# Recent trends in infant mortality and infant mortality risk factors

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# Acknowledgements

**NCHS Birth and infant health team:**

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# What's new?

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## Recent Declines in Infant Mortality in the United States, 2005–2011

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### Key findings

- Following a plateau from 2000 through 2005, the U.S. infant mortality rate declined 12% from 2005 through 2011. Declines for neonatal and postneonatal mortality were similar.
- From 2005 through 2011, infant mortality declined 16% for non-Hispanic black women and 12% for non-Hispanic white women

Infant mortality is an important indicator of the health of a nation (1,2). This report describes the recent decline in the U.S. infant mortality rate from 2005 through 2011. Changes in infant mortality rates over time are examined by age at death, maternal race and ethnicity, cause of death, and state. The linked birth/infant death data set (linked file) is generally the preferred source for infant mortality rates by race and ethnicity (3,4). This is particularly important for racial and ethnic groups other than non-Hispanic white, non-Hispanic black, and Hispanic. For these three groups, rates calculated from the mortality and linked files have been very similar for many years, and trends are unlikely to differ (3–5). Thus, data from the mortality file are used for this analysis because of their greater timeliness (3,6). Data for 2011 are preliminary (6). Because preliminary data are not available by state, data for the 2005–2010 period were used for the geographic analysis.

http://www.cdc.gov/nchs/data/databriefs/db120.pdf

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## Infant Mortality Statistics from the 2009 Period Linked Birth/Infant Death Data Set

By T.J. Mathews, M.S. and Marian F. MacDorman, Ph.D., Division of Vital Statistics

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**Abstract**

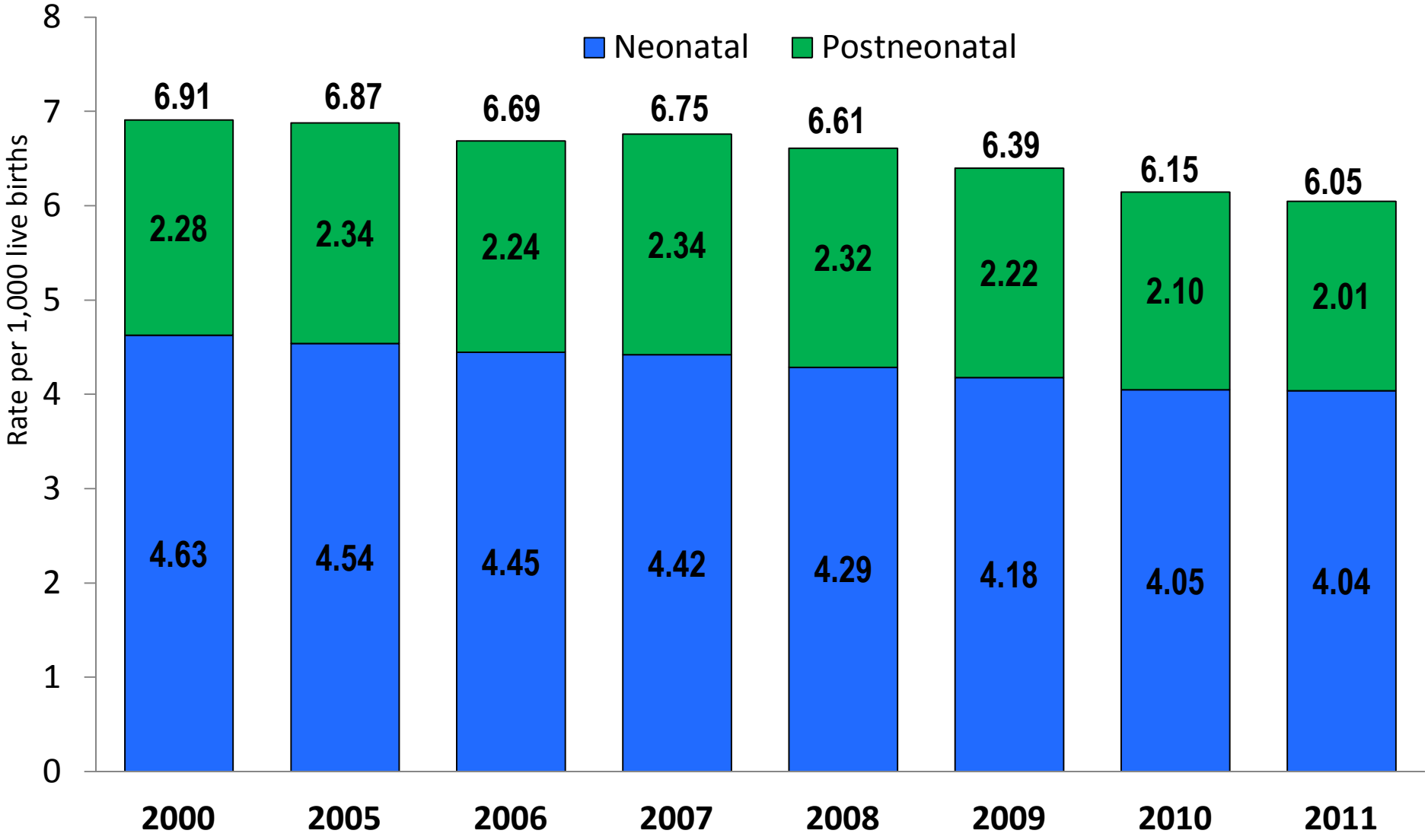
**Objective:** This report presents 2009 period infant mortality statistics from the linked birth/infant death data set (linked file) by maternal and infant characteristics. The linked file differs from the mortality file which is based entirely on death certificate data.

http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_08.pdf

# Vital Statistics Infant Mortality Data

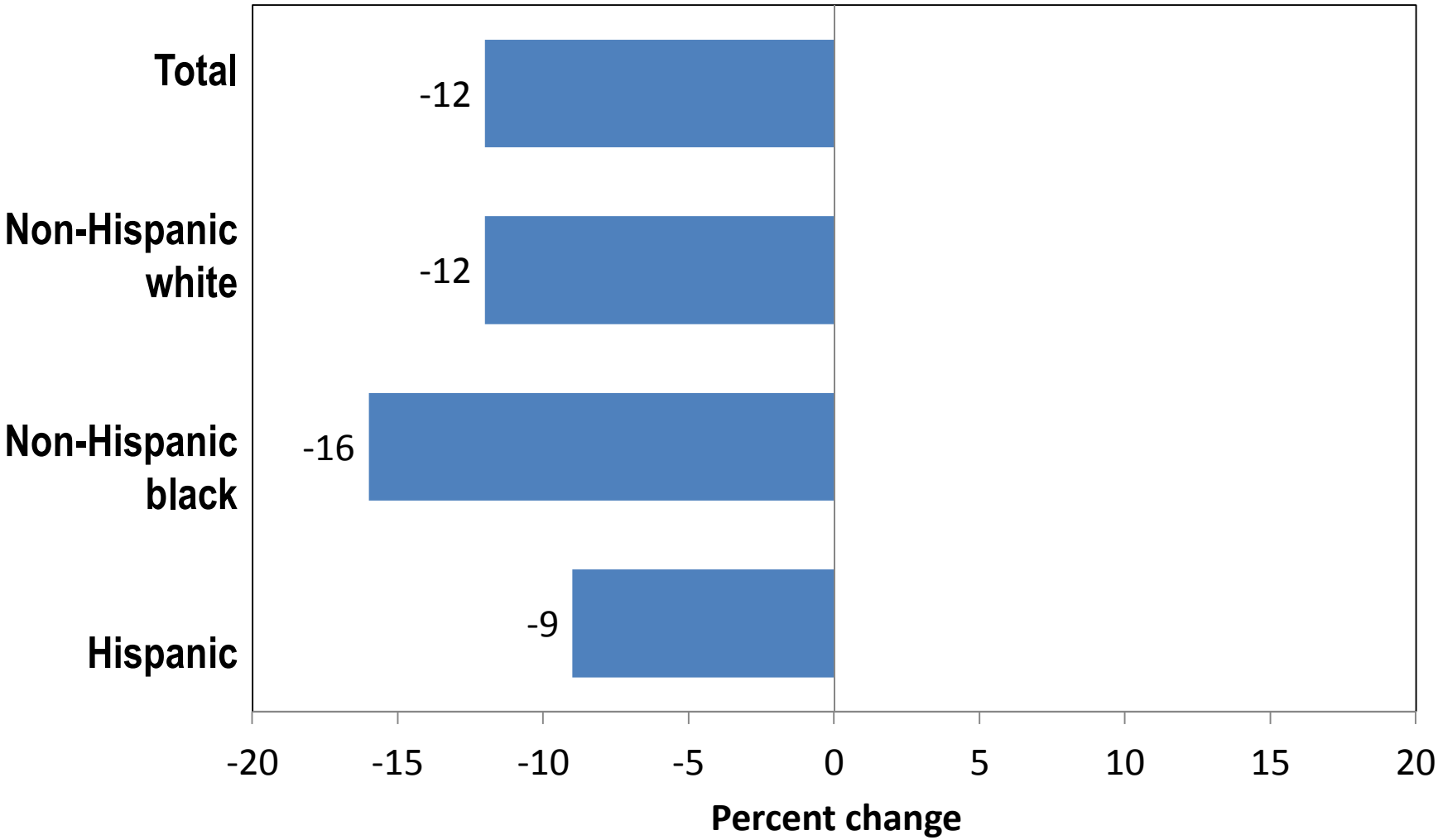
- Based on all birth and death certificates filed in state vital statistics offices, and transmitted to NCHS.
- National data files currently available:
  - Birth (natality) data – 2011 preliminary and 2010 final
  - Mortality data – 2011 preliminary and 2010 final
  - Linked birth/infant death data set (linked file) – 2009 period file
    - Links birth and death certificate data for all infant deaths.
    - Purpose: To use more detailed data from the birth certificate for infant mortality analysis. Linked file provides more accurate data by race and ethnicity than mortality data.
- For this presentation, black and white = non-Hispanic black and non-Hispanic white

# Infant, neonatal and postneonatal mortality rates, US, 2000 and 2005-2011




Source: CDC/NCHS mortality data set; 2011 data are preliminary.

# Percent change in infant mortality rates by race and ethnicity, US, 2005-2011

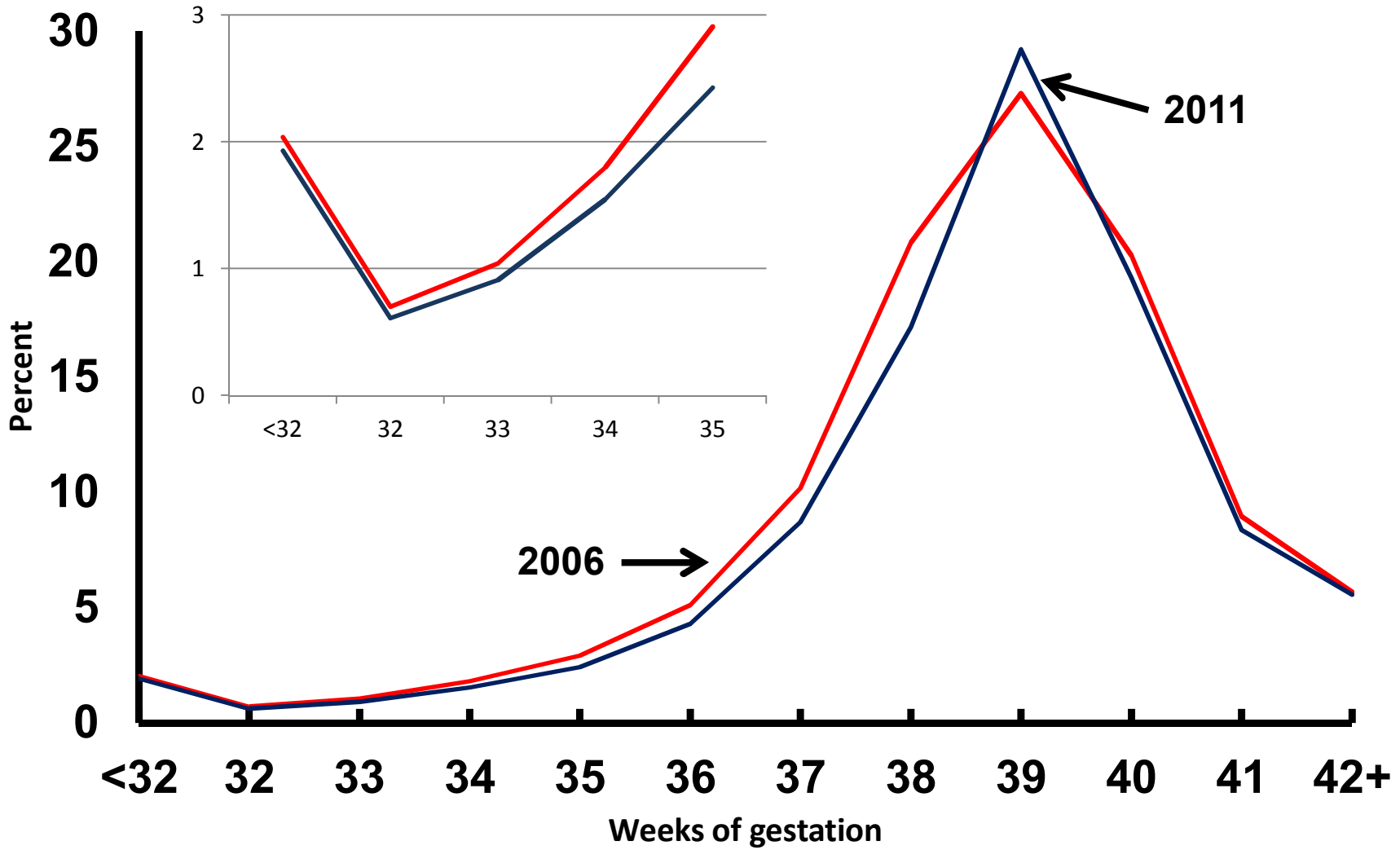



Source: MacDorman MF, Mathews TJ. Recent declines in infant mortality in the United States, 2005-2011. NCHS data brief no. 120. Hyattsville, MD: National Center for Health Statistics. 2013.

# Components of infant mortality

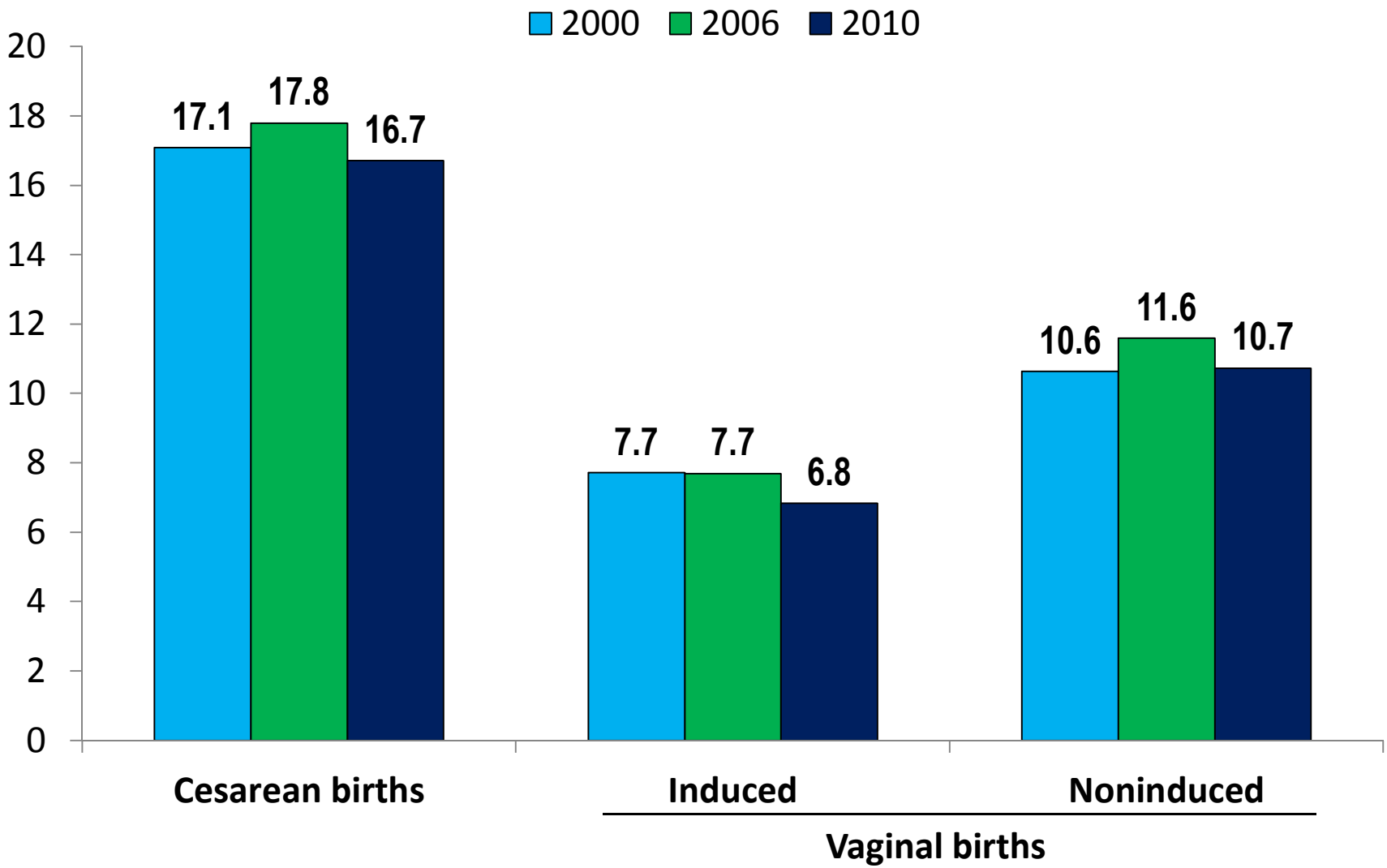
- The overall infant mortality rate can be partitioned into two key components:
  1) The distribution of births by gestational age;
  2) Gestational age-specific infant mortality rates (i.e. the mortality rate for infants at a given gestational age)
- Component 1 available through 2011; component 2 through 2009.
- About 60% of the 2005-2011 infant mortality decline occurred from 2005-2009.

# Percent distr. of births by gestational age: US, 2006 & 2011



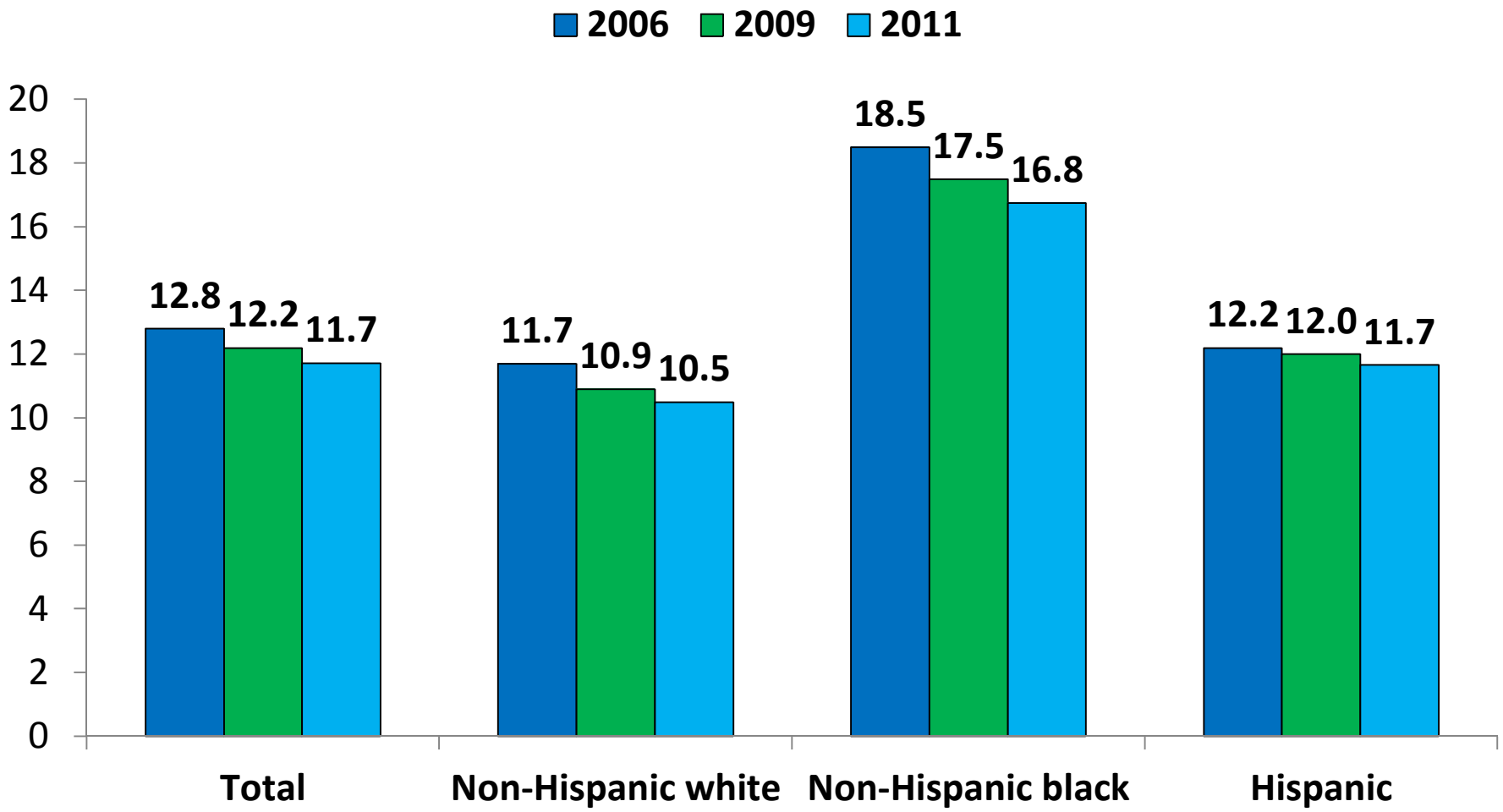

NOTE: Gestational age in completed weeks based on LMP-based measure of gestational age. 2011 data are preliminary. SOURCE: CDC/NCHS vital statistics natality file.

# Percent preterm for cesarean, induced vaginal, and non-induced vaginal births: US, 2000, 2006, and 2010



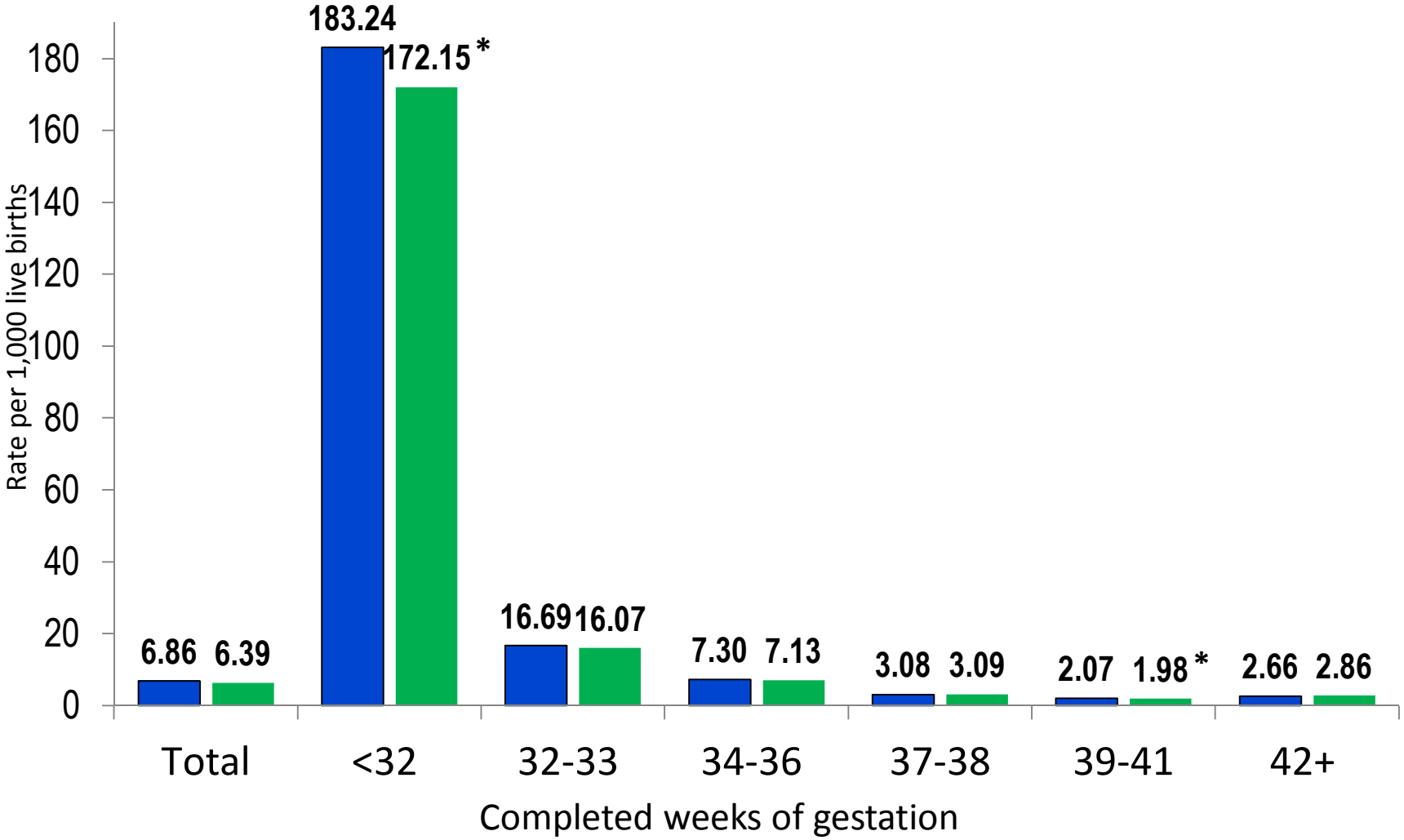

Source: CDC/NCHS vital statistics natality data.

# Percentage of preterm births by maternal race/ethnicity, 2006, 2009 and 2011




Sources: Hamilton et al. Births: Preliminary data for 2011. Martin et al. Births: Final Data for 2009.

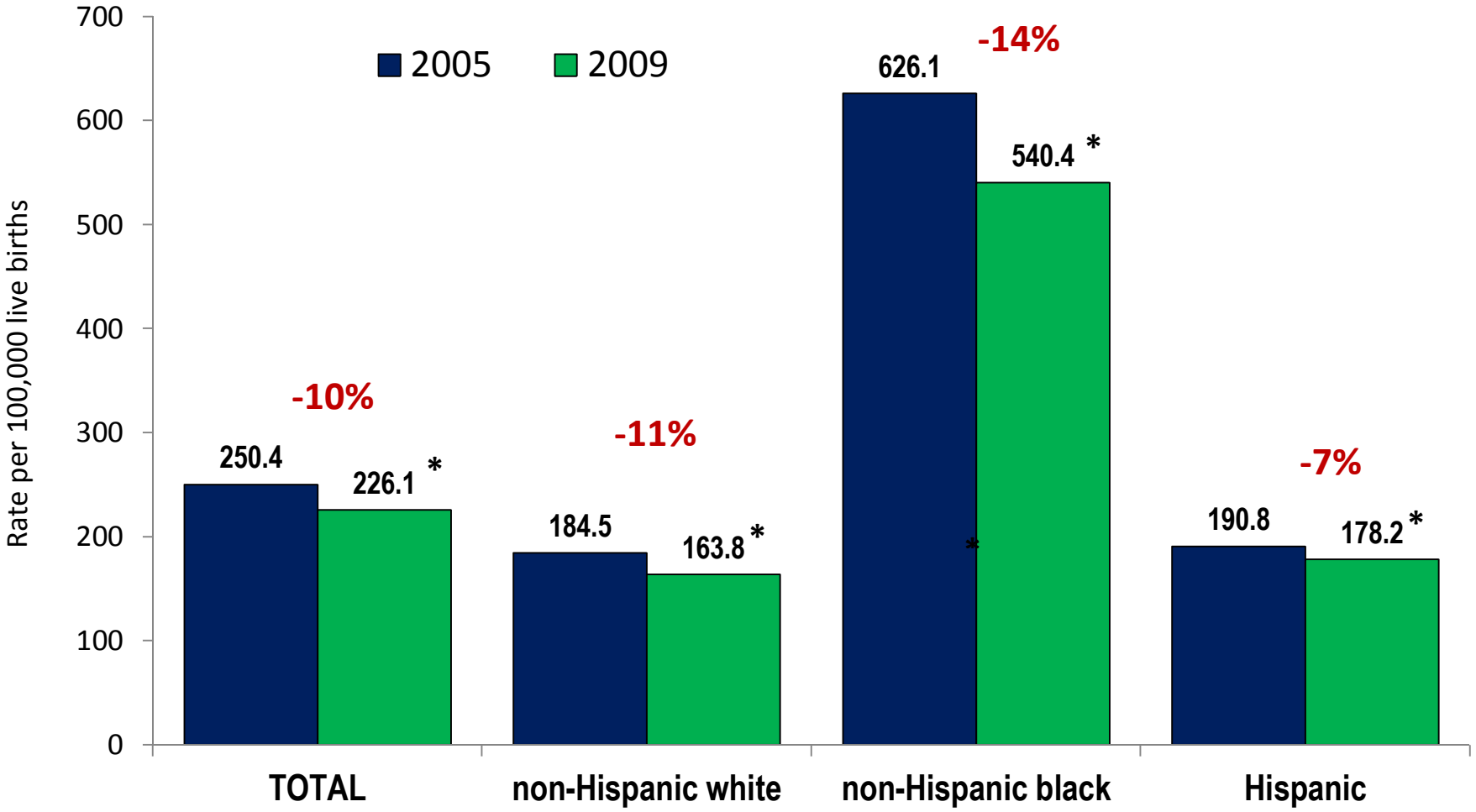
# Infant mortality rates by gestational age, US, 2005 and 2009




Source: NCHS, linked birth/infant death data set.

* indicates statistically significant difference at p<.05 level.

# Infant mortality rates for preterm-related causes of death by maternal race/ethnicity, US, 2005 and 2009



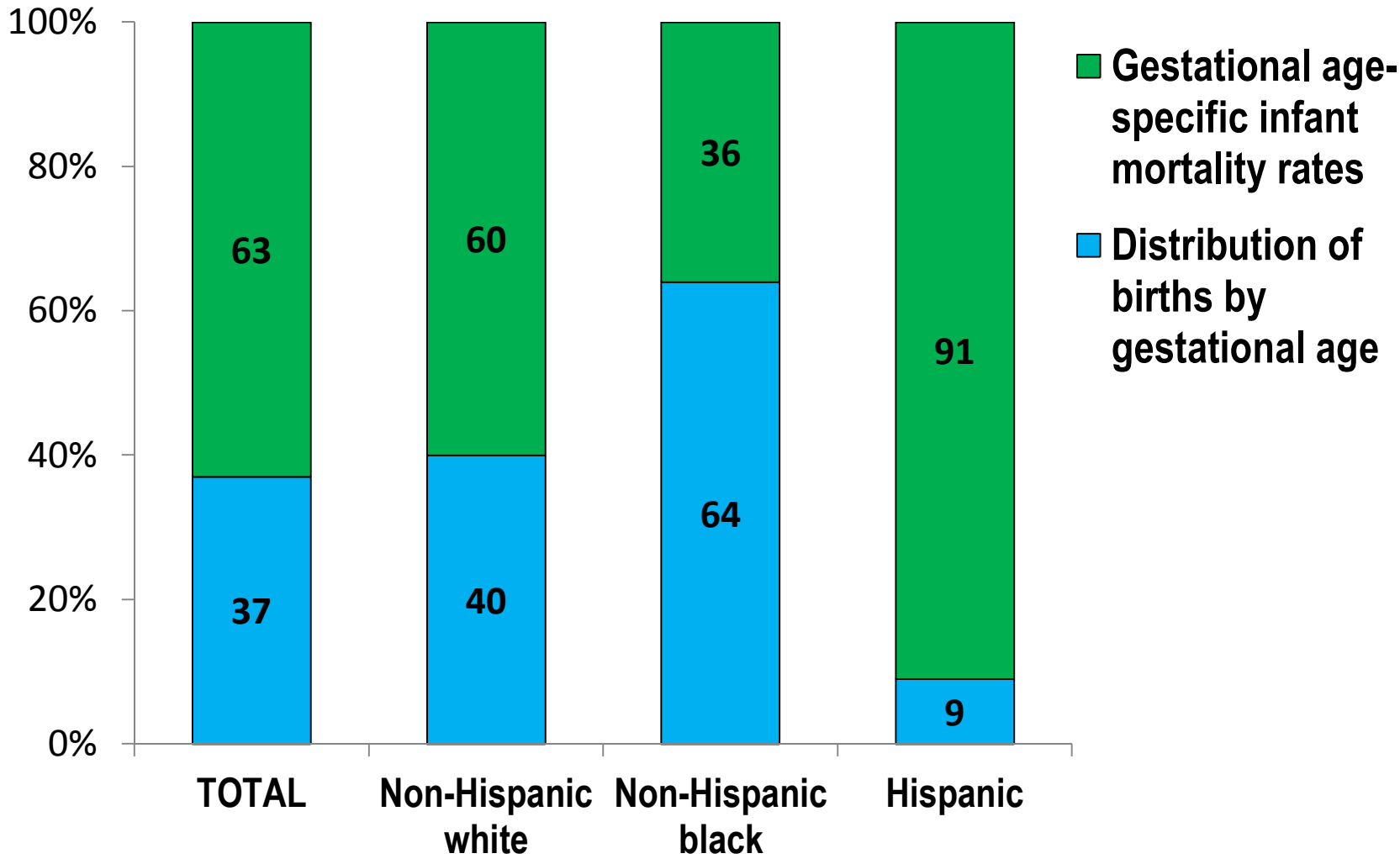

**SOURCE: CDC/NCHS linked birth/infant death data set.**

*** Indicates statistically significant difference at p<.05 level.**

# Kitagawa analysis

- Used to quantify the relative contribution of changes in the two components, to the 2005-2009 infant mortality decline.
- Analyzed separately for the total population and for non-Hispanic white, non-Hispanic black, and Hispanic women.

# Percent contribution of two components to decline in US infant mortality rate 2005-2009, by race/ethnicity




Source: CDC/NCHS; linked birth/infant death data set.

# Conclusions

- After a plateau from 2000-2005, the US infant mortality rate (IMR) declined 12% from 2005 to 2011.
- From 2005-2011, the IMR declined by 16% for non-Hispanic black, 12% for non-Hispanic white, and 9% for Hispanic women .
- In 2011 there were 23, 910 infant deaths (based on preliminary data).

# Conclusions (cont.)

- After more than two decades of increase, there was a 9% decrease in the preterm birth rate from 2006-2011.
- Preterm births decreased for spontaneous vaginal, induced vaginal, and cesarean deliveries.
- Black women have higher rates of preterm birth and preterm-related infant mortality; thus the recent decline in infant mortality had a bigger impact for black women.
- For black women, 2/3 of the 2005-09 IMR decline was due to declines in preterm births. For white and Hispanic women, the majority of their infant mortality declines were due to declines in gestational age-specific IMRs.

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**Any questions?**