non-Hispanic), 84% (Hispanic) and 90% (Asian).

Table 6: Percent Receiving Prenatal Care in a Private Office, MetroWest, 2000-2004, By Age

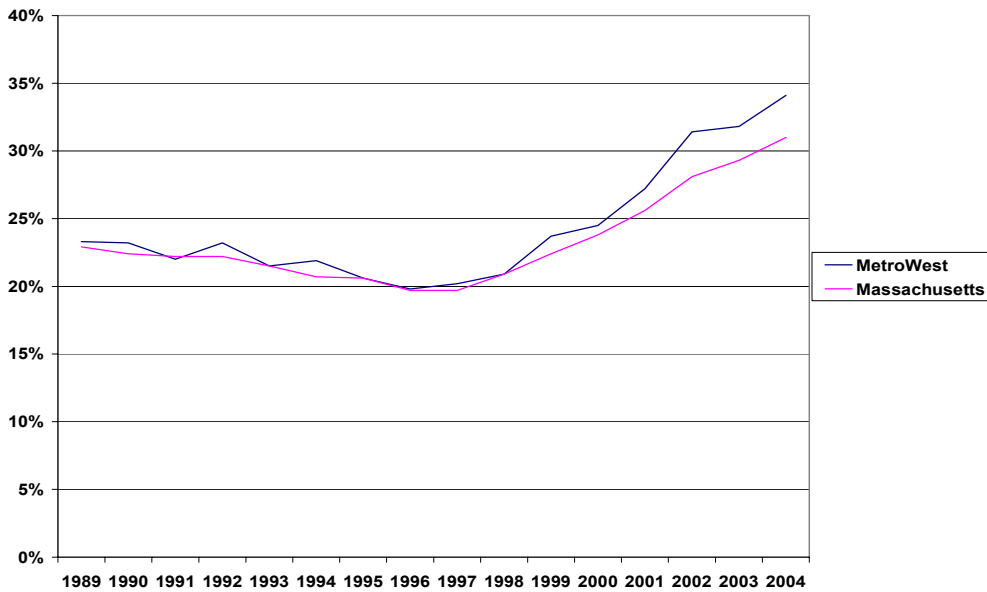
Race/Ethnicity	Age 15-19	Age 20-24	Age 25-34	Age 35+
White, NH	88.2	90.4	90.0	89.4
Black, NH	82.4	77.8	79.1	85.3
Hispanic	82.8	85.9	87.7	88.7
Asian, NH	100.0	90.7	92.8	83.7
All Other	66.7	84.1	83.9	86.1

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health
 NH indicates non-Hispanic.

Caesarean Delivery

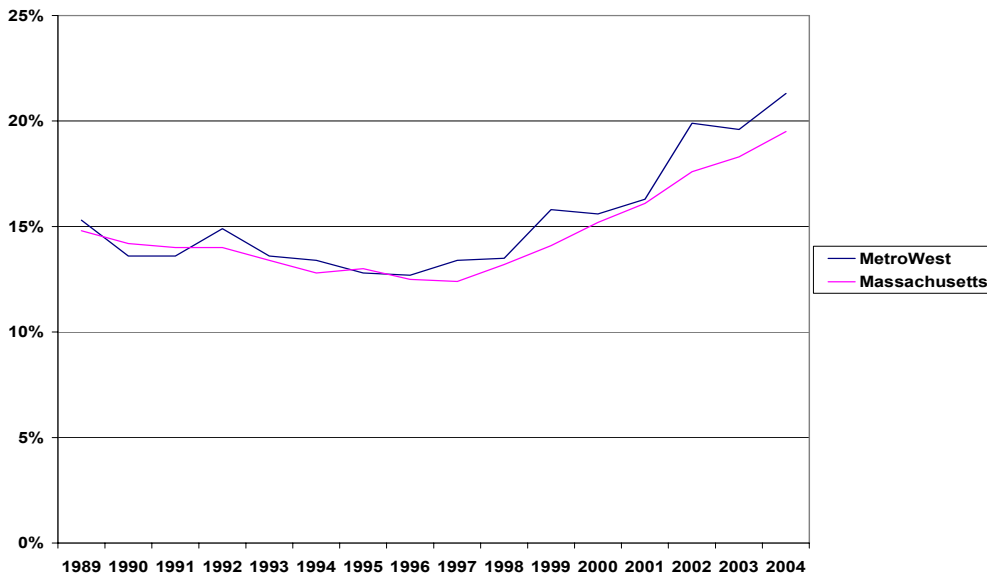
The rising rate of caesarean deliveries has garnered a great deal of attention, including a recent NIH-sponsored conference on the topic.⁹ Nationally the rate has risen since 1996 to a record high of 29.1% in 2004. Massachusetts' rates have been rising even faster, reaching 31.0% in 2004. In MetroWest, the 2004 rate was 34.1%, a significant increase from 1996, when the rate was 19.8%. The rising rate is partly the result of an increase in primary (first-time) caesareans. Repeat caesareans have also rapidly increased to the point where 91.4% of birthing MetroWest mothers with a prior caesarean repeated the surgery in 2004. This figure is up from 67% as recently as 1998. Key issues are the frequency of caesarean delivery where it may not be needed; and the recent shift back to repeat caesareans for virtually all mothers with a prior caesarean. Figure 17 presents the trends over time in caesarean births in Massachusetts and MetroWest. The rates are largely comparable until 1998 when the MetroWest rate begins to climb at a faster rate than the statewide rate. It has been argued by the American College of Obstetrics and Gynecology that comparisons of overall rates are problematic and that such analyses should be limited to mothers characterized as "low risk"—with full-term (37+ weeks) singleton births to babies presenting in a vertex (head-down) position.¹⁰ Our data allow us to apply two of these criteria. Figure 18 displays the historical trend in percentage of primary caesareans to mothers with full-term singleton births, and the pattern remains largely the same. We examined the rates by age. Percentages of caesareans for mothers from MetroWest were higher for older mothers than for younger mothers, as shown in Table 7.

Figure 17: Caesarean Percent of All Births, 1989-2004



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Figure 18: Primary Caesarean Percent for Lower-Risk* Mothers, 1989-2004



* Full-term (37+ weeks) singleton births

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Table 7: Caesarean Percent by Age, 2000-2004

	Age <30	Age 30-34	Age 35+
MetroWest	28.4	34.3	38.4
Massachusetts	25.0	32.8	39.1

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

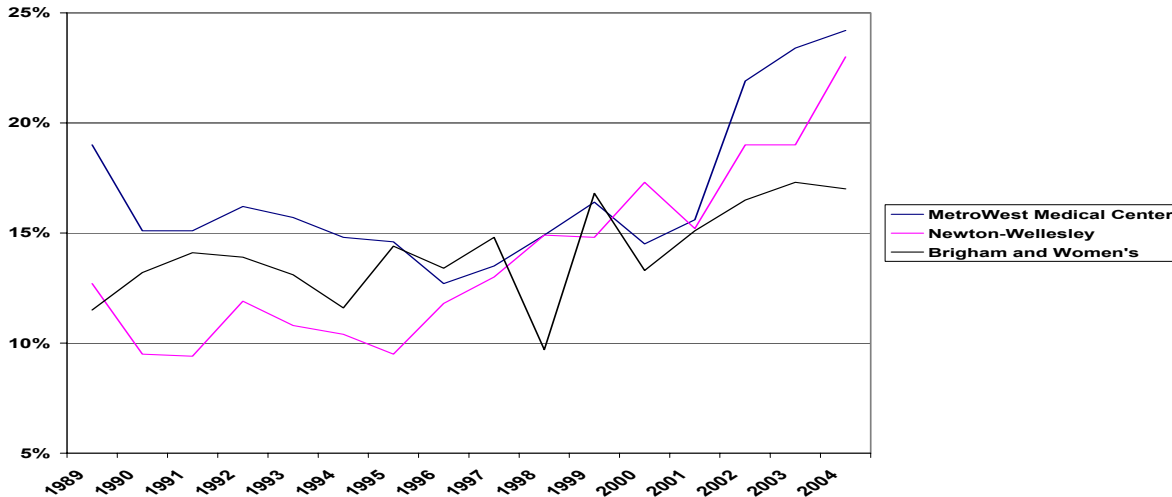
Table 8: Caesarean Delivery Counts and Percent, 2000-2004

Delivery Method	Number	MetroWest Percent	Massachusetts Percent	U.S. Percent (2004)
Caesarean deliveries	9,503	29.7	27.4	29.1
Primary caesarean deliveries	6,010	18.7	17.6	20.6
Vaginal birth after Caesarean (VBAC) deliveries	537	8.6	11.0	9.2

Sources: MetroWest and State: MassCHIP v3.00 r314, Massachusetts Department of Public Health; U.S. rate see endnote 5.

Table 8 indicates that MetroWest’s primary caesarean rate for 2000-2004 is slightly higher than Massachusetts’ rate, but slightly lower than the national rate.

Figure 19: Primary Caesarean Percent (Three-Year Moving Averages) for Lower-Risk* Mothers, by Hospital, 1989-2004



* Full-term (37+ weeks) singleton births

Source: MassCHIP v3.00 r314., Massachusetts Department of Public Health

Since hospital factors often play a larger role than town of residence in determining caesarean rates, Figure 19 presents the trends in primary caesarean rates for the three birthing hospitals most often used by mothers in the MetroWest area: MetroWest Medical Center (9,154 deliveries to MetroWest residents, 2000-2004), Newton-Wellesley Hospital (6,101 deliveries), and Brigham and Women’s Hospital (4,848 deliveries). Because of the variation in rates across single years, three-year moving averages are used. Analysis is limited to full-term births of singleton infants. An interesting pattern emerges: MetroWest Medical Center generally has the highest caesarean rate, with a rapid rise in the most recent three-year period. Newton-Wellesley begins with the lowest rate, but a consistent rise beginning in the mid-1990s results in a primary rate over 20% for the most recent period. Brigham and Women’s hospital starts out in the middle of the group, but with a slower rate increase in recent years, the result is the lowest current rate among the three hospitals. The overall single-year 2004 caesarean rates (primary + repeat) at each hospital for MetroWest mothers, regardless of risk factors,

were Brigham & Women’s Hospital, 32.8%; MetroWest Medical Center, 36.2%; and Newton-Wellesley Hospital, 36.8%.

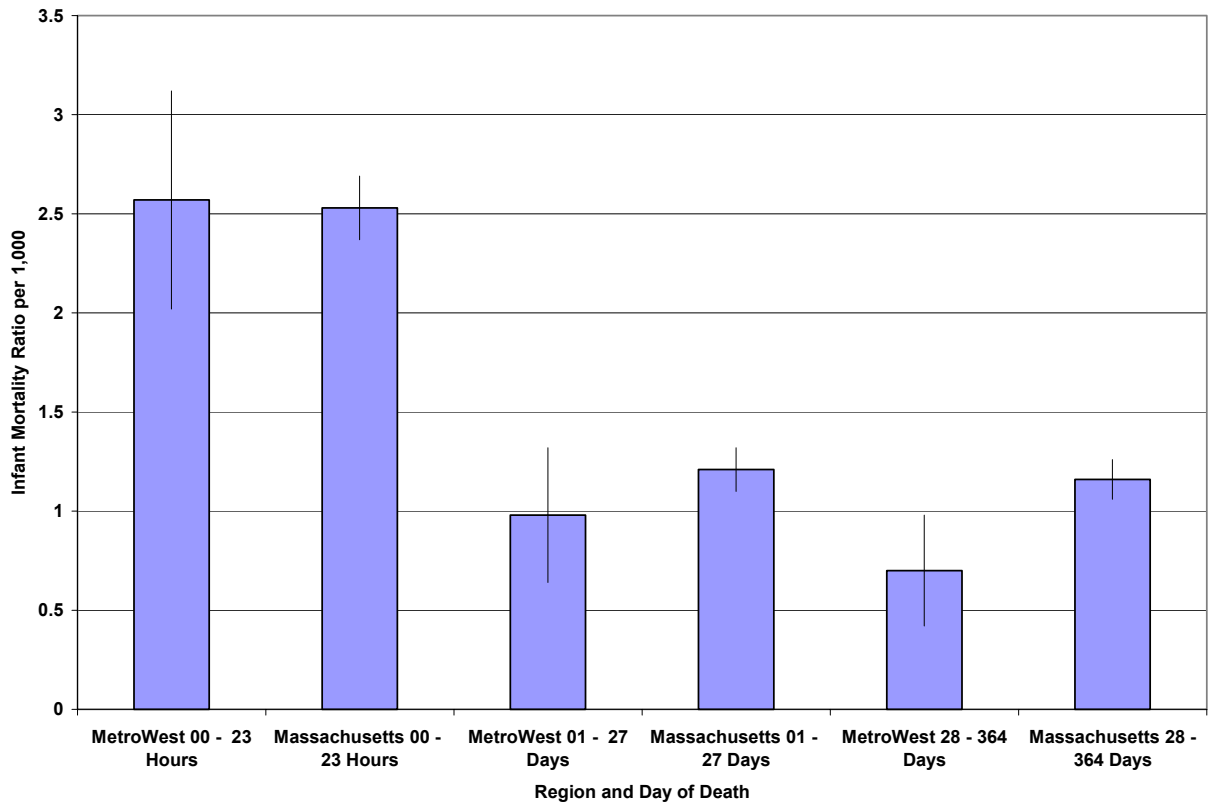
Birth Outcomes

Birth outcomes have several indicators, including neonatal, perinatal, and infant deaths; maternal deaths; pre-term births; and low and very low birthweight. Each of these topics is reviewed in the following sections.

Infant Mortality

Infant deaths are those deaths that occur in the first year of life. Within this group are neonatal deaths, occurring in the first 28 days of life. An additional classification of deaths is those that occur within one day of birth. Finally, perinatal deaths are deaths that occur in cases of at least 20 weeks gestation or up to 28 days after birth. This category was created to recognize that many neonatal deaths occur to pre-term babies. For the outcomes requiring linkage of the birth and death files, data for 1999-2003 only are available.

Figure 20: Infant Mortality Ratios for MetroWest and Massachusetts, 1999-2003



Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

The results for all causes of death shown in Figure 20 demonstrate that for newborns, the mortality ratios (deaths per 1,000) for MetroWest and Massachusetts are not different. Nor are the mortality ratios different for neonatal death. MetroWest has a lower rate than Massachusetts of post-neonatal infant death—i.e., in the period between 28 and 364 days. The rates for this time period are low—in the range of 1 per 1,000.

SIDS

Only three MetroWest cases of infant deaths due to Sudden Infant Death Syndrome (SIDS) were identified for the period 1999-2003.

Maternal Mortality

Maternal mortality is a rare event in the U.S., and especially in Massachusetts and MetroWest, as shown in Table 9. Only one case of maternal mortality occurred in MetroWest in the five-year period 1999-2003.

Table 9: Maternal Mortality Summary, 1999-2003

Type of Mortality	MetroWest Towns	Peer Towns	Massachusetts
Maternal Mortality	1	1	11

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Pre-Term, Low-Birthweight, and Very Low-Birthweight Births

The Birth Registry provides data on pre-term births, defined as births occurring before the 37th week of gestation. These data indicate that, for the period 2000-2004, 8.2% of births in MetroWest were pre-term, as compared with 8.5% in Massachusetts and 12.5% nationally (2004).

The rates of low and very low birthweight babies were better in MetroWest (6.7% low + very low birthweight and 1.2% very low birthweight for 2000-2004) than in Massachusetts (7.4% low + very low birthweight and 1.4% very low birthweight for 2000-2004); state rates were in turn better than national rates (8.1% low + very low birthweight and 1.5% very low birthweight). These rate differences may in large part reflect the race and ethnicity composition of the female populations at risk, since Black mothers are much more likely to have low-birthweight and very low-birthweight babies, and they are relatively under-represented in Massachusetts compared to the nation. Black mothers are even more under-represented in MetroWest. Nationally, Black babies are almost twice as likely to be of low or very low birthweight (in 2004, 13.7% Black, non-Hispanic compared to 7.2% White, non-Hispanic) and more than twice as likely to have extremely low birthweight babies (3.1% as compared to 1.2%). These statistics may reflect a difference in the proportions that are pre-term: nationally in 2004, 17.9% of Black babies were pre-term and 4.0% were very pre-term (less than 32 completed weeks of gestation), while for White, non-Hispanic infants, 11.5% were pre-term, and only 1.6% were very pre-term.

Abnormalities and Congenital Anomalies

The Birth Registry provides data on abnormal conditions of newborns, and on specific congenital anomalies. The data in Table 10 indicate the numbers and percentages in MetroWest, and the percentages in Massachusetts. These results indicate that MetroWest babies are less likely than those

in Massachusetts to suffer from abnormal conditions, and markedly less likely to suffer from congenital anomalies.

Table 10: Abnormal Conditions of Newborn

Condition	MetroWest Count	MetroWest Percent	Massachusetts
Any Abnormal Condition of Newborn	4,165	13.0	15.1
Congenital Anomaly	1,045	3.3	6.1

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

Summary of Findings

Demographic Profiles of Women and Birth Mothers in MetroWest

- Crude birth rates are higher for MetroWest White and Asian, non-Hispanic women than they are in Massachusetts. Crude birth rates are lower for MetroWest Black, non-Hispanic women than they are in Massachusetts.
- The age distribution of women in child-bearing years varies greatly among race and ethnicity groups. Such a phenomenon necessitates examination of *age-specific* birth rates. A simple message about race and ethnicity birth-rate disparity does not account for the data.
- Among all demographic groups, Hispanic women in MetroWest have both a younger age distribution *and* higher age-specific birth rates in the younger age groups. Thus, given present trends, we can expect a large rise in the Hispanic population in MetroWest—even without new immigration.
- Black women have a relatively low birth rate in MetroWest, as compared with other race and ethnicity groups in MetroWest, and as compared with Black, non-Hispanic Massachusetts rates.

Teen Births

- Teens have a lower rate of “adequate” or “adequate intensive” prenatal care than older mothers.
- Teen birth is typically associated with being unmarried in MetroWest, although the unmarried rates are lower than in Massachusetts.
- Teen birth is associated with lower rates of paternity acknowledgment than for older women. The rate of paternity acknowledgment is lowest for Black teens, in both MetroWest and Massachusetts. This situation is a cause of special concern.
- Hispanic teens have a relatively high rate of second births before age 20, in comparison to other groups in MetroWest.

- For teen births, large differences exist among MetroWest towns and regions. The NorthWest Region, Commercial towns, and the specific communities of Framingham, Marlborough, and Milford all have significantly elevated rates above the MetroWest average. Marlborough's rate of teen birth is also above the Massachusetts average. The high rates in these towns are due to both Hispanic births and to White, non-Hispanic births.

The Social and Health Context of Birth

- Mothers in the MetroWest area are less likely to use a nurse-midwife for prenatal care and are more likely to visit a doctor in a private office than mothers in Massachusetts generally.
- There are large differences in rates of unmarried motherhood by age, race, and ethnicity. For each race and ethnicity group, the rate of unmarried motherhood is very high in the teens and then steeply declines in the succeeding age groups.
- Hispanic and Black women have a lower rate of adequate or adequate intensive prenatal care than Asian and White women.
- Smoking during pregnancy is low in MetroWest, as compared with Massachusetts and the United States.

Birth Outcomes

- For newborns, the mortality ratios for MetroWest and Massachusetts are not different. Nor are the ratios different for neonatal death.
- MetroWest has a lower rate than Massachusetts of post-neonatal infant death—i.e., in the period between 28 and 364 days.
- The rates of low-birthweight and very low-birthweight babies were slightly better in MetroWest than in Massachusetts. In part, this is due to differences in the race/ethnicity composition of the MetroWest and Massachusetts female child-bearing populations.
- MetroWest babies are less likely than those in Massachusetts to suffer from abnormal conditions as judged at birth, and markedly less likely to suffer from congenital anomalies.
- Caesarean rates for mothers in the MetroWest area are higher than the state average, even when controlling for gestational age and multiple births.
- The caesarean rate for mothers 15-29 and 30-34 in MetroWest is higher than the state average, while the rate for mothers 35+ is marginally lower.

Recommendations

Several of the recommendations in the 2005 *MetroWest Health Data Book and Atlas* are validated in this 2006 update. From the more extensive and in-depth analysis in this report, we recommend:

- Focus on the teen-birth problem in Marlborough and Framingham, and more specifically on second births before age 20 and among Hispanic teens.
- Organize teen birth interventions, in partnership with school and community organizations, ideally at MetroWest Medical Center, because more than half (58.1%) of the 634 (127 average annual) MetroWest resident teen births took place at this hospital.
- Focus on the problem of birth outside of marriage in the younger age groups (i.e., 15-24), as well as the causes and consequences. In addition, focus on the lack of paternity acknowledgment, especially among teens and most specifically among Black teens in MetroWest.
- Focus on the low levels of prenatal care delivered by certified nurse midwives, and the consequences in terms of adequacy of prenatal care, especially for teens and Hispanic and Black mothers, who are shown to have higher levels of less-than-adequate care.
- Given that no teen-specific Brazilian population data are available from the U.S. Census, investigate ways to obtain data on the Brazilian teen population in such communities as Framingham and Marlborough in order to produce more accurate Brazilian teen birth rates. Such an investigation might involve initiatives with the public schools.

Appendix A: Race/Ethnicity and Specific Background

Percent Distribution of Births by Race/Ethnicity and Specific Background

Race/Hispanic Ethnicity	Specific Background	MetroWest	Massachusetts
White, Non-Hispanic	Other Portuguese & Brazilian	6.33	4.37
	Other	92.29	93.15
	Unknown	1.07	2.16
	Groups Deleted From Table	0.31	0.32
	All	100.0	100.0
Black, Non-Hispanic	Cape Verdean	1.38	3.84
	Other Portuguese & Brazilian	2.57	0.41
	Haitian	12.65	17.99
	West Indian/Caribbean	8.30	9.59
	Other	72.13	67.28
	Unknown	1.38	0.59
	Groups Deleted From Table	1.59	0.30
	All	100.0	100.0
Hispanic	Puerto Rican	28.55	46.36
	Dominican	5.91	18.02
	Central American	26.16	18.30
	Other or Unknown Hispanic	39.37	17.31
	All	100.0	100.0
Asian/Pacific Islander, NH	Chinese	30.48	26.76
	Vietnamese	3.95	15.82
	Cambodian	0.61	10.90
	Thai	1.22	1.49
	Laotian	0.28	1.75
	Asian Indian	39.69	20.00
	Other or Unknown Asian	21.09	20.59
	Other	2.30	2.03
	Unknown	0.28	0.43
	Groups Deleted From Table	0.10	0.23
	All	100.0	100.0
Other, Non-Hispanic	Asian Indian	6.19	2.63
	Other or Unknown Asian	3.35	2.15
	Cape Verdean	1.29	36.13
	Other Portuguese & Brazilian	57.47	18.50
	Other	26.55	34.92
	Unknown	2.84	1.41
	Groups Deleted From Table	2.31	4.26
	All	100.0	100.0

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health
 NH indicates non-Hispanic.

Appendix B: Summary of Birth Statistics

Summary of Birth Statistics for MetroWest and Massachusetts 2000-2004, and the U.S., 2004

	MetroWest Counts 2000-2004	MetroWest Rate/1,000	Massachusetts Rate/1,000	U.S. (2004) Rate/1,000
Crude Birth Rate	32,041*	54.8	48.4	66.3
15-19	684	10.2	23.5	41.2
15-17	194	4.6	13.3	22.1
18-19	490	20.0	37.0	70
20-24	2,198	43.1	57.8	101.8
25-29	5,742	94.7	84.9	115.5
30-34	13,178	145.3	106.7	95.5
35-39	8,488	74.7	54.3	45.4
40-44	1,666	15.4	11.6	9
45+	85	0.9	0.7	0.6
White, non-Hispanic	27,285	53.4	43.9	58.5
Black, non-Hispanic	505	47.4	65.3	66.7
Asian/Pacific Islander	2,129	82.1	66.3	67.2
Hispanic	1,671	69.5	76.3	97.7
Births to Unmarried Mothers	Counts	Percent	Percent	Percent
All	3,354	10.5	27.1	34.6
White, non-Hispanic	2,409	8.8	18.8	23.6
Black, non-Hispanic	179	35.4	56.9	68.5
Asian/Pacific Islander	53	2.5	15.0	15.0
Hispanic	608	36.3	62.0	45.0
By Age				
15-19	570	83.3	91.5	81.3
15-17	178	91.8	96.4	89.7
18-19	392	80.0	89.2	77.3
Other Categories				
Paternity Acknowledgment	31,289	97.6	92.6	
Parity: % First	13,691	42.7	43.6	
Smoking During Pregnancy	1,258	3.9	8.4	10.2
Began Prenatal Care in First Trimester	29,129	90.9	83.1	83.9
Medicaid Payor for Prenatal Care	3,306	10.3	22.9	NA
Caesarean Delivery Rate	9,503	29.7	27.4	29.1
Primary Caesarean Rate	6,010	18.7	17.6	20.6
Vaginal Birth After Caesarean (VBAC)	537	8.6	11.0	9.2
Pre-term Birth (<37 completed weeks)	2,633	8.2	8.5	12.5
Low Birthweight	368	6.7	7.4	8.1
Very Low Birthweight		1.15	1.39	1.47
Any Abnormal Condition of Newborn	4,165	13.0	15.1	NA
Congenital Anomaly	1,045	3.3	6.1	NA

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health; U.S. Data see endnote 5.

Appendix C: MetroWest Births by Hospital

Count of Births by Hospital for MetroWest Residents, 2000-2004

Hospital	Average Annual Births, by Hospital, 2000-2004	Total Births Residence: Percent by Hospital
MetroWest Medical Center—Framingham	1,832	28.57
Newton-Wellesley Hospital	1,221	19.05
Brigham and Women's	972	15.16
Beth Israel Deaconess	519	8.09
Milford-Whitinsville Hospital	459	7.16
UMass. Health—Memorial Hospital/UMass Medical Center (Birth Hospital)	403	6.29
Caritas St. Elizabeth's Hospital	179	2.80
Massachusetts General Hospital	139	2.17
Emerson Hospital	123	1.92
Saint Vincent Hospital	98	1.53
Caritas Norwood Hospital	88	1.37
Mount Auburn Hospital	71	1.10
Out of State	62	0.97
Sturdy Memorial Hospital	52	0.81
The Birthplace at Wellesley	39	0.61
New England Medical Center (Tufts)	38	0.59
At Home	21	0.32

Source: MassCHIP v3.00 r314, Massachusetts Department of Public Health

End Notes

¹ In the case of Asian mothers, this pattern follows the distinctive Asian patterns of immigration into the U.S. Writing specifically about the Chinese population, Peter Kwong has pointed to these differential patterns of immigration. Kwong uses the concept of “Ethnoburbs” to describe the new concentrations of Asians in affluent suburban areas, and the large differences between suburban and urban Asian populations. See: Kwong P, Miscevic D. *Chinese America: The Untold Story of America’s Oldest New Community*. New York, NY: The New Press, 2005.

² Some caution should be exercised in interpreting age, race and ethnicity differences in birth rates, since either or both of the following factors may influence the calculated rates: (1) To the extent that undocumented immigrant women do not appear in the U.S. Census, their denominators for the calculation of birth rates would be too small, and their calculated birth rates would therefore be artificially high. (2) For the same reason, to the extent that young women are more likely to be missing from the U.S. census, their denominators are too small, and their birth rates are therefore artificially high. None of the above invalidates the comparisons between MetroWest and Massachusetts unless there is a—as yet unproven—difference in the percentages missing in the U.S. Census for MetroWest and for Massachusetts as a whole.

³ MetroWest Community Health Care Foundation. *MetroWest Health Data Book*. April 2002.

⁴ Massachusetts Births 2004. Boston, MA: Massachusetts Department of Public Health, 2006.

⁵ Hamilton BE, Martin J, Ventura S, Sutton P, Menacker F. Births: Preliminary Data for 2004. National Vital Statistics Report; vol. 54, no. 8. Hyattsville, MD: National Center for Health Statistics, 2005.

⁶ Massachusetts Department of Public Health. Massachusetts Community Health Information Profile (MassCHIP), Custom Reports. 2005. Available at: <http://masschip.state.ma.us> Accessed August 9, 2006.

⁷ The issues are obviously complex, particularly in light of the recent Massachusetts Supreme Court decision legalizing gay and lesbian marriage.

⁸ Elders MJ, Albert AE. Adolescent pregnancy and sexual abuse. *Journal of the American Medical Association*. 1998;280:648-649.

⁹ National Institutes of Health State-of-the Science Conference Statement Caesarean Delivery on Maternal Request March 27-29, 2006. *Obstet Gynecol* 2006; 107:1386-1397.

¹⁰ ACOG Task Force on Caesarean Delivery. Evaluation of Caesarean Delivery. Washington, DC: ACOG (American College of Obstetrics and Gynecology), 2000.