

2009 Mississippi Infant Mortality Report¹

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Introduction

The Mississippi State Department of Health (MSDH) is committed to decreasing infant mortality. Mississippi celebrates a small decrease in infant mortality during the past year. The 2008 infant mortality rate of 9.9 per 1,000 live births reflects a 2% reduction as compared to the 2007 rate of 10.1 per 1,000 live births. The Healthy People 2010 goal is to reduce U.S. infant mortality to 4.5 deaths per 1,000 live births by the year 2010. Thus, an additional reduction of 5.4 deaths per 1,000 live births would be required to reach the 2010 goal.

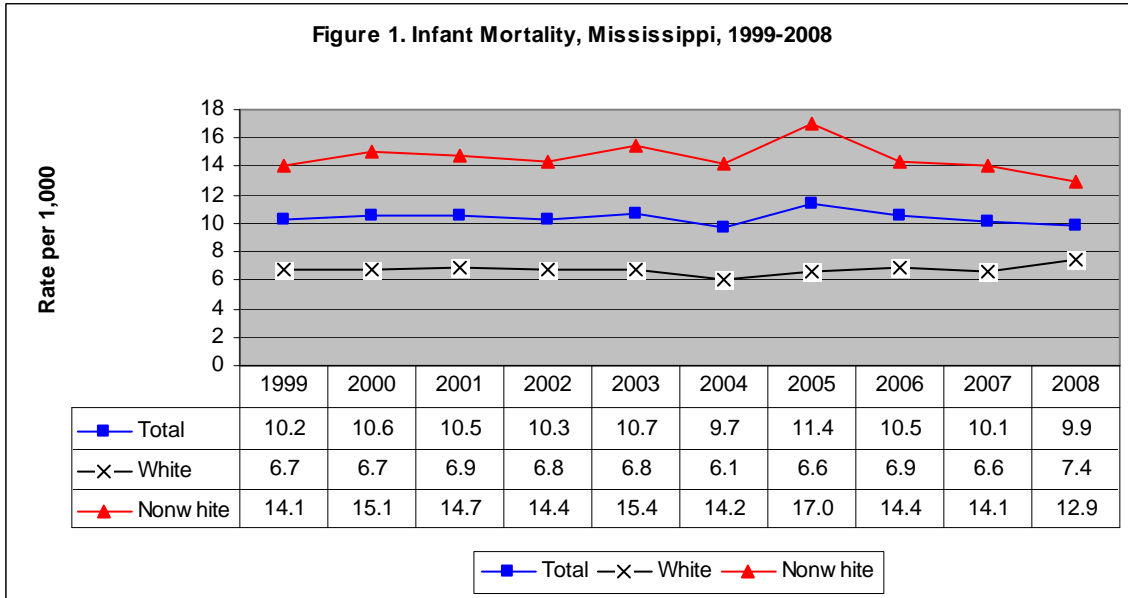
This report describes the pattern of infant mortality, delineates contributing factors, outlines a work plan for reducing infant mortality, and discusses progress accomplished during the preceding year. The MSDH Vital Statistics is the principal data source.

Data Monitoring

The leading causes of infant mortality in Mississippi are birth defects, low birthweight and premature birth, followed by Sudden Infant Death Syndrome, accidents, and maternal complications of pregnancy. Maternal factors, racial disparities, and prenatal care also impact infant mortality in Mississippi. The magnitude and significance of their contribution to Mississippi infant mortality is demonstrated by the following statistics, underscoring the need to monitor these events closely and target interventions towards reducing them.

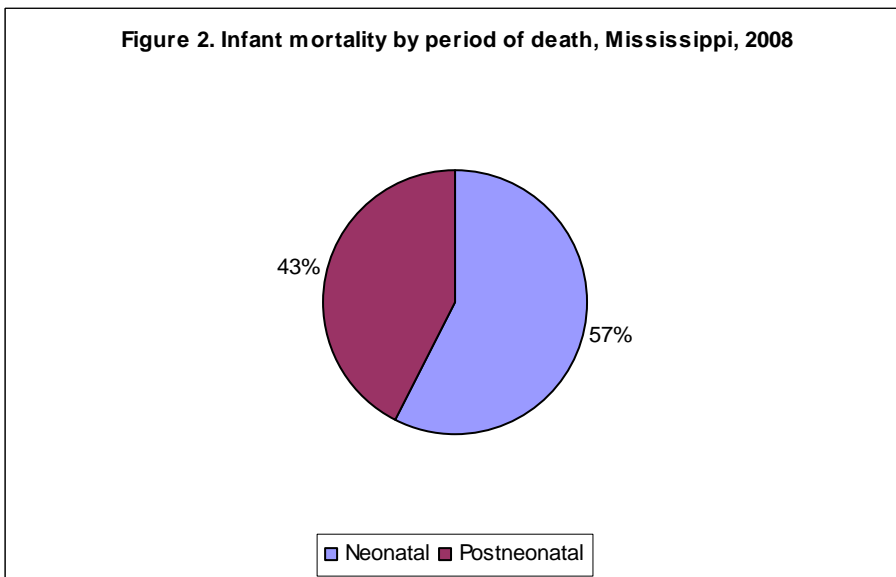
Infant mortality trend

The infant mortality rate for Mississippi has fluctuated during the last ten years (1999-2008) (Figure 1). During this period, the rate of Mississippi infants dying in the first year of life ranged from a low of 9.7 deaths per 1,000 live births in 2004 to a high of 11.4 in 2005. Each year on average, approximately 452 deaths occurred among some 43,540 births. The average infant mortality rate for the period was 10.4 infant deaths per 1,000 live births. The 10-year average infant mortality rate was 6.8 for whites and 14.6 for nonwhites.



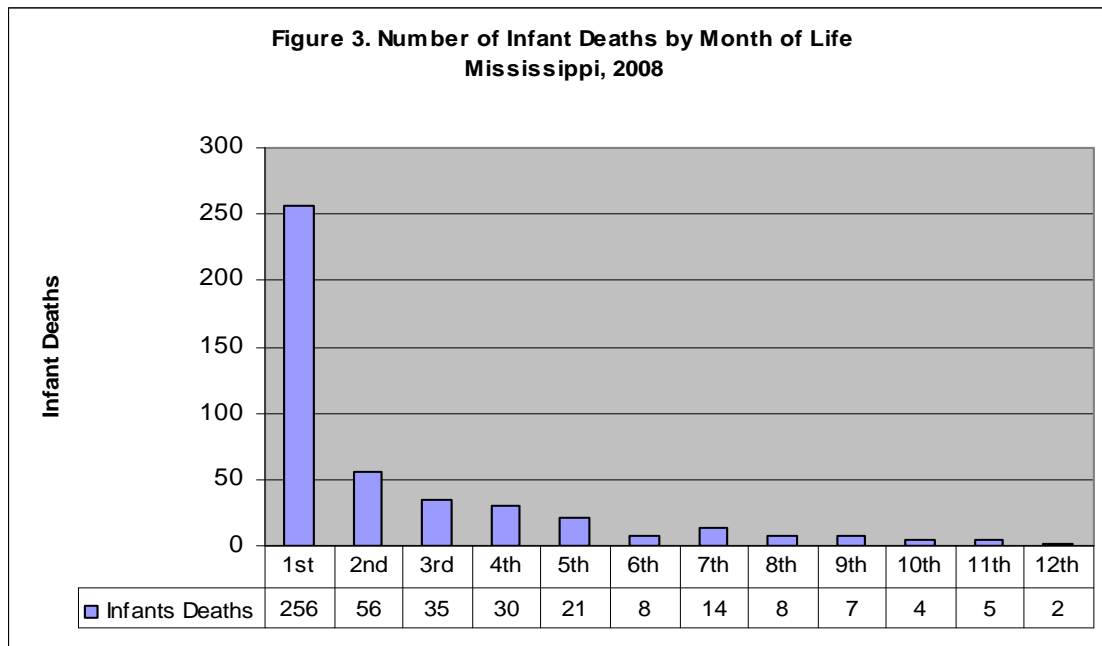
Infant mortality by period of death

In 2008, 57% of infant deaths occurred during the neonatal period, and 43% of infant deaths occurred during the postneonatal period (Figure 2). Neonatal deaths take place prior to the 28th day of life. Postneonatal deaths occur between the 28th day of life and the first birthday.



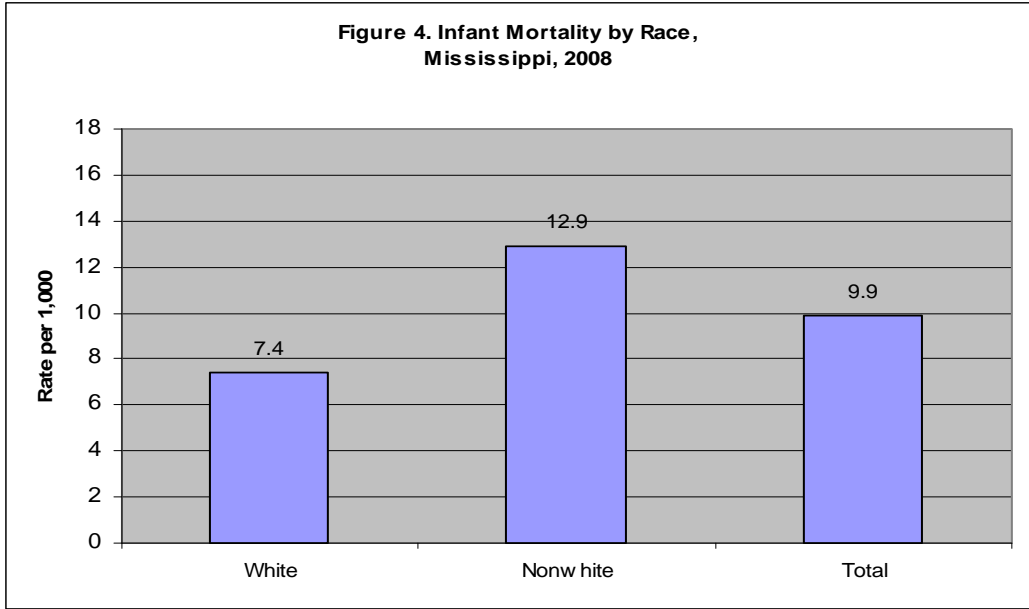
Infant age in months at time of death demonstrates that 256 (57.4%) of 446 infant deaths took place during the neonatal period. In addition, 121 of 446 (27.1%) occurred when infants were 2-

4 months of age. The remaining 69 (15.5%) were sparsely spread across the 5th through the 12th month of life (Figure 3).



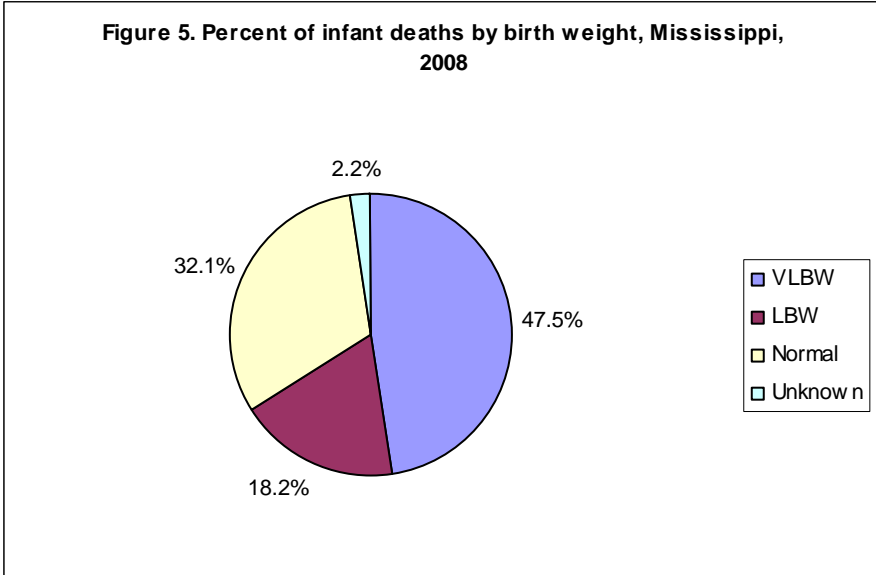
Infant mortality by race

In 2008, the infant mortality rate for nonwhites (96.1% of nonwhites were African Americans) was 12.9 compared to 7.4 deaths per 1,000 live births for whites. While a significant racial disparity continued to exist in 2008, the rate for nonwhites decreased by 8.5% from 14.1 in 2007 to the lowest rate in 10 years of 12.9 deaths per 1,000 live births. However, the rate for whites increased by 12.1% from 6.6 in 2007 to the highest rate in 10 years of 7.4 deaths per 1,000 live births (Figure 4).



Infant mortality by birth weight

Infant deaths attributable to preterm birth (PTB, <37 weeks gestation) and resultant low birth weight (LBW, < 2,500 grams) are the most common causes of infant death. In 2008, 47.5% of infant deaths were among babies having very low birth weight (VLBW, < 1,500 grams). Another 18.2% were those having LBW (between 1,500 and 2,499 grams). Slightly less than one third (32.1% of infant deaths occurred among babies with weights greater than or equal to 2,500 grams (normal weight) (Figure 5). The infant mortality rates for VLBW babies and LBW babies were 218.8 and 18.6 deaths per 1,000 live births, respectively. For babies weighing 2,500 grams or more, the rate was 3.6 deaths per 1,000 live births.



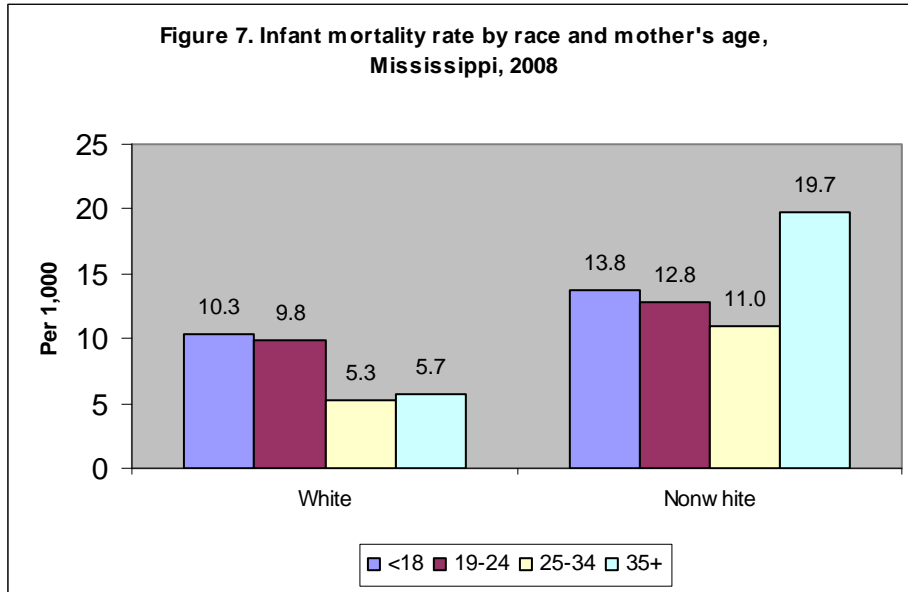
Infant mortality by gestational age

In 2008, 58.1% of infant deaths were among babies with a gestational age of less than 37 weeks. About 32.1% of infant deaths were among babies with a gestational age greater than or equal to 37 weeks. The infant mortality rate for babies born prematurely (<37 weeks gestation) was about 8 times higher (32.5/1,000) than those born full term (4.1/1,000) (Figure 6).



Infant mortality by mother's age

In 2008, nine white infants and 21 nonwhite infants born to teen mothers (less than 18 years of age) died. Babies born to mothers aged 25-34 years had the lowest infant mortality compared to mothers in other age groups (Figure 7).



Infant mortality by mother's marital status

In 2008, 62.9% of infant deaths occurred among unmarried mothers. The infant mortality rate for unmarried mothers was 11.3 compared to 8.0 deaths per 1,000 live births among married mothers.

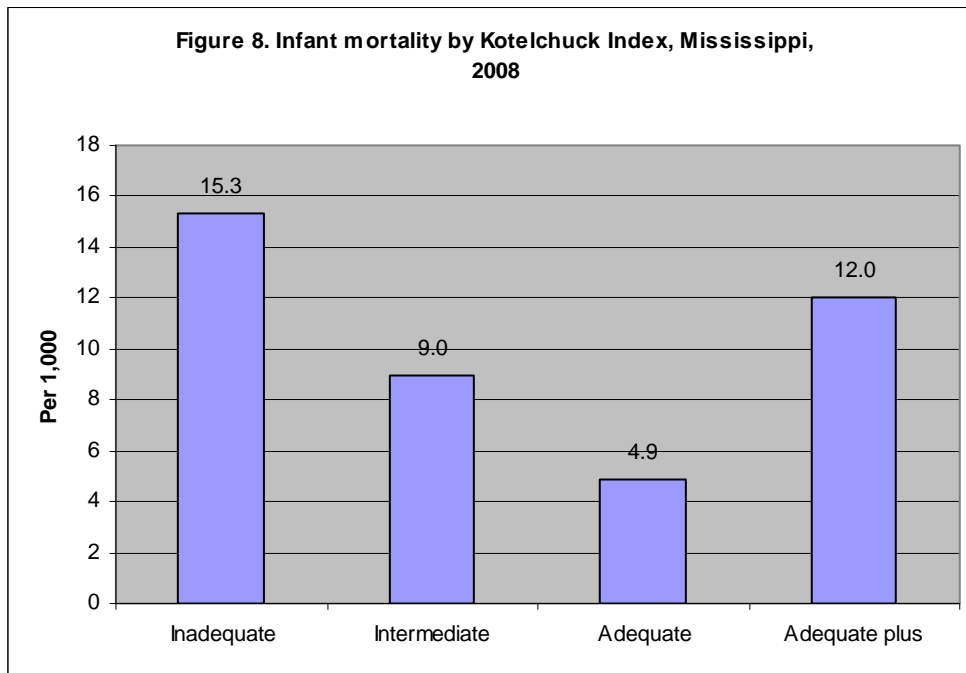
Infant mortality by Kotelchuck Index

The Kotelchuck Index classifies prenatal care into one of four categories by combining information about the timing of prenatal care, the number of prenatal care visits and the fetus' gestational age.

- Inadequate: Prenatal care began after the 4th month or less than 50% of recommended prenatal visits were received.

- Intermediate: Prenatal care began by the 4th month and 50% to 79% of recommended prenatal visits were received.
- Adequate: Prenatal care began by the 4th month and 80%-109% of recommended prenatal visits were received.
- Adequate Plus: Prenatal care began by the 4th month and 110% or more of recommended prenatal visits were received.

In 2008, mothers who received “inadequate” prenatal care had the highest infant mortality rate compared to those who had received “intermediate” and “adequate” prenatal care. However, the infant mortality rate for infants born to mothers who received “adequate plus” prenatal care is more than 2.4 times that of infants born to mothers who received “adequate” prenatal care. This finding suggests that mothers likely received “adequate plus” prenatal care due to high-risk pregnancy or anticipated negative outcome (Figure 8).



Work Plan and Progress Report

The MSDH continues to rank infant mortality as the agency's highest priority. New programs have been implemented to address maternal and infant health in Mississippi.

In 2006, after recognizing that preterm birth and low birthweight were major contributors to Mississippi infant mortality, MSDH conducted a study to investigate the impact of selected maternal chronic medical conditions, race, and age on preterm birth, low birthweight, and infant mortality among Mississippi mothers. The study focused on chronic medical conditions existing prior to pregnancy. The retrospective cohort analysis of infant birth certificates matched with infant death certificates included 202,931 singleton infants born to African American and white Mississippi mothers during 1999-2003.

The results indicated that preterm birth, low birthweight, and infant mortality were more prevalent among African-American women, very young women (≤ 15 years old), and women with certain chronic medical conditions that existed prior to pregnancy such as hypertension and diabetes. The study underscored the importance of increasing access to preconception (or pre-pregnancy) care and treating women throughout the lifespan as well as recommending training for women's health care providers in recognizing and understanding the effects of chronic disease in women. The study documented the need for preventive health care as a tool for reducing racial disparities in infant mortality. Generally speaking, healthier mothers have healthier babies. Thus, improving the health of mothers prior to pregnancy could improve outcomes for Mississippi infants and their families.

Modeling a program implemented in Georgia in 2006 (Dunlop et al, 2008), MSDH implemented pilot programs in two Mississippi communities in 2009 that focus on women who delivered a very-low-birth-weight infant, which annually contributes to more than half of Mississippi infant deaths. The communities currently include an expanded area of Metropolitan Jackson (Hinds County) and an 18-county catchment area of the Mississippi Delta (Desoto, Tunica, Tate,

Panola, Quitman, Coahoma, Tallahatchie, Bolivar, Sunflower, Carroll, Leflore, Washington, Humphreys, Holmes, Yazoo, Sharkey, Issaquena, and Warren Counties). These communities are predominantly African American with high rates of poverty. The communities have excessive rates of LBW or VLBW deliveries (and correspondingly higher infant mortality and morbidity) and low rates of health insurance coverage and access to primary care services. The combined Delta Infant Mortality Elimination (DIME) and Metropolitan Infant Mortality Elimination (MIME) components of the interpregnancy care project give varying perspectives – urban and rural – of implementing interpregnancy care in Mississippi. The DIME project is funded through the Delta Health Alliance. Alternative funding sources are being sought for the MIME. The programs are planned to continue for at least 3 years.

The DIME and MIME projects have three aims for women who delivered a VLBW infant at the University of Mississippi Medical Center (UMMC): (1) Improve overall health status, and reduce medical and social risks such as achievement of optimal child spacing (of 18 to 24 months) through the provision of primary health care, social, and community outreach services; (2) Reduce subsequent poor pregnancy outcomes in enrolled high-risk women; (3) Share with health care providers, policy makers, and central Mississippi community members what the impact of VLBW infants and racial disparity has on overall infant mortality in Mississippi. The projects will offer experience in implementation of community-based interpregnancy care and outreach services to high-risk women. A part of the outreach aim is to communicate the impact of the interpregnancy care and outreach services on subsequent health and subsequent pregnancy outcomes for high-risk women. These aims are being implemented through collaboration between the MSDH, UMMC, Healthy Linkages, federally qualified community health centers, and some smaller partners. The Program enrolls women who recently delivered or admitted a VLBW infant at UMMC for 24 months of services and study. Since acquiring Institutional Review Board approval in February 2009, more than 56 women have enrolled in the projects and case studies of success stories and challenges have begun to be documented. Evaluation is one of the key components of these pilot projects. If the projects are effective and funded, MSDH plans to expand to other areas of the state.

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