

Closing the Gap

Decline in Black Infant Mortality Rates in Boston, 2001-2012

Racial and ethnic differences in infant mortality rates are among the earliest and most persistent health inequities documented in the United States (1). Although the infant mortality rate (IMR) for White and Black infants in the United States declined annually from 1935 to 2007 by 3.2% and 2.6% per year, respectively, the racial disparity between White and Black infant mortality increased. In 1935, the Black infant mortality rate (81.9 deaths per 1,000 live births) was 58% higher than the rate for White infants (51.9 deaths per 1,000 live births), but by 2007 the Black infant mortality rate (13.2 deaths per 1,000 live births) was 135% higher than the White infant rate (5.6 deaths per 1,000 live births) (2). More recently, however, this persistent gap between the Black and White infant mortality rates appears to be narrowing locally and nationally (3).

An analysis conducted by the Boston Public Health Commission revealed progress in reducing Black infant mortality in Boston. The analysis considered Boston infant mortality over three four-year time periods from 2001 to 2012 (T1: 2001-2004, T2: 2005-2008, T3: 2009-2012). Data were aggregated into four-year time periods to obtain statistically reliable rates. The Black infant mortality rate decreased from 13.1 deaths per 1,000 live births in 2001-2004 to 7.4 in 2009-2012, which means the 2009-2012 Black infant mortality rate was 44% lower than the 2001-2004 rate. The decrease in the Black infant mortality rate is equivalent to 59 total fewer Black infant deaths during the eight years 2005-2012.

Over the three time periods, infant mortality rates for overall Boston as well as Asian, Latino, and White infants were stable. For the three racial/ethnic groups, the infant mortality rate was below the Healthy People 2020 target of 6.0 deaths per 1,000 births in the two most recent time periods (T2: 2005-2008, T3: 2009-2012). Though decreasing, the Black infant mortality

rate remained above the Healthy People 2020 target across all three time periods.

As the decrease in the Black infant mortality rate occurred while the White infant mortality rate was stable, the gap between Black and White infant mortality rates narrowed. The Black to White infant mortality rate ratio, a measure that quantifies the difference between Black and White infant mortality rates, decreased from 3.8 in T1 to 3.3 in T2 to 2.0 in T3. In other words, the Black IMR went from being nearly 4 times the White IMR in T1, to 3 times the White IMR in T2, to 2 times the White IMR in T3, amounting to 25% time period to time period decreases in the Black-White infant mortality gap.

Figure 1

Infant Mortality Rates by Race/Ethnicity by Year

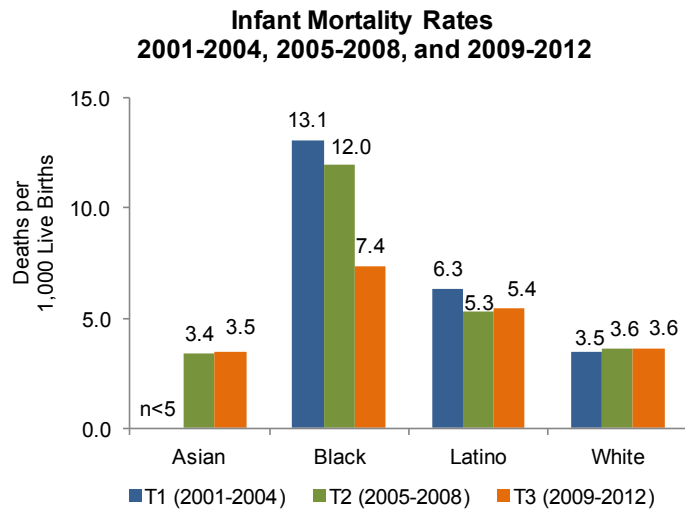
Year	Black	Latino	White	Boston
	IMR (per 1,000)	IMR (per 1,000)	IMR (per 1,000)	IMR (per 1,000)
2000	13.6	5.1	2.8	6.7
2001	13.5	5.6	5.1	7.4
2002	12.4	6.5	4.6	7
2003	14.2	4	2.7	6
2004	12.1	9.4	1.4	6
2005	8.7	3.1	4.1	5.2
2006	13.2	2.9	3.6	5.8
2007	11.3	6.8	3.4	6.4
2008	14.6	8.1	3.4	7.2
2009	7.7	8	5	6.4
2010	7.4	4.7	1.6	3.7
2011	7.8	2.6	5	5.3
2012	6.5	6.5	3	4.7

NOTE: Death data for 2012 are preliminary and should be interpreted with caution. Until data are final, some changes in data values may occur during data quality processes. No rates could be calculated for Asian residents due to less than 5 infant mortality in each of the years shown.

DATA SOURCE: Massachusetts Resident Birth and Death files, Massachusetts Department of Public Health

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Figure 2



NOTE: Death data for 2012 are preliminary and should be interpreted with caution. Until data are final, some changes in data values may occur during data quality processes.
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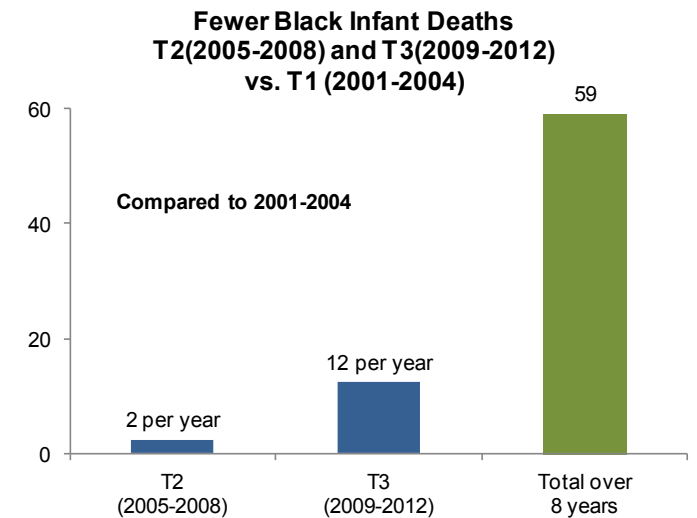
The reduction in Boston Black infant mortality is consistent with national and state level data. Nationally, the U.S. infant mortality rate declined from 6.9 infant deaths per 1,000 live births in 2005 to 6.1 in 2010, a 12% change from 2005 through 2010 (3). This decline was experienced among infants born to White, Latino and Black women, but with the largest decline among those born to Black women for whom the rate went from 13.6 deaths per live births in 2005 to 11.5 in 2010 (3).

In an analysis of Massachusetts excluding Boston data using the same time periods applied to the Boston data, the Black infant mortality rate for T3 (2009-2012) was 7.9 deaths per 1,000 births, 30% lower than the rate for T1 (2001-2004), which was 11.3 deaths per 1,000 births. The White infant mortality rate for T3 (2009-2012) was 3.6 deaths per 1,000 births, 12% lower than the rate for T1 (2001-2004), which was 4.1 deaths per 1,000 births). Asian and Latino infant mortality rates were stable across the three time periods. Boston data, in comparison, show Black infant mortality at a 44% lower level when comparing the same two time periods, while Asian, White, and Latino infant mortality rates were similar.

From 2001 to 2012, approximately two-thirds of

Boston infant deaths occurred during the neonatal period (0-27 days of life) while the remainder occurred in postneonatal period (between 28 days and under 1 year). For Boston infants, neonatal infant mortality decreased from 5.0 deaths per 1,000 live births in T1 (2001-2004) to 3.8 by T3 (2009-2012) while the postneonatal mortality rate was stable. Black infants experienced a decrease in neonatal mortality (from 10.1 to 5.9 deaths per 1,000 live births) and postneonatal mortality (from 3.0 to 1.5 deaths per 1,000 live births) from T1 to T3 while rates among White infants were stable.

Figure 3



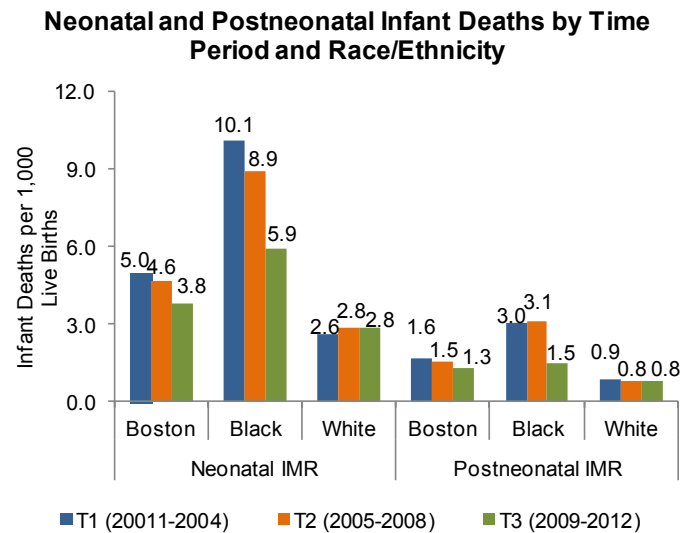
NOTE: Death data for 2012 are preliminary and should be interpreted with caution. Until data are final, some changes in data values may occur during data quality processes.
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Leading causes of infant death in Boston were perinatal conditions including short gestation/low birth weight, congenital anomalies, and sudden infant death syndrome (SIDS). Mortality rates from perinatal conditions decreased among Black infants from 8.6 deaths per 1,000 live births in T1(2001-2004) to 5.2 deaths in T3 (2009-2012) while mortality rates from other conditions did not change. Cause-specific White infant mortality rates did not change from T1 to T3.

Infant mortality is higher among births resulting from teenage pregnancies, births to women with lower educational attainment, and to women born in the

United States (2,4). Shifts in the prevalence of these risk factors impact infant mortality. BPHC conducted a preliminary assessment of changes in the prevalence of these risk factors among Boston women who gave birth from 2005-2010. The analysis revealed a decrease in teen pregnancies births (ages 15-19 years) among Black women, an increase in births to foreign-born Black women, and no changes in the educational attainment among Black Boston women who gave birth from 2005-2010 (data not shown).

Figure 4



NOTE: Death data for 2012 are preliminary and should be interpreted with caution. Until data are final, some changes in data values may occur during data quality processes.
 DATA SOURCE: Massachusetts Resident Birth files, Massachusetts Department of Public Health
 DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Low birth weight births and preterm births

Low birth weight and preterm birth are among the most significant contributors to infant mortality. Among Boston infants overall, rates of low birth weight births and preterm births were stable from 2001-2004 to 2009-2012 (T1 to T3). Among Black infants, rates of low birth weight births and preterm births decreased significantly (6% and 9% from time period to time period, respectively), with the 2009-2012 rates being lower than the 2001-2004 rates by 10% and 16%, respectively. In contrast, the Latino and Asian low birth weight birth rates increased from T1 to T3 (7% and 13% from time period to time period, respectively). Preterm birth rates among Asian, Latino and White infants were stable across the three time periods.

Figure 5

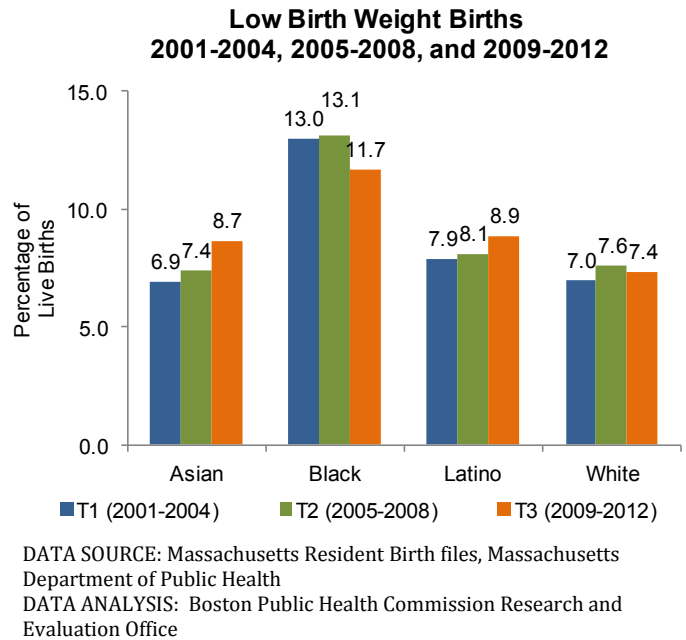
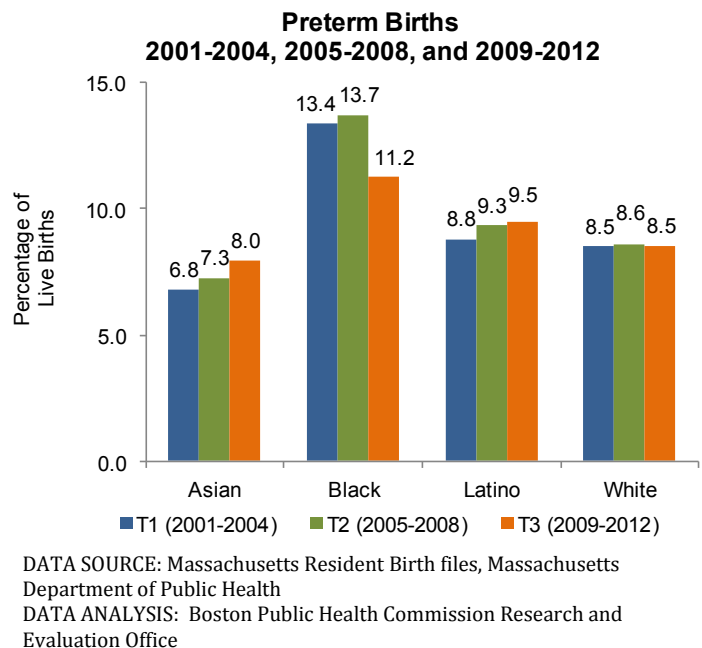


Figure 6



Summary

The decline in Black infant mortality, low birth weight, and preterm birth rates and the subsequent narrowing of the gap between Black and White infant mortality rates in Boston are greeted with optimism. From T1 to T3, fewer Black infants died in the neonatal and post-neonatal period, and Black infant mortality due to perinatal conditions (e.g., short gestation/low birth weight) decreased. This may reflect the fewer high-risk infants being born and/or a greater survival rate of high-risk infants. Further analysis is needed to understand factors associated with improved birth outcomes among Black infants in Boston and continued surveillance of birth outcomes is critical to monitoring and evaluating these important trends.

Boston's Efforts to Reduce Black Infant Mortality

The Boston Public Health Commission has worked determinedly this past decade to address health inequities in birth outcomes. Many efforts described below were designed specifically to decrease Black infant mortality in Boston, and the gap between White and Black infant mortality rates.

Boston's Black –White gap in birth outcomes is not new. Public health efforts addressing this inequity go back at least 30 years, to the passage of state legislation assuring health coverage for all women during pregnancy in Massachusetts. What is new in the current period, and most sharply since 2008, has been an explicit focus first, on the impact of poverty, racism and associated stress on health, and second, on the need for a broad, collaborative effort to support women facing these stresses on a daily basis. The result has been a broad array of initiatives, housed in clinical settings, communities, and the homes of women themselves, that are linked by a shared understanding of the challenges facing low income women and women of color in Boston and a compassionate, respectful approach to women's daily struggles to address those challenges.

Among these efforts are:

- A new focus in BPHC case management programs, which serve about 2,000 women per year, on women's health entering pregnancy. Research

indicates that disparities we see in birth outcomes are not primarily due to differences in the nature or extent of medical care available to Boston women once pregnant, but rather, to the health status of women entering pregnancy. Enhanced attention to women's health before a first pregnancy, and then between pregnancies in what is known as the "interconceptional" period, has become a major focus of BPHC case management. Key elements of this strategy have been extending case management beyond the perinatal period, to see women and their families through the post partum year and into a next pregnancy and strong links between BPHC case management and health care providers citywide, promoting access to a medical home for every woman.

- An increasing emphasis on the power of woman-to-woman support. The World Health Organization identifies social isolation as a major stressor and a cause of health disparities. BPHC has learned to mobilize the power of women to support and learn from each other, first through "women's circles" in Boston communities, and now through the Centering Pregnancy model of care, discussed below.
- A strong focus on the social determinants of health, and on both case management and mutual support as strategies to help women deal with hardship related to housing, food access, family medical concerns and financial stress.
- Collaboration with providers to assure optimal care during pregnancy, for women already at risk. Increasingly during this most recent period providers have made use of progesterone to prolong pregnancy for women at risk of preterm birth.

Early promise of each of these strategies has led to their more systematic and institutionalized adoption since 2008. Newer BPHC initiatives include:

- Support for Centering Pregnancy, a group-based model of prenatal care, endorsed by BPHC and many clinical sites city wide. Research shows that Centering can reduce rates of preterm birth among black women by as much as one third. BPHC has helped sites fund the transition towards this

model of care in Healthy Start prenatal care partner sites citywide and has supported the transition of sites outside our network.

- The Healthy Start in Housing program, a partnership between BPHC and the Boston Housing Authority, which places women who are pregnant, at high risk of homelessness, and at risk of adverse pregnancy outcome at the top of the list for BHA housing and provides them with three years of intensive, supportive case management. Now in its third year, the program has housed nearly 80 women, enabling them to take the steps required to improve health, find employment, and move towards family stability.
- The Welcome Family program, for which Boston is one of four pilot sites in the state, conducts home visits to families just out of the hospital with newborn babies. Experienced public health nurses offer women guidance, support, and referrals to community resources. Welcome Families will ultimately be available to all women in Massachusetts; the Boston pilot has started with a focus on women receiving care at community health centers in Mattapan, Dorchester and Roxbury, providing a broad safety net for women at those sites.
- Implementation of “One Key Question,” a strategy developed by the Oregon Foundation for Reproductive Health to promote preconceptional health and pregnancy planning. Unplanned pregnancies mean women don’t have a chance to deal with outstanding health issues and risks before pregnancy. “One Key Question” encourages providers to ask women (and women to ask themselves) “DO YOU WANT TO BECOME PREGNANT IN THE NEXT YEAR?” opening the door to honest conversation about how to assure a healthy pregnancy – before the baby is conceived. Starting this fall, BPHC and our partners will promote this approach through media and in clinical care citywide.

Building on the success of these efforts, we have convened a broad coalition with representation not only from the city’s major delivery hospitals, but also from health centers, city agencies, community organizations, and an active consumer work group to identify opportunities to improve health care and social supports for women. One particularly innovative effort on the horizon for this coalition is:

References

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4. Rosenberg, KD et al. Why do foreign-born Blacks have lower infant mortality than native born Blacks? New directions in African American Infant Mortality Research. J Natl Med Assoc. 2002; 94:770-778.