2013

Worcester Healthy Baby Collaborative (WHBC)

[2013 REPORT ON INFANT MORTALITY IN THE CITY OF WORCESTER]

The City Council has requested that the Worcester Healthy Baby Collaborative (formerly known as the Worcester Infant Mortality Reduction Task Force or WIMRTF) present this report on infant mortality rates in the City of Worcester as an update since 2007 when the WIMRTF last prepared a report for the City Council.

EXECUTIVE SUMMARY

The Infant Mortality Rate (IMR) of a region is the number of deaths in the first year of life per 1,000 live births in a given year. The national decline in infant mortality since 2005 was a significant achievement that was driven by factors such as wide availability of life-saving neonatal care, increases in access to primary care, and better nutrition. Worcester is fortunate to have excellent neonatal care at our Level III intensive care nursery at UMass, and excellent access to primary care with two community health centers serving Worcester's neediest populations. However, when we review the lack of significant change in Worcester's IMR during the time when national and state rates have declined, and the stubborn persistence and even worsening of racial/ethnic disparities, it is clear that local infant mortality rates reflect more than excellent local medical care.

Infant mortality can be seen as a barometer of a community's commitment to the provision of excellent secondary education, a trusted and high quality health care system, adequate food and good nutrition, safe and stable housing, a healthy psychosocial and physical environment, and sufficient income to prevent impoverishment.

In Worcester, trends in infant mortality are driven by socio-economic and ethnic disparities that negatively affect the mother's health and well-being, and lead to them to lose their babies who are born too soon due to prematurity.

Recommendations to the City Council

A. Improve educational opportunities and health literacy for Hispanics, as well as for all immigrants and refugees in Worcester.

B. Support intensive health education outreach to underserved communities to connect them with primary care. Support expansion of the ongoing intercollegiate/community-drive efforts at such health education at WPI, Clark and UMass. Encourage these efforts to include targeted outreach and bridge-building to address the issues of perceived institutional racism and lack of trust in the health care system by immigrant communities.

C. Advocate at the state level to expand case management in Worcester for programs like the Maternal, Infant, and Early Childhood Home Visiting program that the state DPH is starting.

D. Support the Worcester Health Baby Collaborative (WHBC) plans for an Infant Mortality Summit in September 2014. Use this summit as an opportunity to prioritize and align the City Council's Health Subcommittee focus on the prevention of infant mortality and pre-term birth.

E. Advocate for improved data access, including development of a city-wide birth registry, to inform timely data-driven policies in Worcester regarding prenatal care to refugees and immigrants.

AT A GLANCE

- Over the last decade, the city of Worcester average IMR ranged between 7-9 deaths per 1,000 live births, compared to the state of Massachusetts' IMR rate of 5 (US averages for the same time period of 6.5).
- About 75% of Worcester's infant deaths are neonatal deaths.
- Infant mortality in Worcester (and nationally) is significantly related to prematurity—it is not about term or near-term babies dying early.
- Worcester's IMR surpasses that of all other surrounding communities
- The IMR in Worcester reveals striking racial and ethnic disparities
- Worcester's IMR is linked to the mother's educational attainment

Worcester Healthy Baby Collaborative

2013 Report on Infant Mortality in the City of Worcester

The City Council has requested that the Worcester Healthy Baby Collaborative (formerly known as the Worcester Infant Mortality Reduction Task Force or WIMRTF) present this report on infant mortality rates in the City of Worcester as an update since 2007 when the WIMRTF last prepared a report for the City Council. In response to the City Council's request, we are dividing this report into four sections:

1. Statistics on infant mortality rates with a focus on rates from 2000-2012 for Worcester, Massachusetts, and the United States;
2. The interpretation of the existing data;
3. The progress of the Worcester Healthy Baby Collaborative since 2007 in understanding the complicated multidimensional factors that contribute to these figures; and
4. Recommendations for the City Council to continue to address this topic as a public health issue for the city and how to keep this topic integrated into the Community Health Improvement Plan as it moves forward.

I. Introduction

The Infant Mortality Rate (IMR) of a region is the number of deaths in the first year of life per 1,000 live births in a given year. Infant mortality is a multi-factorial phenomenon. Preterm birth is a major contributing factor to the overall U.S. infant mortality problem. Besides medical risk factors (see appendix), risks for both preterm birth and infant mortality include the so-called "social determinants of health" such as stress (individual and environmental), poor social support, adverse neighborhood environment (physical and social), community lack of trust in primary care and perceived institutional racism, lack of educational attainment, and poverty. The WHBC believes that these issues are among the most important factors contributing to Worcester's infant mortality problem.

The national decline in infant mortality is a significant achievement, driven by factors such as wide availability of life-saving neonatal care, increases in access to primary care, and better nutrition. Worcester is fortunate to have excellent neonatal care at our Level III intensive care nursery at UMass, and excellent access to primary care with two community health centers serving Worcester's neediest populations. However, when we review the lack of significant change in Worcester's IMR during the time when national and state rates have declined, and the stubborn persistence and even worsening of racial/ethnic disparities, it is clear that local infant mortality rates reflect more than excellent local medical care. Indeed, infant mortality can be seen as a barometer of a community's commitment to the provision of high quality health care, adequate food and good nutrition, safe and stable housing, a healthy psychosocial and physical environment, and sufficient income to prevent impoverishment.

II. Infant Mortality Rates (IMR) in Worcester

Although the average number of infant deaths to Worcester women ranges between 20-25 per year, year-to-year fluctuations in the IMR can be quite dramatic. Since the overall numbers of births are too small for any one year to make any statistical inferences, we have used the "3 year rolling average" as indicated in the figure below to display overall trends for each three year period since 1990.

Over the last decade, the city of Worcester averaged an IMR that ranged between 7-9 deaths per 1,000 live births (**Error! Reference source not found.** in appendix), compared to the state of Massachusetts' IMR rate of 5 (with national IMR averages for the same time period of 6.5).

Despite the recent downward trend in Worcester's overall IMR rate in the last five years, this did not follow the steadily decreasing trend seen in state and national rates (from 9.2 nationally in 1990 to 6.1 in 2011).

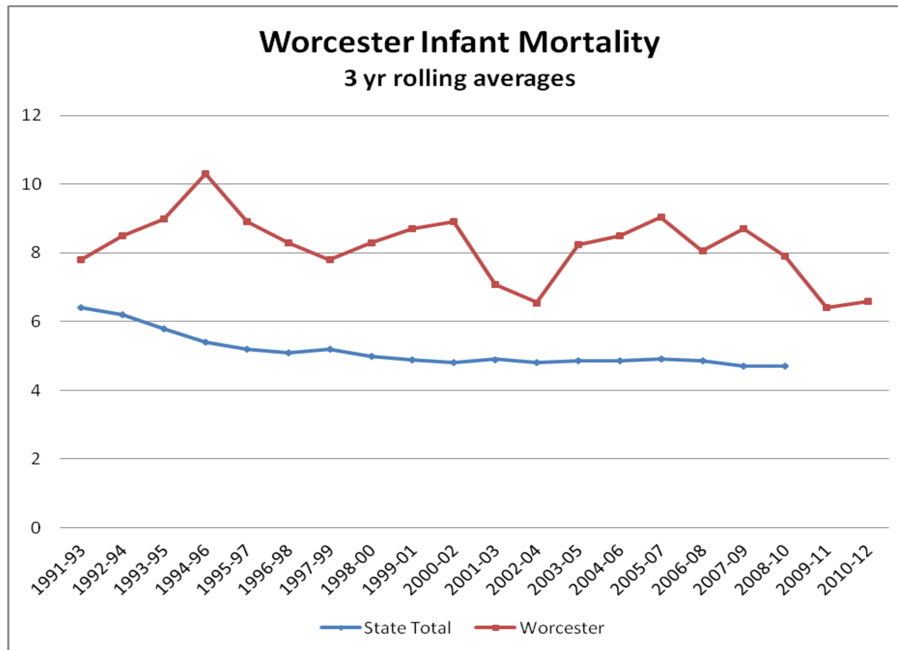


Figure 1. 3-year rolling average of IMR in Worcester (Source: MDPH, WHBC)

The Worcester Healthy Baby Collaborative (formerly the WIMRTF) has manually reviewed all hospital charts of infants who died at UMASS Memorial since 1998. The in-depth analysis allowed us to understand some of the underlying patterns that are driving these trends.

In Worcester, trends in infant mortality in Worcester are driven by socio-economic and ethnic disparities that negatively affect a pregnant woman's health and well-being, and lead these women to lose their babies who are born too soon due to prematurity.

1. **Neonatal Deaths**. Infant deaths include Neonatal Deaths (occurring in the first 28 days of life) and Post-Neonatal Deaths (from ages 29 days to one year). In the United States, about 2/3 of infant deaths are neonatal deaths. Over the last decade, about 75% of Worcester's infant deaths are neonatal deaths. This indicates that the majority of babies dying in Worcester are those born too soon and too small to be saved even in Worcester County's sophisticated Neonatal intensive Care unit (NICU), located at the UMass Memorial Medical Center. Prematurity like this is usually a reflection of a maternal issue, not an infant problem.

2. **Extreme Prematurity**. Infant mortality in Worcester (and nationally) is thus significantly related to prematurity—it is not about term or near-term babies dying early.

3. **Worcester IMRs rate surpass surrounding communities**. High Worcester IMRs are NOT reflected in the IMRs of surrounding communities. Many pregnant women, if not MOST pregnant women, from the communities surrounding the city of Worcester deliver their babies at the two Worcester hospitals that offer maternity care (UMass and St. Vincent). The data in this report are solely reflective of Worcester city residents; residents of surrounding communities have IMRs that are much lower and indicate a lower risk population.

4. **Racial and Ethnic Disparities Persist**. The most important issue in thinking about Worcester's IMR over the last two decades is not only that it is overall about twice the state's IMR, but that there are striking racial and ethnic disparities.

III. Racial and Ethnic Disparities in IMR in Worcester

1. IMR to African-Born Women

Over the last 15 years, the major concern of the WIMRTF/WHBC has been to address the high rate of infant deaths among Worcester's Black immigrant mothers. During this time, Worcester has witnessed a demographic shift. Preliminary analysis of data obtained from the MA Department of Public Health, and from hospital charts at UMASS Memorial and St. Vincent Hospital, has revealed that most of the Black infants born in Worcester in these decades are born to women who have immigrated from Africa, usually from West Africa with Ghana the most

heavily represented country. This was a finding of the Task Force not previously uncovered by the state DPH due to limitations in the department's analysis.

About 7% of the residents of Worcester identify as Black, but between 17% and 55% of the infants who died from 2000-2012 were born to Black mothers, and the majority of these are to immigrant mothers.

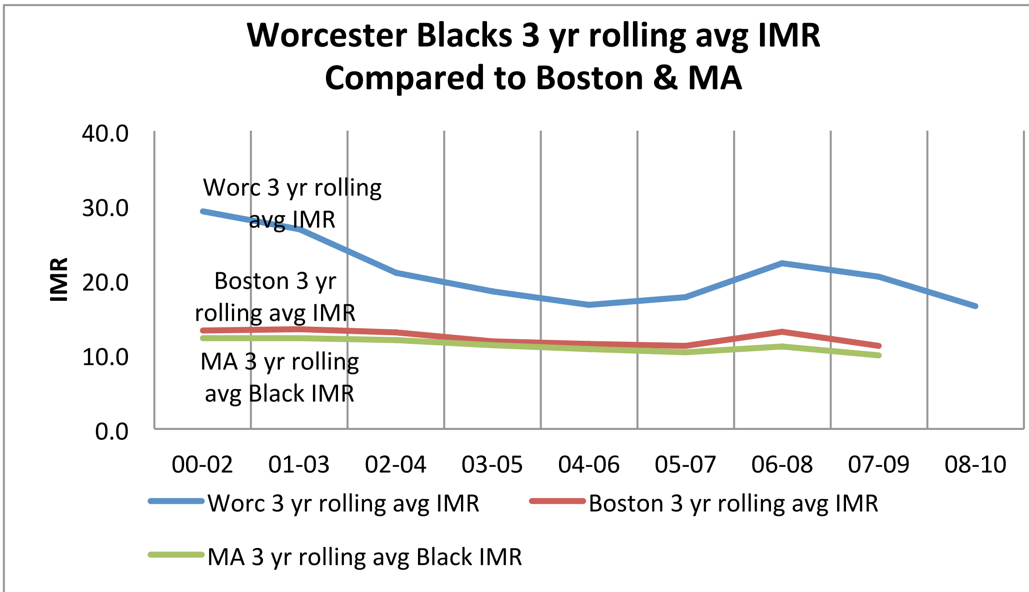
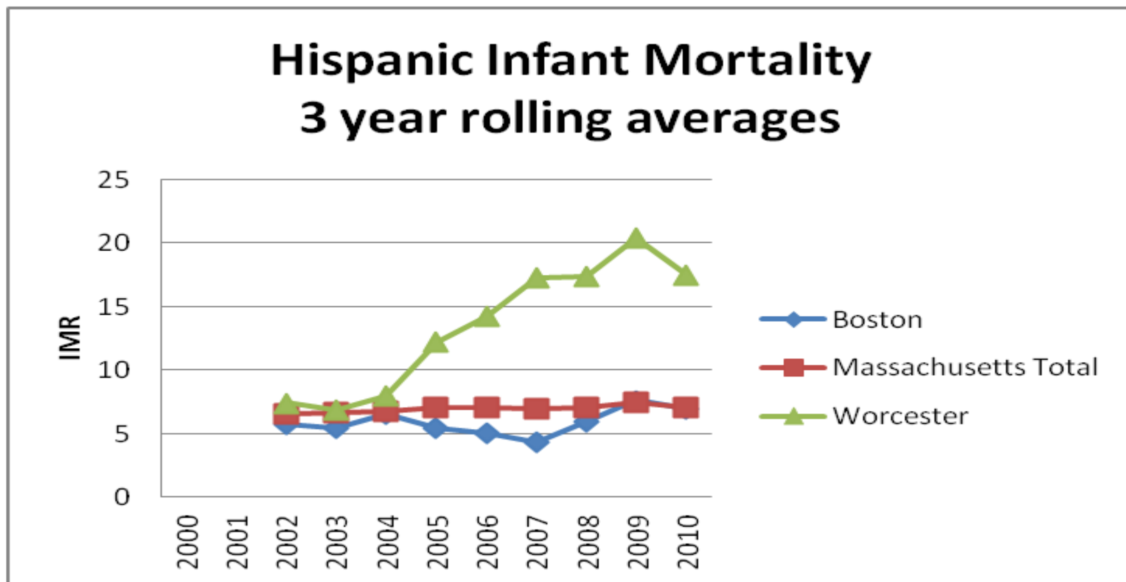


Figure 2. A chart of the 3-year rolling average provides a clearer view of the trends revealed in the data.

2. IMR to Hispanic Women

Since 2000, we have also noted an alarming rise in infant deaths to Hispanic mothers in Worcester, with the 3 year rolling average IMR for Hispanics rising from about 7-8 in 2000-2004 (comparable to city's overall IMR in this time period) to 17-20 in 2005-2010.



Worcester's Hispanic population by 2010 census data is about 2/3 Puerto Rican, with infants of mothers born in Puerto Rico or the Dominican Republic representing almost all the Hispanic infant deaths since 2000 in Worcester (see Table 4 in appendix). Thus the immigration issues for African women seen in rise from 1995 to 2005 in the Worcester Black IMR may not be the same issues affecting the rise in Hispanic infant mortality rate in the last 10 years.

Worcester's increase in Hispanic infant mortality in the last decade is especially worrisome because national trends are different. Between 2005-2011, with the overall IMR down 12%, Hispanic IMR was down 9% nationally.

IV. Socio-economic and Educational Determinants of Infant Mortality

1. Determinants in the Black IMR

As the WIMRTF/WHBC has investigated the high Black IMR in Worcester over the last 15 years, the immigrant mothers whose babies were dying typically do not have the usual high-risk characteristics. In fact, immigrant African mothers in Worcester are not usually teens; most have graduated from high school and are holding down two jobs; about half have government assistance (as a measure of poverty); few smoke cigarettes, and very few report alcohol or drug use. Additionally, most of the Worcester women from Africa with infant deaths have enrolled in prenatal care in the first trimester and have had adequate prenatal care based on standard criteria (see table 5 in appendix).

2. Determinants in the Hispanic IMR

Among Worcester's Hispanic population, however, the story is somewhat different. Although the annual number of births to Hispanic women in Worcester has actually dropped in the last decade, the IMR has steadily risen over this same time period. We know that Hispanic mothers in Worcester are more likely than their non-Hispanic white counterparts to be unmarried, less educated, and poor. However, the overall trends in each of these areas for Hispanic mothers in the last decade do not show that these gaps have increased. Indeed, statewide, Hispanic mothers who are married, not on public assistance and with a college degree consistently have lower IMR than most other comparison groups. We are currently studying this population in an attempt to see what other factors may be affecting this vulnerable group.

3. Teen Births not found to be a determinant

Although much attention has been given to Worcester's teen birth rate, which in 2010 was significantly higher than the state's, there are several

issues about Worcester's teen births at least in 2010 which suggest that teen births are not the reason for Worcester's overall higher IMR or Worcester's Latino IMR.

For instance, teens in Worcester do not have a higher low birthweight (LBW) rate than teens in the state, a risk factor for infant mortality, and the percentage of teen births that are Hispanic (25%) is lower than the percentage of state teen mothers who are Hispanic (38%). Teen pregnancy is closely linked to poverty, lack of high school graduation, and single parenthood, and these interconnected social determinants of health are where Worcester should focus its teen pregnancy prevention and infant mortality prevention efforts.

V. The Worcester Healthy Baby Collaborative (formerly Worcester Infant Mortality Reduction Task Force): Past, Present, and Future

The WIMRTF was formed in the mid-1990s in response to a worrisome trend in the Worcester IMR. In cooperation with the Worcester Department of Public Health, a volunteer group of concerned health care workers, social service agency representatives, and community members began to meet regularly and to discuss the reasons behind these rising rates. Believing that the IMR related to numerous issues including inadequate prenatal care, maternal environmental factors, and pre-existing maternal medical conditions, Great Brook Valley Community Health Center successfully applied for federal funding for a Healthy Start Program in Worcester, known as the Worcester Healthy Start Initiative (WHSI). This program was in place from 1999 to June 2012 and was successful in that participants in the WHSI had a slightly better IMR than the residents of Worcester as a whole (from 2005-2014 an IMR of about 7 among WHSI participants).

1. Loss of Worcester Healthy Start Initiative

When the Edward M Kennedy Health Center as the lead agency in the WHSI grant applied for continued federal funding in 2012, there were two factors that weighed against the renewal of this support.

Worcester's infant mortality numbers are not comparable to other large urban cities in the project – for example, Cleveland's IMR is 9.1-9.7 and Detroit's 12.6-14. The federal Healthy Start Initiative was moving to be more 'city' based than 'agency' based. The WHSI funding/grant from the beginning was awarded to a health center and not to the city. Ultimately, this long-term strategy weighed in the granting process, and the health center was not able to continue to compete with large urban municipalities for funding.

With WHSI, Worcester had made significant strides in dealing with many of the markers associated with infant mortality: the program had done a 'good job' with the grant dollars, made a difference, and was expected to sustain the work without the infrastructure investment dollars.

Although the health centers in Worcester have attempted to maintain at least some of the case management services that WHSI funding provided, there have been some reduction in services, and the WHSI's systematic approach to centralized data collection to understand the results of these services is now lacking.

2. Hospital Chart Reviews

Beginning in 1999, Dr. Dale Magee, a local obstetrician with training in public health, began to do an annual review of the medical records at both UMass Memorial Hospital and St Vincent Hospital of every mother/infant pair when the infant died, including stillbirths. Gradually, a pattern of infant death among immigrant West African women became apparent, as well as the worsening of the infant mortality rates among Worcester Hispanics. Dr. Magee's reviews and reports have allowed the group to have detailed data over two years before less detailed data is made available by the state DPH. The graphics in this report were produced from his reports to the WHBC.

3. African-Born Community-Based Research

In the early 2000s, in collaboration with the WHSI and funding from Blue Cross/Blue Shield Foundation, the WIMRTF hired experts from Boston University to hold focus groups with the West African community to help

us gain insight into the concerns of pregnant women in this population. These focus groups brought to light many issues around the African community's perceptions of racism in the Worcester community at large and in the Worcester health care system.

Other activities of the WIMRTF through 2012 are outlined in the appendix.

4. Collaboration with March of Dimes

Starting in 2009, the WIMRTF collaborated with the state March of Dimes for administrative/organizational support for ongoing efforts. With the March of Dimes' leadership, we now have bimonthly meetings with working groups on specific projects held in the interim months. In December of 2012, we renamed our collaborative group the Worcester Healthy Baby Collaborative (WHBC).

5. Future Steps

1. Ongoing collaboration with local educational institutions to draw on academic expertise in areas important to addressing the cross-cultural needs of our 21st century population.
    a. Dr. Marianne Sarkis and students at Clark University
    b. Dr. Tiffany Moore-Simas at University of Massachusetts
    c. Faculty and students at WPI (working on our Nhirya Ba or Blessed Baby videos)
2. Outreach to the Hispanic community. Maya Mauch, a medical student at UMass, and Dr. Magee are conducting key informant interviews within the Hispanic Community to try to better understand what has changed in the past decade.
3. Community Education: We are planning a Summit in Fall 2014 on infant Mortality, to include community members and health care workers.

4. Community engagement on social media education: our working group on Nhyira Ba (Blessed Baby, a prenatal educational program targeted at African immigrants) including a Facebook page and videos of local women talking about health issues.

5. Collaborating/integrating with other similar work in Worcester/MA--the Massachusetts Perinatal Quality Collaborative; the Boston and Springfield IM groups; the National Children's Study; the Maternal, Infant and Early Childhood Home Visiting Initiative; the Community Heath Improvement Plan workgroups that relate most closely to IM issues in Worcester (e.g. health disparities).

VI. Recommendations to the City Council

A. Improving Educational Opportunities for Immigrants in Worcester

In our community, IMR is NOT a medical issue but a reflection of the socioeconomic status (SES), stress, and the living conditions of the mothers and their families. In reflecting for over a decade on the most effective and efficient way to improve SES status, living conditions and stress, we conclude that increasing the high school graduation rate and college graduation rate are the most effective IMR prevention strategies. Improving an individual's educational attainment has been shown in general to add at least 7 years to that person's lifespan and quality of life. Education reduces smoking, poverty, and unmarried parenthood, with lower rates of all of these associated with lower infant mortality.

Focusing on education is particularly critical among Hispanics in Worcester who have a lower graduation rate than others. The conditions of Worcester's West Africans are unique and may relate to immigrant stress, initial SES status and other factors. This group is advancing through education quite rapidly, and we anticipate that their conditions will improve.

Recommendations:

1. The City Council could demonstrate its commitment to reduce infant mortality in Worcester by improving educational advancement opportunities for Worcester's most vulnerable populations. A community wide initiative that looks beyond the schools to the community and parenting factors that could improve the success of our students in school is likely the best investment of community capital that the City Council could make. The benefits go far beyond infant mortality and will strengthen the community as a whole.

2. The City Council can support the WHBC's work with Worcester's colleges and universities with community groups to develop health education outreach efforts conducted by community-members and local health providers to foster trust and convey medically sound health information. This work needs to include targeted outreach and bridge-building between health care centers and systems and the various affected communities to address the issues of perceived institutional racism and lack of trust in the health care system by immigrant communities.

3. The City Council can support the WHBC's plans for an Infant Mortality Summit in the city in September 2014, to include both community members and health professionals both locally and beyond.

B. Identify Alternative Funding for Case Management

We have concerns about the loss of WHSI funding: losing this intensive case management program leads to losing ground on some of the gains we have seen in last decade in overall IMR. Although the two community health centers in Worcester have been able to continue some of the case management, resources are limited and vulnerable to further funding cuts at local, state, and federal level. Furthermore, as noted in section C below, the data collection is no longer centrally happening so that

understanding the ongoing risk factors is more challenging than previously.

Recommendations:

1. The City Council can advocate to expand case management in Worcester for programs like the Maternal, Infant, and Early Childhood Home Visiting program that the state DPH is starting.

C. Need for Data

The last *Report to Black Mothers,* published by the MA Department of Public Health contained comprehensive and comparative information on the health of black mothers, both native and immigrant, based on data from 1997-2000. Much has happened in the Commonwealth since that report, yet none of it is being reported on due to staffing and budgetary issues.

The WHBC would like to reproduce this report; however, significant barriers exist at the state Department Health level that prevent access to data without bureaucratic processes that can significantly delay the work. Rigid Institutional Review Board (IRB) requirements make it so that even IMR analysts such as Dr. Dale Magee and Dr. Marianne Sarkis are unable to access these data in a timely manner. This report will be one of many that focus specifically on an in-depth analysis of the health of mothers in Worcester.

Recommendations:

1. The City Council can help advocate for an expedited access to the data necessary to reproduce the Black Births report either at the local level or at the State level.

2. The City Council can support the development of a city-wide birth and death registry that will collect the kind of demographic and outcome information that WHSI did, so that we can continue to study and understand the factors influencing infant mortality patterns in Worcester's most vulnerable populations. Analysts and researchers from the

WHBC require accessing standardized data in order to allow them to understand IMR similarities and differences in the socio-economic, educational, and geographical/environmental determinants. This will allow WHBC to make data-driven recommendations to the city and to identify targeted strategies to address and eliminate IMR in the city.

References

1. U.S. Census Bureau, *American Community Survey(ACS): Public Use Microdata Sample: 2008 [computer file]*, 2008.
2. Migration Policy Institute. *Massachusetts: Social & Demographic Characteristics*. 2008 [cited 2010 February 28]; Available from: http://www.migrationinformation.org/datahub/state.cfm?ID=MA .
3. Massachusetts Department of Public Health, *Massachusetts Births 2007*, S. Bureau of Health Information, Research, and Evaluation, and Division of Research and Epidemiology, Editors. 2009, Massachusetts Department of Public Health.
4. Massachusetts Department of Public Health, *Births to Black Mothers in Massachusetts 1997-2000*, 2004, Department of Public Health: Boston.

Worcester Health Baby Collaborative Member Organizations

March of Dimes Foundation, Massachusetts

Blackstone Valley OB/GYN

Catholic Charities Worcester County

Children's Friend

Clark University

Common Pathways

Department of Social Services, Worcester

Edward M. Kennedy Community Health Center

Family Health Center of Worcester

Legal Assistance Corporation of Central Massachusetts

Massachusetts Department of Public Health

Massachusetts Department of Public Health

Pernet Family Health Service

Reliant Medical Group

Shrewsbury OB/GYN

The National Children's Study Worcester County

UMass Medical School

UMass Memorial Health Care

UMass Memorial Medical Center

Worcester HeadStart

Worcester Polytechnic Institute

Worcester Public Schools

Worcester Division of Public Health