

PEDIATRIC NUTRITION SURVEILLANCE SYSTEM

**CENTERS FOR DISEASE CONTROL AND
PREVENTION (CDC) / MASSACHUSETTS
WOMEN, INFANTS AND CHILDREN (WIC)
NUTRITION PROGRAM**



**Massachusetts Department of Public Health
Bureau of Family Health and Nutrition
Nutrition Division
2008 PEDIATRIC DATA REPORT**



March 2010

PEDIATRIC NUTRITION SURVEILLANCE SYSTEM CDC / MASSACHUSETTS WIC NUTRITION PROGRAM

2008 Pediatric Data Report

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Introduction

Purpose of Nutrition Monitoring

Nutritional status affects every aspect of a child's health, including normal growth and development, physical activity, and response to serious illness. Nutritional assessment is an integral part of pediatric care, and all children should be screened routinely for abnormalities of growth. At the population level, child growth is an indicator of overall population health. Nutrition surveillance monitors trends and patterns of key indicators of childhood nutritional status in order to identify existing and emerging needs and to target and develop appropriate nutrition interventions. Key indicators of childhood nutritional status include height, weight, anemia, birth weight, overweight, obesity and breastfeeding history.

National Pediatric Nutrition Surveillance

In 1973, the Centers for Disease Control and Prevention (CDC) began working with five United States (U.S.) states to develop a system for continuously monitoring the growth and nutritional status of low-income children in federally funded maternal and child health and nutrition programs. By 2008, the Pediatric Nutrition Surveillance System (PedNSS) had expanded to include 44 states, the District of Columbia, six Indian Tribal Organizations (ITOs) and one U.S. territory. The PedNSS collects and analyzes data on demographic characteristics, birth weight characteristics, indicators of nutritional status, and infant-feeding practices for children from birth to age 20 years. Some national PedNSS data from certain states may include not only infants and children up to age five but also children and adolescents up to 20 years of age. Other goals of the PedNSS include data interpretation and dissemination. Information from PedNSS is very useful in policy making, priority setting, planning, implementation and evaluation of nutrition programs. In 2007, 85.4% of national PedNSS data were obtained through the Special Supplemental Nutrition Program for Women, Infants and Children (the WIC Program), and the rest of the remaining data were obtained from the Early Periodic Screening Diagnosis and Treatment (EPSDT) program (5.6%), the Title V Maternal and Child Health (MCH) program (0.5%), and others such as Head Start (8.4%).

Pediatric Nutrition Surveillance in Massachusetts among MA WIC Infants and Children Aged Five Years or Less

Massachusetts (MA) has participated in the national PedNSS since 1993. All MA data are collected on infants and children up to age five, who attend WIC clinics for routine care, nutrition education, and supplemental foods. Infants and children can join WIC at any time provided they are not more than five years old and meet the eligibility criteria on income and nutritional need. These data are aggregated at the state level and submitted to CDC as transaction files for analysis, using a Secure Data Network. The CDC then produces a national nutrition surveillance report by using PedNSS data from MA and other states. The CDC also produces a surveillance report specific for the state of MA as one of the PedNSS contributors. As WIC participation is dependent upon income eligibility, nutrition risk eligibility criteria and other requirements, these data are not representative of the population of MA children as a whole. It should be noted that to be income eligible for WIC,

applicants must have income at or below an income level or standard set by the State agency or be determined automatically income-eligible based on participation in certain programs like Supplemental Nutrition Assistance Program (SNAP) formerly known as Food Stamp, Transitional Assistance to Needy Families (TANF) formerly known as Aid to Families with Dependent Children (AFDC), other state administered programs and Medicaid. Nutritional risk eligibility criteria include medically-based conditions (for example anemia, underweight, growth failure and poor pregnancy outcomes) and dietary-based conditions (such as nutrient deficiencies or inadequate food intake).

Purpose of the Report

Starting with the 2003 report, data analysis and chart preparation were provided by the CDC and not by the Office of Data Translation (ODT) at the Massachusetts Department of Public Health (MDPH). Consequently the 2008 data analysis and graphics were also done by the CDC. This report is a summary of all Massachusetts PedNSS data collected during the 2008 calendar year. It also highlights data trends from 1999 through 2008. The report serves two purposes: (1) It provides analyses of Massachusetts-specific data, and (2) it serves as an annual summary report for the Massachusetts WIC Program.

Regarding the first purpose, the 2008 MA PedNSS data are compared with the 2007 (the prior year) national PedNSS data which was the most current national data available at the time of MA PedNSS data analysis. It should be noted that the national data are not representative of the total population of U.S. children. Comparison of the Massachusetts and national data can be informative only regarding the health and nutritional status of low to moderate-income children in Massachusetts relative to children in similar circumstances across the nation.

Regarding the second purpose, this report will assist the Massachusetts WIC Program in identifying specific risk factors and needs among the participant population, in planning, implementing, and evaluating nutrition interventions, and in developing and implementing quality assurance protocols.

The data obtained for various indicators are usually compared to the Healthy People 2010 program benchmarks or targets (USDA HP-2010 published in 2000) to see whether the MA PedNSS infants and children are meeting these national targets and to determine areas that need improvement. For example one of the HP-2010 Objective is to reduce prevalence of low birth weight to no more than five percent of all live births; another target is to reduce short stature among low income children aged less than five years to five percent, one target is to reduce underweight among low income children aged less than five years to five percent, while another target is to increase prevalence of breastfeeding in the early post partum period to 75%.

Limitations

Some MA PedNSS data are exclusive to infants and children in the WIC program. Certain data on demographics, nutritional status, anemia and infant feeding practices should be interpreted with caution as they tend to be much different than the data for the general MA population published by the MA Department of Public Health. This discrepancy could occur because MA PedNSS data are based on low income infants and children participating in the WIC Program only and such data is not representative of the state of Massachusetts as a whole.

There were also small number limitations. Rates and proportions based on fewer than 100 observations are suppressed and trends based on small numbers should be interpreted cautiously. No statistics for some variables are shown for American Indian and multiple race MA PedNSS populations aged from two years to less than five years old whenever the group had fewer than 100 records. The CDC does not generate statistics based on fewer than 100 records as the data will not be statistically stable.

Some data such as income, birth weight information, mother's age and breastfeeding characteristics were not obtained from certain clients as the clients declined to report them. Such missing information will impact household poverty determination, nutritional status, low birth weight and high birth weight determination as well as other factors that impact the health of the child.

Executive Summary

Demographic Characteristics

- The 2008 Massachusetts Pediatric Nutrition Surveillance System (MA PedNSS) report includes records representing 131,911 children ages zero to 59 months (Table 1).
- Fifty-six percent (56.0%) of the 2008 MA PedNSS population were children of color compared to the national PedNSS population, where 68.0% were children of color (Figure 2).

Birth Weight Characteristics

- The overall prevalence of low birth weight (LBW), defined as birth weight less than 2500 grams, was 8.4% in 2008 MA PedNSS. This rate was slightly lower than the national LBW prevalence of 9.4%.
- Low birth weight in MA PedNSS was most prevalent among Black non-Hispanic (10.9%) and Asian (8.4%) children and least prevalent among Hispanic or Latino (7.8%) and White non-Hispanic children (7.8%) (Figure 4a).
- The overall prevalence of LBW has remained stable in the past ten years in MA PedNSS, from 8.6% in 1999 to 8.4% in 2008. During this period, the prevalence of LBW has been higher but stable among Black non-Hispanic infants (from 10.9% in 1999 to 10.9% in 2008) compared to infants from other races combined (Figure 4b).
- The overall prevalence of high birth weight (HBW), represented as birth weight greater than 4000g, was 7.7% in 2008 MA PedNSS. This rate was slightly higher than the HBW prevalence of 6.4% in the national data during the same period.

Indicators of Nutritional Status

Short Stature

- The prevalence of short stature (height-for-age < 5th percentile) was 4.6% and 6.2%, respectively, among children represented in the MA PedNSS and their national counterparts (Figures 7 & 8).
- American Indian/Alaskan Native children less than five years old had the highest prevalence of short stature (5.8%) in MA PedNSS (Figure 8).

-
- Overall, the percentage of MA PedNSS children with short stature has not changed in the past ten years (from 4.6% prevalence in 1999 to 4.6 % prevalence in 2008).
 - Among Hispanic children, the proportion with short stature decreased slightly from 4.5% in 1999 to 4.3% in 2008 (Figure 9).
 - The HP-2010 goal is to reduce growth retardation or short stature among low income children under-age five years to five percent.

Underweight

- The prevalence of underweight (weight-for-height < 5th percentile as per CDC Growth Charts 2000) was 5.4% among all children represented in the MA PedNSS and 4.5% among children in the national PedNSS during the same period.
- Asian children in MA PedNSS had the highest prevalence of underweight (6.2%) and Hispanic children had the lowest (4.3%) (Figure 10)
- While about ten percent (10.2%) of children zero to 11 months of age represented in 2008 MA PedNSS were considered underweight, the proportion of children in all other age groups who were categorized as underweight was 5.4% approaching the Healthy People 2010 target of five percent. This is likely due to the fact that infants who are born with low birth weight are unlikely to attain catch-up growth by the time of first data collection. Data collection is usually done in the first two months of life for children zero to 11 months (Figure 11).
- The prevalence of underweight children generally decreased (though slightly) among all race/Hispanic ethnicity categories in MA PedNSS for the past ten years from 6.0% in 1999 to 5.4% in 2008, and the prevalence of underweight was consistently higher among Asian children, from 8.0% in 1999 to 6.2% in 2008, but consistently lower among Hispanic children, from 4.7% in 1999 to 4.3% in 2008 (Figure 12).

Obesity and Overweight

- Overall prevalence of obesity slightly increased among all racial groups in MA PedNSS from 13.5% in 1999 to 14.7% in 2008. The overall prevalence of overweight slightly increased in the same decade from 16.4% in 1999 to 16.8% in 2008.
- The prevalence of obesity in MA PedNSS for children less than five years old was 14.7% in 2008 while in the national PedNSS it was 13.9% (Figure 13a).
- In the 2008 MA PedNSS, the prevalence of obesity varied by race and ethnicity. Over eighteen percent (18.4%) of Hispanic, 13.7% of Black non-Hispanic and

13.2% of White non-Hispanic children between two and five years old were obese compared to 8.9% of Asian children between two and five years old (Figure 14a).

- In the 2008 MA PedNSS, the prevalence of obesity also varied by age. Eighteen percent (18.1%) of children who were one year old, 14.8% of children who were two years old, 17.4 % of children who were three years old and 18.5% of children at four years old were described as obese, compared to 9.2% of children under one year of age (Figure 13b).
- The overall prevalence of obesity among MA PedNSS children between two and less than five years old increased slightly in the past ten years among all race/Hispanic ethnicity categories from 13.5% in 1999 to 14.7% in 2008.
- Hispanic children consistently had the highest prevalence of obesity ranging from 16.6% in 1999 to 18.4% in 2008 while Asian children had the lowest prevalence of obesity (from 9.7% in 1999 to 8.9% in 2008) (Figure 16).
- Four-year olds also consistently had the highest prevalence of obesity over the last ten years, from 16.3% in 1999 to 18.5% in 2008, compared to children less than one year old whose prevalence for obesity ranged from 8.9% in 1999 to 9.2% in 2008 (Figure 14b).
- One third (33.5%) of children between two and less than five years old represented in the 2008 MA PedNSS were overweight and obese compared to 31.3% among children in the national PedNSS (Figure 14a). The proportion of all children categorized as overweight in MA PedNSS (16.8%) is similar to the proportion of children in the national PedNSS (16.4%).
- A greater proportion of children in the MA PedNSS (16.7%) are categorized as obese compared to children in the national PedNSS (14.9%).

Anemia

- The overall prevalence of anemia in 2008 for children represented in the MA PedNSS was 11.7%, compared to 15.0% in the national PedNSS.
- Anemia prevalence in 2008 MA PedNSS varied by race and ethnicity and was highest among Black non-Hispanic children (17.0%), and lowest among White non-Hispanic children (9.9%) (Figure 17a).
- Anemia prevalence also varied by age in MA PedNSS (Fig.17b) and was highest among children between six to 12 months of age (15.1%) and lowest in children between three years and less than five years (9.3%) (Figure 17b). The anemia prevalence in the national PedNSS, was highest in children between 12 and 18 months old (18.5%) but lowest in children three years and above but less than five years old (10.9%) (Figure 17b).

-
- The overall prevalence of anemia in MA PedNSS decreased in the past ten years in all race/Hispanic ethnicity categories (from 15.0% in 1999 to 11.7% in 2008). Anemia prevalence was consistently high among Black non-Hispanic children, and decreased slightly in the last ten years (from 18.9% in 1999 to 17.0% in 2008) (Fig.18). In contrast, anemia prevalence in Asian children fell considerably in the last ten years from 17.2% in 1999 to 10.3 %in 2008.

Infant-Feeding Practices

- Seventy two percent (72.1%) of all infants in the 2008 Massachusetts PedNSS were ever breastfed (Fig.19) compared to 59.8% of children in the national PedNSS. "Ever breastfed" includes infants whose mother initiated breastfeeding, either by breastfeeding exclusively or breastfeeding in addition to formula feeding.
- Black non-Hispanic infants (82.6%) had the highest prevalence of breastfeeding initiation, followed by Hispanic infants (80.5%), while White Non-Hispanic infants had the lowest breast feeding initiation rate (64.1%) among MA PedNSS children (Figure 19).
- In the last ten years, the percentages of infants in the MA PedNSS that were breastfed increased in all categories of breastfeeding (Figure 23). For infants ever breastfed, the proportion increased from 58.6% in 1999 to 72.1% in 2008. For those breastfed for at least 6 months, the percentage increased from 19.8% in 1999 to 27.3% in 2008, while for infants breast fed for at least 12 months, breastfeeding percent increased from 8.5% in 1999 to 14.0% in 2008.
- Both Black non-Hispanic (82.6%) and Hispanic (80.5%) infants in the 2008 MA PedNSS surpassed the HP 2010 goal of ever being breastfed (set at 75.0%).

Conclusions

In 2008, 4.6% of children less than five years of age who participated in the MA PedNSS program were short for their ages, 5.4% were underweight and 14.7% were obese. The overall prevalence of short stature (4.6%) and underweight (5.4%) among the 2008 MA PedNSS children were near the HP 2010 target of 5.0%, suggesting that underweight and short stature may not be significant public health problems for the state of Massachusetts as a whole, although differences exist among the various ethnic groups. For example, the proportion of underweight children in MA PedNSS was highest among Asian (6.2%), but lowest among Hispanic (4.3%) and Black non-Hispanic (5.7%) children. The prevalence of short stature was highest (5.8%) among American Indian/Alaskan native children less than five years old.

The prevalence of obesity was highest among Hispanic children (18.4%), followed by Black non-Hispanic (13.7%), White non-Hispanic (13.2%), American Indian (12.3%) and Asian (8.9%) children, indicating the need for effective public health interventions to reverse this trend in MA PedNSS populations especially the Hispanic ethnic group.

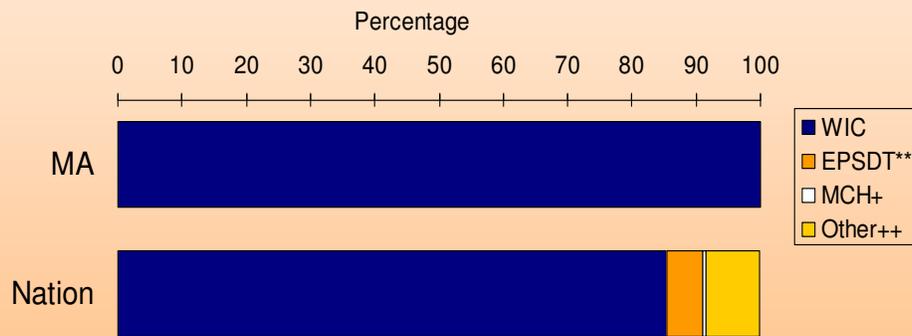
In addition, the overall prevalence of anemia was high (11.7%) for children in all racial and ethnic groups in MA PedNSS. The highest prevalence of anemia in MA PedNSS was observed among Black non-Hispanic children (17.0%) while the lowest prevalence was observed among White non-Hispanic children (9.9%). Possible causes of childhood anemia include deficiencies in iron, folate or vitamin B-12 or chronic infections, inflammation and hereditary hemoglobinopathies such as sickle cell disease.

Seventy-two percent (72.1%) of all infants in the MA PedNSS were ever breastfed. Black non-Hispanic infants (82.6%) had the highest prevalence of breastfeeding initiation, followed by Hispanic infants (80.5%), while White non-Hispanic infants had the lowest breast feeding initiation rate (64.1%) among MA PedNSS children.

According to the US Department of Health and Human Services report for Healthy People 2010 published in 2000, the HP 2010 target is to increase the proportion of children who were ever breastfed to 75%, breastfed at six months to 50% and breastfed at one year to 25%. Both Black non-Hispanic and Hispanic children in the 2008 MA PedNSS surpassed the HP 2010 target for breast feeding initiation.

Source of Data

Figure 1-Source of Data
among Children Aged Less than Five Years



* Special Supplemental Nutrition Program for Women, Infants and Children.

** Early Periodic Screening, Diagnosis, and Treatment Program.

+ Title V Maternal and Child Health Program.

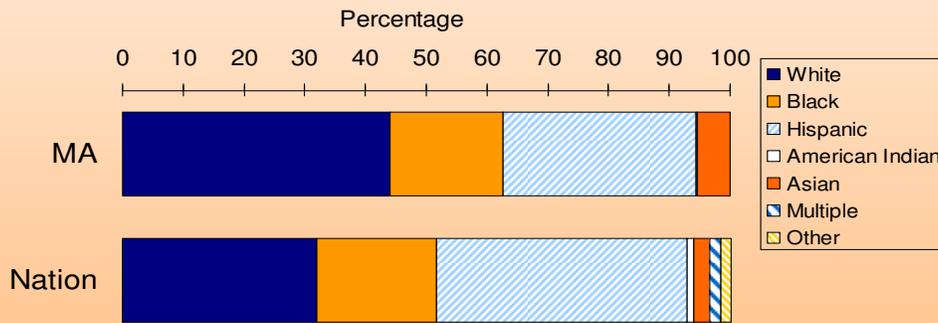
++ Includes Head Start.

2008 MA PedNSS

- The 2008 MA PedNSS included records representing 131,911 children ages zero to 59 months (Table 1).
- In the 2008 MA PedNSS, the entire (100%) dataset was derived from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).
- Among the national PedNSS population, 85.4% of the 2008 dataset was based on data derived from WIC. Other data sources included the Early Periodic Screening Diagnosis and Treatment or EPSDT Program (5.6%), the Title V Maternal and Child Health Program or MCH (0.5%), and other programs including Head Start (8.4%).

Demographics: Race and Ethnicity

Figure 2-Racial and Ethnic Distribution
Among PedNSS Children Aged Less than Five Years

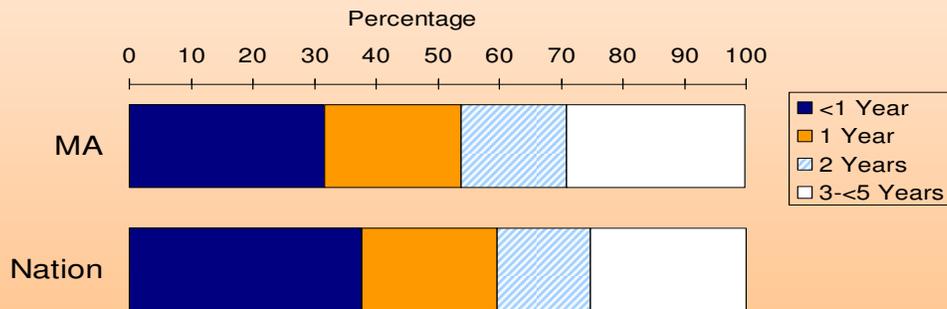


2008 MA PedNSS

- In 2008, the racial and ethnic distribution of the MA PedNSS population was comprised of 44.0% White non-Hispanic, 18.6% Black non-Hispanic, 31.9% Hispanic, and 5.4% Asian /Pacific Islander and 0.1% American Indian/Alaskan Native children as well as children from all other races or children with multiple races (Figure 2).
- In 2008, 56.0% of the MA PedNSS population consisted of children of color.
- While the proportion of Black non-Hispanic children varied slightly in both the 2008 MA PedNSS (18.6%) and the national PedNSS(19.6%), the MA PedNSS population had a larger proportion of White non-Hispanic (44.0%) and Asian (5.4%) children than the national PedNSS population (with 32% White non-Hispanic and 2.6% Asian children). However, there were a greater proportion of Hispanic children nationally (41.4%) than in the MA PedNSS population (31.9%).

Demographics: Age Distribution

Figure 3-Age Distribution
among PedNSS Children Aged Less than Five Years



2008 MA PedNSS

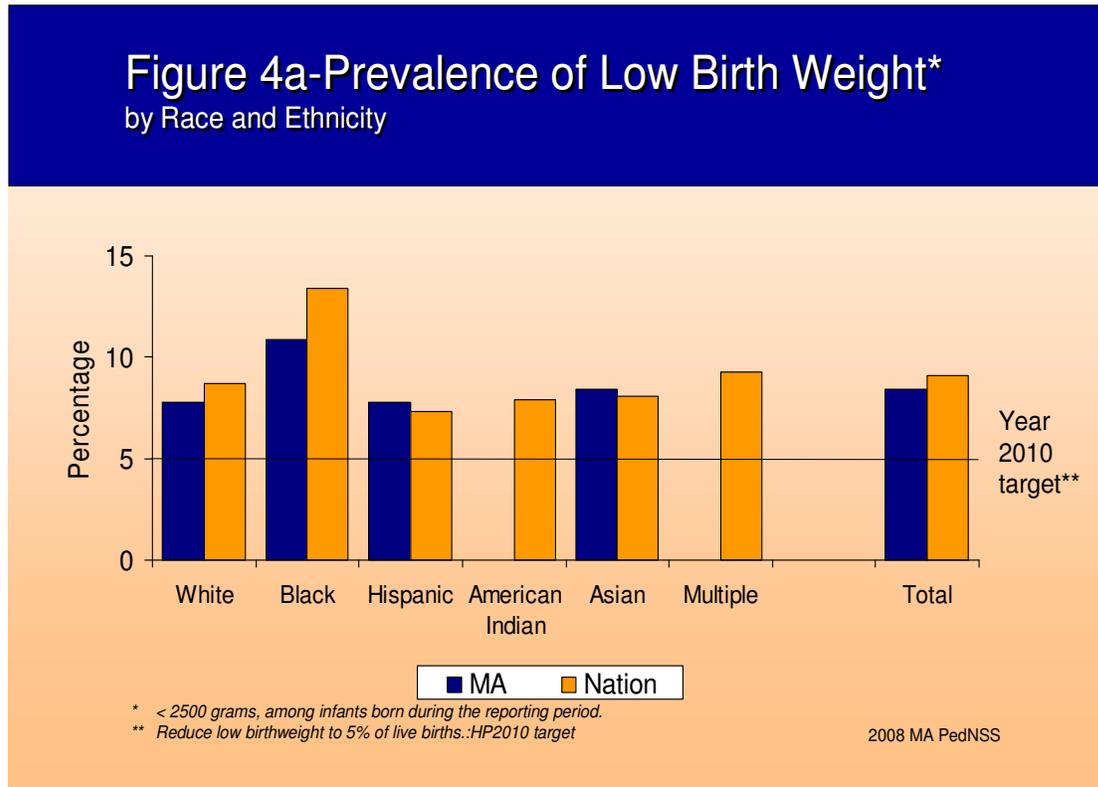
- The 2008 MA PedNSS included records representing 131,911 children ages zero to 59 months (Table 1).
- Almost a third (31.6%) of the total 2008 MA PedNSS population was under one year of age, 22.1% were one year old, 17.2% were two years old, and 29% were between three and less than five years old.
- A similar observation was made among national PedNSS children, however a greater proportion of children (37.6%) were less than one year old (Figure 3).

Demographic: Race/Ethnicity and Age Distribution of Children

Table 1. Race/Ethnicity and Age Distribution of Children Participating in the Massachusetts 2008 PedNSS

Race and Ethnic Distribution	Number	Percent
White non-Hispanic	57,976	44.0
Black non-Hispanic	24,570	18.6
Hispanic	42,121	31.9
American Indian	147	0.1
Asian/Pacific Islander	7097	5.4
Multiple Races	0	0.0
All Other	0	0.0
Total	131,911	100.0
Age Distribution		
0 - 5 months	32,251	24.4
6 - 11 months	9483	7.2
12 - 23 months	29,195	22.1
24 - 35 months	22,696	17.2
36- 59 months	38,286	29.0
Total	131,911	100.0

Low Birth Weight



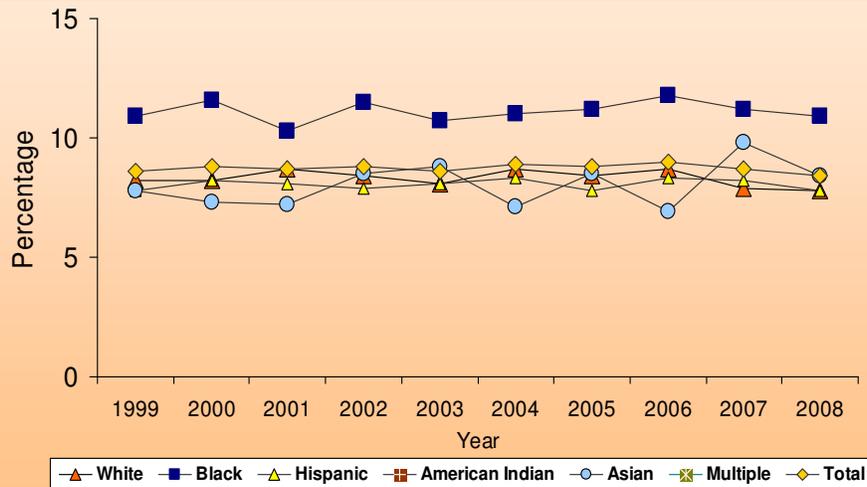
One of the important determinants of neonatal and post neonatal mortality is low birth weight (LBW), defined as birth weight less than 2500g (IOM 1985). Low birth weight infants are at increased risk for neonatal mortality, developmental delay, and for other medical complications during infancy, that range from neuro-developmental disabilities to respiratory problems, and such children tend to fare worse when compared to peers of normal birth weight. Low birth weight infants are also at increased risk for conditions affecting the lower respiratory tract and future cognitive and behavioral difficulties (Phillip1995, Taylor et al 2000, Hack et al 2002, Bhutta et al 2002 and Reichman 2005).

- The overall prevalence of LBW in the MA PedNSS (8.4%) was higher than in the general MA population reported at 7.9% (according to the 2007 MA Birth Report published by MA Department of Public Health in 2009). This discrepancy may be due to the fact that the MA PedNSS data are based on children participating in the WIC Program only (from low-income and minority families).
- The overall prevalence of LBW in the 2008 MA PedNSS was 8.4% while in the national PedNSS it was 9.1% during the same period.

-
- Among the 2008 MA PedNSS population, the prevalence of LBW was higher for Black non-Hispanic infants (10.9%) than for Asian (8.4%), White non-Hispanic (7.8%) and Hispanic (7.8%) infants.
 - Similarly, in the 2008 national PedNSS, the prevalence of LBW was higher for Black non-Hispanic infants (13.4%) than for infants with multiple races (9.3%), White non-Hispanic (8.7%), Asian (8.1%), American Indian (7.9%) and Hispanic (7.3%) infants (Figure 4a).
 - The HP 2010 target is to reduce LBW to no more than five percent of all live births. Since the prevalence of LBW was high among all PedNSS infants both in MA and nationally (with Black non-Hispanic having the highest prevalence), all such infants are at increased risk for various health problems and should be targeted for appropriate interventions.
 - No statistics for LBW are shown for American Indian and multiple race MA PedNSS populations aged from two years to less than five years old as the group had fewer than 100 records. The CDC does not generate statistics based on fewer than 100 records as the data will not be statistically stable (Figure 4a).

Trends in the Prevalence of Low Birth Weight by Race and Ethnicity

Figure 4b-Trends in Prevalence of Low Birth Weight* by Race and Ethnicity among MA PedNSS Children



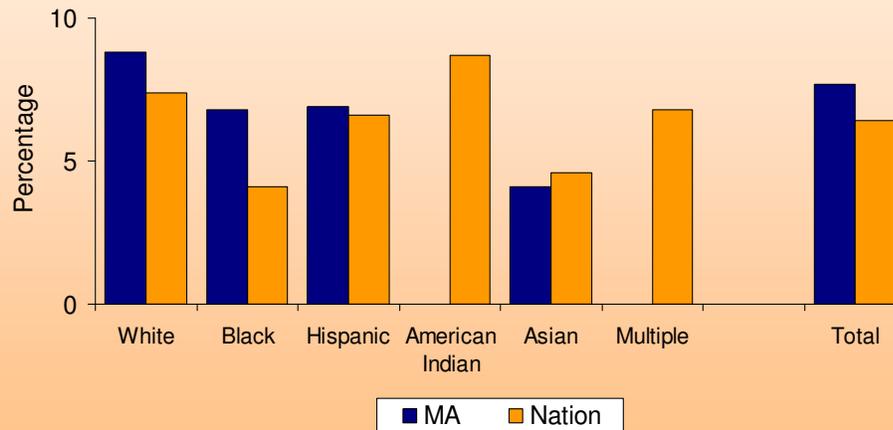
* < 2500 grams, among infants born during the reporting period.
Year 2010 target: reduce low birthweight to 5% of live births.

2008 MA PedNSS

- In the MA PedNSS, the overall prevalence of LBW for infants aged two years to under five years of age has remained stable in the past ten years across all race/ethnicity categories, from 1999 (8.6%) to 2008 (8.4%).
- A small increase in LBW was seen among Asian (0.6%) infants where the prevalence of LBW slightly increased from 7.8% in 1999 to 8.4% in 2008.
- The prevalence of LBW among Black non-Hispanic infants has remained consistently high compared to other races both in the MA PedNSS (8.4%) and the national PedNSS (9.1%).
- In both 1999 and 2008, the percentage of Black non-Hispanic LBW infants was high (10.9%).
- The percent LBW in all race/ethnicity categories in MA PedNSS is above the HP 2010 target of five percent.

High Birth Weight

Figure 5-Prevalence of High Birth Weight*
by Race and Ethnicity among PedNSS children



* > 4000 grams, among infants born during the reporting period.

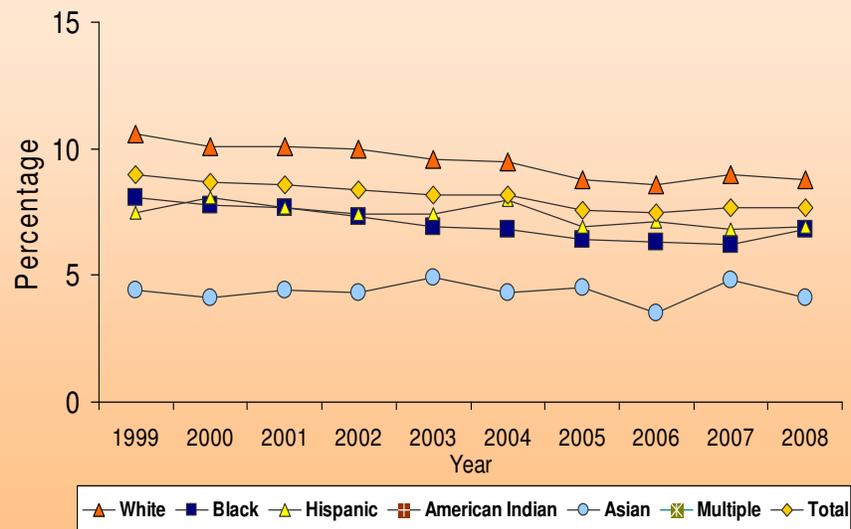
2008 MA PedNSS

High birth weight (HBW), defined as birth weight >4000 g, also called macrosomia, increases the risk for injury and or death during delivery. Such risks include birth injuries such as shoulder dystocia, broken clavicles, neurological damage, prolonged vaginal delivery associated with increased incidence of cesarean delivery, respiratory distress and fetal death due to asphyxia, and other medical complications including childhood asthma and inflammatory conditions. High birth weight infants are also at increased risk for conditions such as diabetes, childhood obesity, adult obesity, lower respiratory tract conditions, hypertension and future cardiovascular diseases (Jolly et al 2003).

- White non-Hispanic (8.8%) and Hispanic (6.9%) infants had the highest prevalence of HBW in the 2008 MA PedNSS. Black non-Hispanic (6.8%) and Asian (4.6%) infants in the MA PedNSS had the lowest prevalence of high birth weight.
- The prevalence of HBW for 2008 MA PedNSS was not calculated for American Indian /Alaskan Native and multiple race children, and hence not displayed in the above graph (Figure 5) because fewer than 100 records were available for analysis for each group at this time period. The CDC does not generate statistics based on fewer than 100 records. In the national PedNSS, the prevalence of HBW was 8.7% for American Indian children.

Trends in the Prevalence of High Birth Weight By Race and Ethnicity

Figure 6-Trends in Prevalence of High Birth Weight
by Race and Ethnicity among MA PedNSS Children



* > 4000 grams, among infants born during the reporting period.

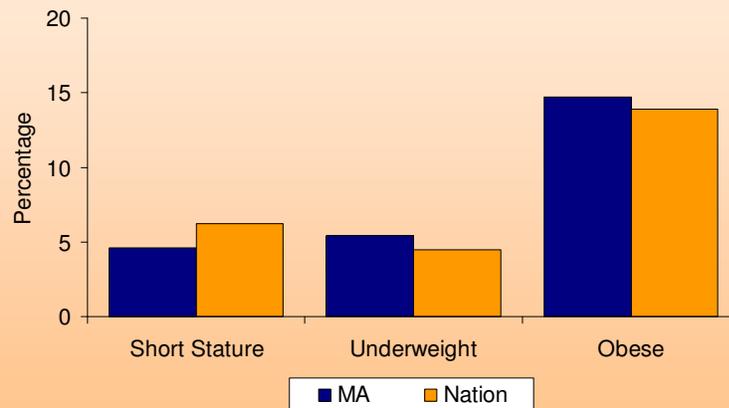
2008 MA PedNSS

- In the past ten years, the overall trend showed a slight decrease in HBW, from 9.0% in 1999 to 7.7% in 2008. Asian infants also experienced a small decrease in HBW from 4.4% in 1999 to 4.1% in 2008.
- Between 1999 and 2008, the prevalence of HBW for MA PedNSS was not calculated for American Indian /Alaskan Native and multiple race infants, and hence not displayed in the above graph (Figure 6) because fewer than 100 records were available for analysis in each year at this time period. The CDC does not generate statistics based on fewer than 100 records.

Prevalence of Short Stature, Underweight and Obesity, by Age

Figure 7-Prevalence of Short Stature, Underweight, and Obesity*

among Children Aged Less Than Five Years

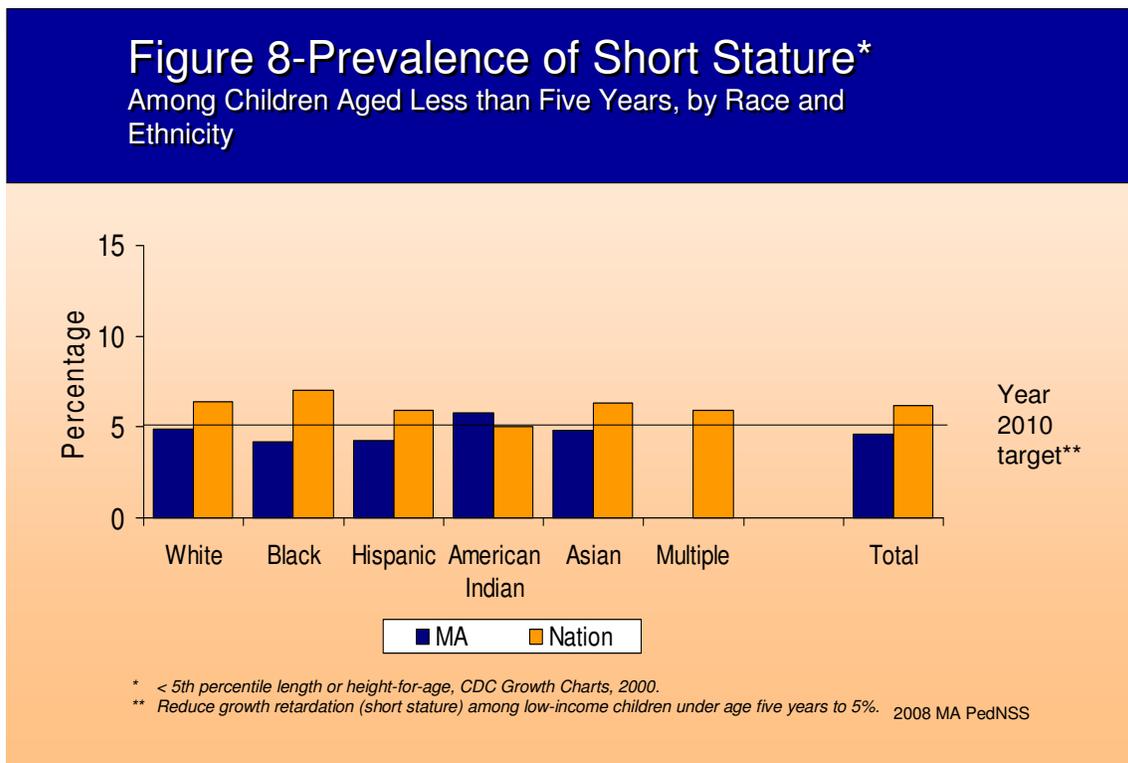


* Short stature: < 5th percentile length or height-for-age; underweight: < 5th percentile weight-for-length or BMI-for-age; obese: \geq 95th percentile weight-for-length or BMI-for-age. CDC Growth Charts, 2000.

2008 MA PedNSS

- In 2008, 4.6% of children less than five years of age who participated in the MA PedNSS program were short for their age, 5.4% were underweight and 14.7% were obese.
- The prevalence of short stature (4.6%) in the 2008 MA PedNSS achieved the target of five percent or less of the Healthy People 2010.
- The prevalence of short stature (4.6%) among MA PedNSS children less than five years of age was less than the prevalence among national PedNSS children (6.2%). However, the prevalence of underweight was slightly higher in MA PedNSS children (5.4%) compared to their counterparts in the national PedNSS (4.5%). The overall proportion of obese children was slightly higher among MA PedNSS children under five years of age (14.7%) than among their national counterparts (13.9%).

Prevalence of Short Stature



Among children less than two years of age, stature is assessed by using length measured in the supine position. Stature is also assessed by using height, measured in the standing position among children two years of age or older.

Short stature or growth retardation is defined based on the 2000 CDC gender specific growth chart percentiles as stature of less than the 5th percentile length-for-age for children younger than two years of age and less than the 5th percentile height-for-age for children two years of age or older.

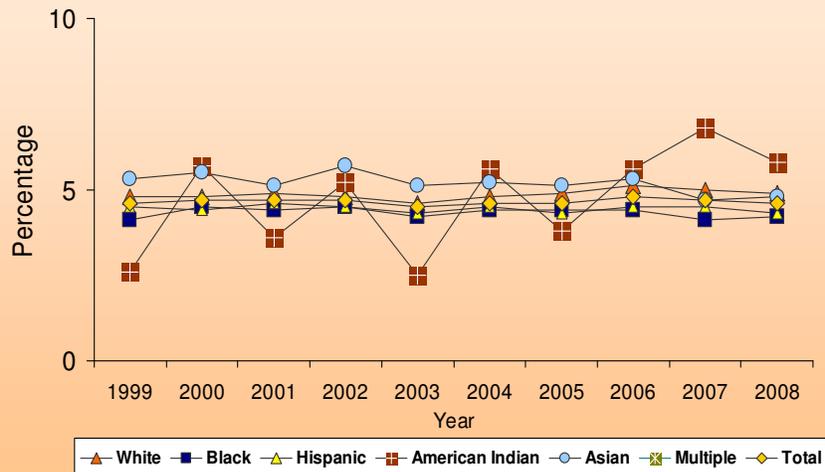
Short stature, also referred to as low length-for-age or low height-for-age (WHO 1996), reflects the long-term health and nutritional status of a child or a population. Short stature may reflect the normal variation of growth within a population; that is, five percent of healthy children are expected to fall below the established cutoff that defines short stature. Short stature may be associated with short parental stature or low birth weight, but it may also reflect growth retardation that results from chronic malnutrition due to inadequate food intake, recurrent illness, or both.

Short stature prevalence varied in both MA PedNSS and national PedNSS by race and ethnicity.

- The prevalence of short stature was consistently lower in the 2008 MA PedNSS children (4.6%) in all race/Hispanic ethnicity groups.
- Short stature was reported to be 6.2% in the 2007 national PedNSS children compared to 3.7% of non-PedNSS US children in the same year (Mei et al 2008).
- In the 2008 MA PedNSS, the overall prevalence of short stature (4.6%) among children under five years old achieved the HP-2010 target of five percent or less. White non-Hispanic (4.9%), Asian (4.8%), Hispanic (4.3%), and Black non-Hispanic (4.2%), achieved the Healthy People 2010 objective of reducing growth retardation to less than five percent of the population in 2008.
- Among the 2008 MA PedNSS population, American Indian/Alaskan native children under age five years had a higher prevalence (5.8%) of short stature compared to the overall state PedNSS data (4.6%) or to White non-Hispanic (4.9%), Asian (4.8%), Hispanic (4.3%) and Black non-Hispanic (4.2%) children.
- Nationally, however, Black non-Hispanic children had a slightly higher prevalence of short stature (7.0%) compared to the overall national PedNSS data (6.2%).

Trends in the Prevalence of Short Stature by Race and Ethnicity in MA PedNSS

Figure 9-Trends in Prevalence of Short Stature*
among MA PedNSS Children Aged <5 Years,
by Race and Ethnicity



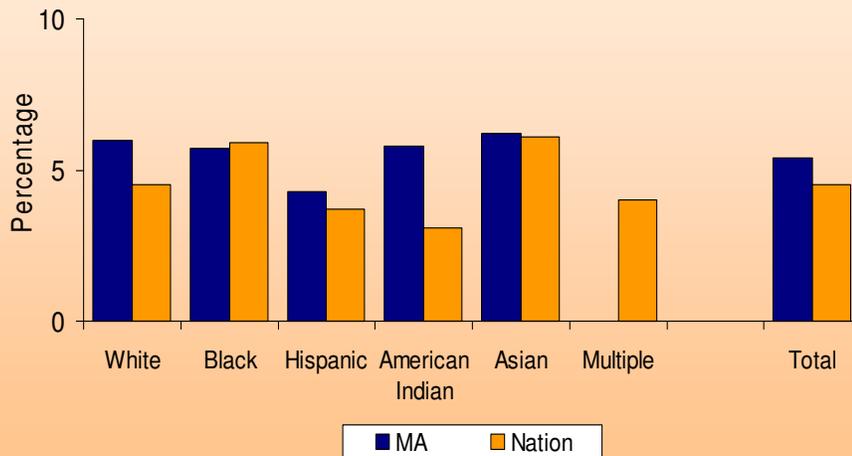
* < 5th percentile length or height-for-age, CDC Growth Charts, 2000.
Year 2010 target: reduce growth retardation (short stature) among low-income children under age five years to 5%.

2008 MA PedNSS

- Overall, the percentage of children with short stature has remained steady in the last ten years among all race/Hispanic ethnicity groups (from 4.6% in 1999 to 4.6% in 2008). However the proportion of short stature among American Indian children increased from 2.6% in 1999 to 5.8% in 2008 PedNSS though their total population data is not stable.

Underweight

Figure 10-Prevalence of Underweight*
among Children Aged Less than Five years, by Race and Ethnicity



* < 5th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall below the 5th percentile.

2008 MA PedNSS

Underweight in children is based on the 2000 CDC gender specific growth charts. It is defined as weight-for-length less than the 5th percentile for children younger than two years of age. It may also be defined as BMI-for-Age less than 5th percentile for children aged two years or older. Underweight is also referred to as low weight-for-height, thinness, or wasting and it is often associated with recent severe illness or acute malnutrition. About five percent of children are expected to fall below the 5th percentile according to the 2000 CDC gender specific growth charts.

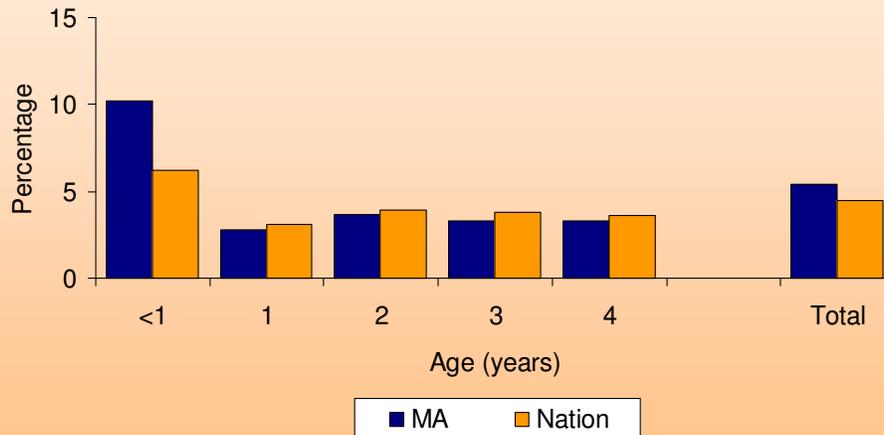
Underweight in children was compared between the 2008 MA and 2007 national PedNSS.

- The overall prevalence of underweight was slightly higher in children represented in the 2008 MA PedNSS (5.4%) compared to those in the national PedNSS (4.5%).
- Asian (6.2%) followed by White non-Hispanic (6.0%) children under five years of age had the highest prevalence of underweight in MA PedNSS.
- Hispanic (4.3%) and Black non-Hispanic (5.7%) children had the lowest prevalence of underweight in MA PedNSS.

-
- In the national PedNSS, Asian children showed the highest prevalence of underweight (6.1%).
 - Hispanic children under five years of age had the lowest prevalence of underweight in MA PedNSS (4.3%), while American Indian children had the lowest prevalence of underweight in the national PedNSS (3.1%).
 - Because fewer than 100 records were available for analysis for multiple race children in MA PedNSS, no data were presented at this time period. CDC do not generate statistics based on fewer than 100 records.

Prevalence of Underweight by Age

Figure 11-Prevalence of Underweight*
Among Children Aged Less than Five Years, by Age



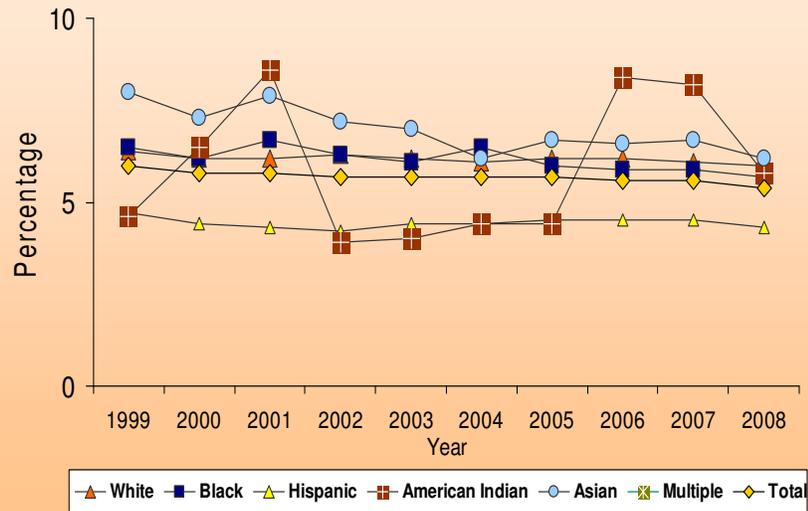
* < 5th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall below the 5th percentile.

2008 MA PedNSS

- With the exception of the youngest age group (less than one year old) that had a prevalence of underweight of 10.2%, in 2008 MA PedNSS, and 6.2% nationally, all other age groups had a low prevalence of underweight, below five percent.
- The high prevalence of underweight among the youngest age group is most likely attributable to infants who were born with a LBW, and who had not yet achieved catch-up growth in weight at the time of measurement.
- The HP-2010 goal is to reduce the prevalence of underweight among low income children under age five years to five percent or less.

Trends in Prevalence of Underweight by Race/Ethnicity

Figure 12-Trends in Prevalence of Underweight*
among MA PedNSS Children Aged Less than Five Years,
by Race and Ethnicity



* < 5th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall below the 5th percentile.

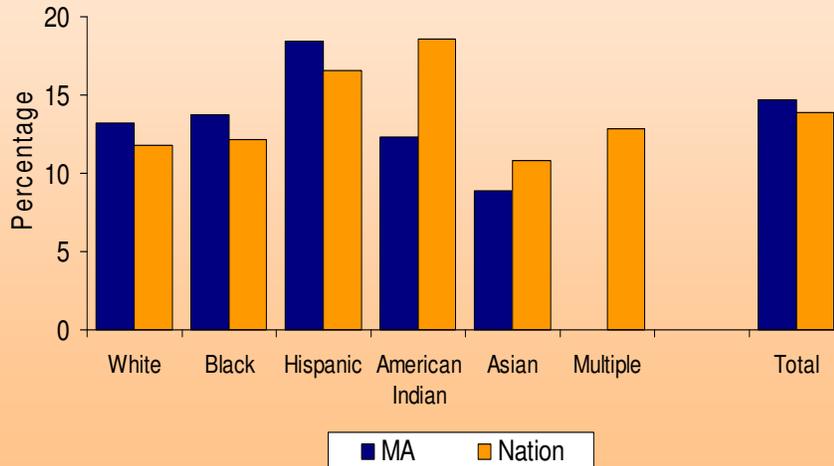
2008 MA PedNSS

- Overall, the proportion of underweight children generally decreased (although slightly) among all racial/Hispanic ethnicity categories in MA PedNSS in the past ten years, from 6.0% in 1999 to 5.4% in 2008.
- Although a decreasing overall trend was observed, the percentage of underweight was consistently higher among Asian MA PedNSS children (from 8.0% in 1999 to 6.2% in 2008) than the percentage for the total state PedNSS population in the same time period (from 6.0 % in 1999 to 5.4% in 2008). The prevalence of underweight was low among the Hispanic MA PedNSS population.

Prevalence of Obesity

Figure 13a-Prevalence of Obesity*

among MA PedNSS Children Aged Less than Five Years, by Race and Ethnicity



* $\geq 95^{\text{th}}$ percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2008 MA PedNSS

Obesity in children is defined as BMI-for-age or weight-for-length equal to or greater than the 95th percentile based on the CDC 2000 growth charts, for children aged two to 20 years. Obesity in young children has increased in recent decades and major health problems associated with childhood obesity include adult obesity, cardiovascular diseases, diabetes, glucose intolerance, and orthopedic disorders (American Academy of Pediatrics Committee on Nutrition 2003).

Overweight is defined as BMI-for-age $\geq 85^{\text{th}}$ percentile but less than 95 percentile as per CDC Growth Charts 2000. About 15% of the children are expected to fall above the 85th percentile and about five percent of the children are expected to fall above the 95th percentile and 10% between the 85th and 95th percentile.

Excessive body weight, manifested as obesity or overweight in young children, has increased in recent decades according to recent research (Anderson and Butcher 2006, Cali and Caprio 2008, Ford and Mokdad 2008, Lee 2008, Ogden et al 2008), and is associated with adverse health consequences. According to the CDC 2007 PedNSS report presented by Polhamus et al (2009), the Expert Committee on Prevention, Assessment and Treatment of Child and Adolescent

Overweight and Obesity, recommended use of two cut off points to screen for obesity and overweight respectively in children aged two years and older. According to the report, children (two years or older), whose BMI-for-age is equal to or greater than the 95th percentile, are considered obese, while children (two years or older) whose BMI-for-age is equal to or greater than the 85th percentile but less than the 95th percentile are considered overweight (Barlow and Expert Committee 2007). These new recommendations supersede the former classifications of “overweight” and “at risk of overweight” categories previously used for children from two years to under twenty years.

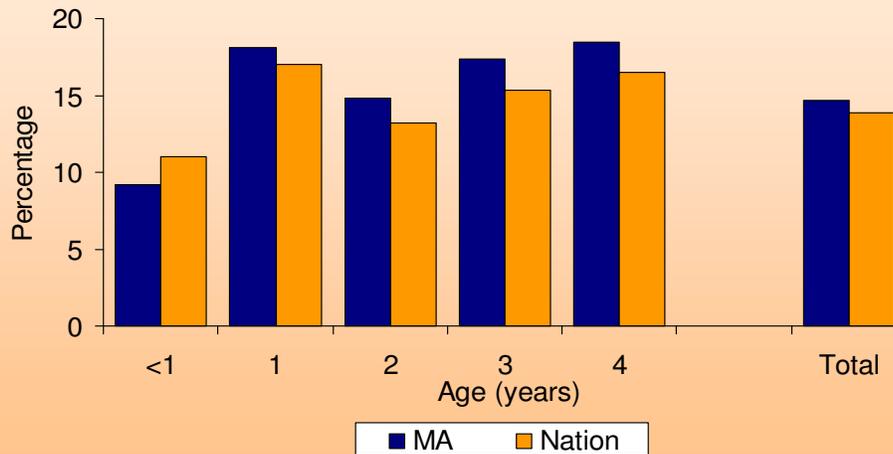
The concern around childhood obesity is grounded in the notion that an obese child is more likely to become an obese adult based on his/her current weight status relative to age-and sex-matched peers. It should be recognized, however, that about five percent of children are expected to have a weight-for-height or BMI-for-age above the 95th percentile, and 10% should fall between the 85th and 95th percentile according to the CDC.

Obesity Prevalence by Race and Ethnicity

- Overall, the prevalence of obesity among all children participating in the 2008 MA PedNSS (14.7%) was slightly higher than that of their 2007 national PedNSS counterparts (13.9%) in all race/Hispanic ethnicity categories.
- The prevalence of obesity among the 2008 MA PedNSS children was highest among Hispanic children (18.4%), followed by Black non-Hispanic (13.7%) and White non-Hispanic (13.2%) children.
- Asian (8.9%) and American Indian (12.3%) children had the lowest prevalence of obesity in the 2008 MA PedNSS.
- Among the 2007 national PedNSS children, the prevalence of obesity was highest among American Indian children (18.6%), followed by Hispanic (16.6%), multiple race (12.8%) and Black non-Hispanic (12.2%) children.
- In the 2007 national PedNSS the lowest obesity rates were observed in Asian children (10.8%) followed by White non-Hispanic children (11.8%) (Figure13a).

Prevalence of Obesity by Age among Children less than Five Years Old

Figure 13b-Prevalence of Obesity*
among MA PedNSS Children Aged Less than Five Years,
By Age

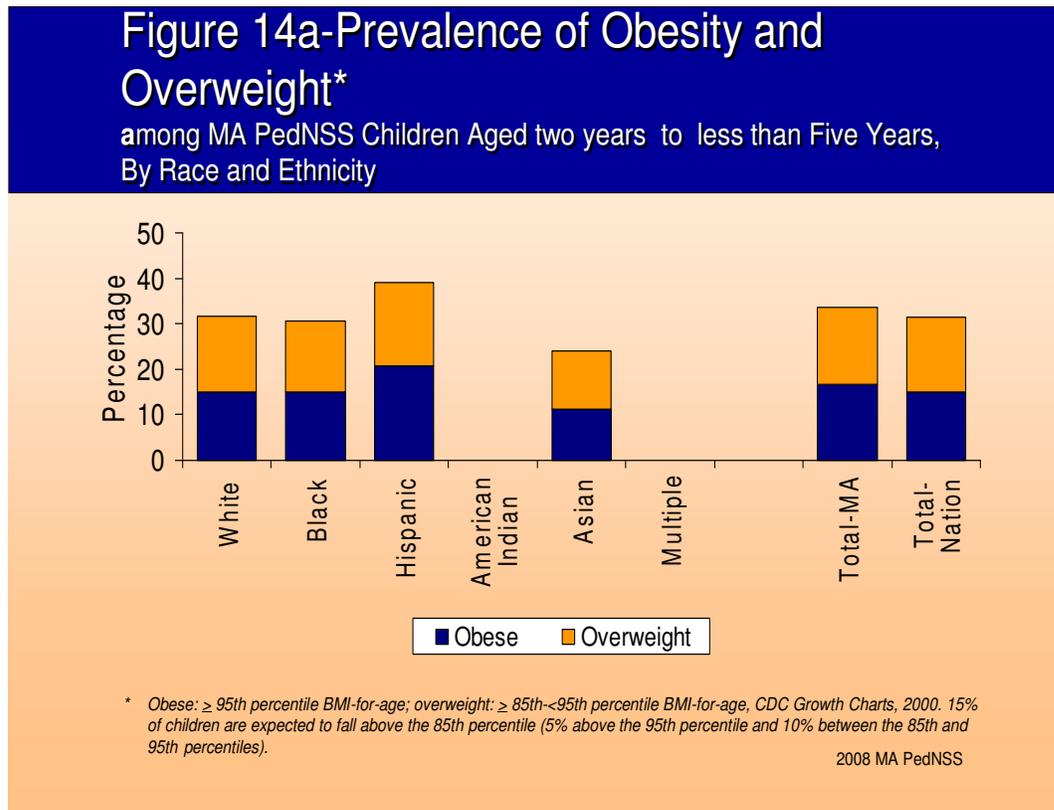


* \geq 95th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2008 MA PedNSS

- In the 2008 MA PedNSS, as well as the 2007 national PedNSS used for comparison, obesity also varied by age. The overall prevalence of obesity in children less than five years old was 14.7% among MA PedNSS while it was 13.9% among the national PedNSS children.
- The greatest proportion of children categorized as obese in 2008 MA PedNSS was observed among the four year olds (18.5%), followed by children who were one year old (18.1%), three years old (17.4%) and two years old (14.8%). Children less than one year old had the lowest prevalence of obesity (9.2%) in the MA PedNSS (Figure 13b).
- In the national PedNSS, 17.0% of children who were one year old, 13.2% of those who were two years old, 15.3 % of those who were three years old and 16.5% of those who were four years old were described as obese compared to eleven percent 11.0% of children less than one year old who were described as obese in the 2007 national PedNSS (Figure 13b). Among children in the MA PedNSS population 14.7% had higher overall prevalence of obesity when compared to their counterparts in the national PedNSS (13.9%) population for all the sampled age groups with the exception of children less than one year old.

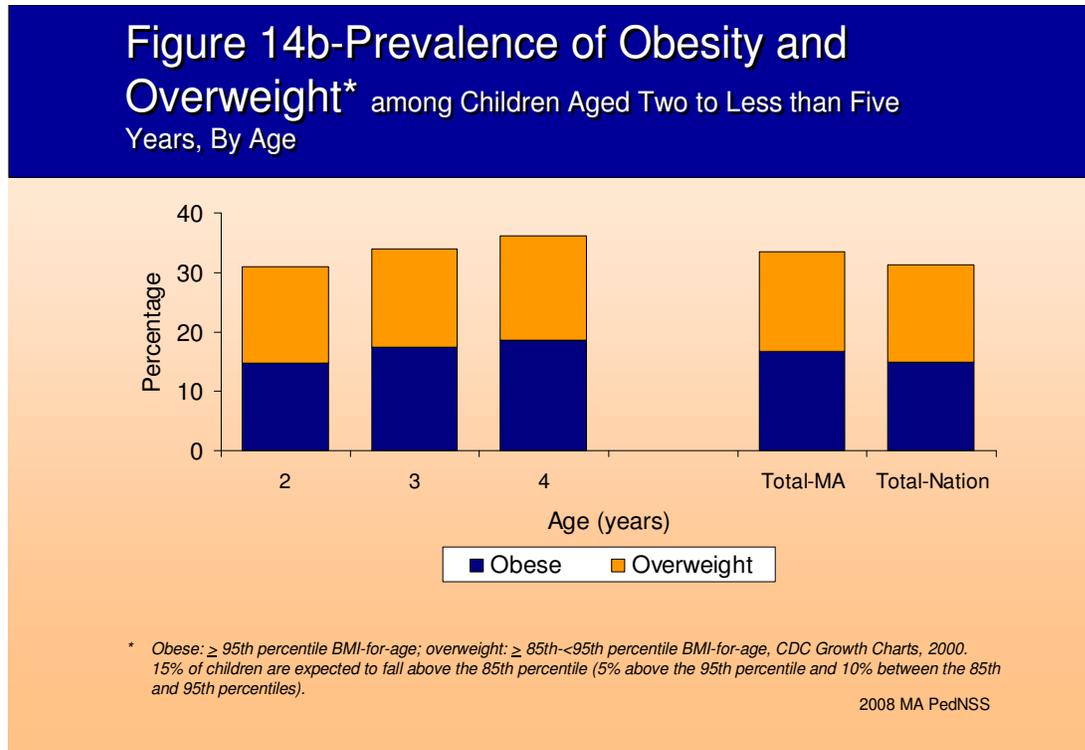
Prevalence of Obesity and Overweight Combined by Race and Ethnicity among MA PedNSS Children Aged Two Years to less than Five Years



- Children between two and five years of age in the 2008 MA PedNSS had a higher prevalence of obesity and overweight combined (33.5%), compared to children of the same age represented in the national 2007 PedNSS whose prevalence of obesity and overweight combined was 31.3% (Fig 14a). In the 2008 MA PedNSS, the prevalence of obesity and overweight combined varied by race and ethnicity.
- One in five Hispanic children (20.9%) between two and five years old were obese and 18.1% were overweight, with the highest combined percentage (39.0%) of both overweight and obesity among all race/Hispanic ethnicity categories reported for MA PedNSS. In comparison, 11.1% of Asian children between two and five years old were obese and 13.0% were overweight, with the lowest combined percentage (24.1%) of both overweight and obese children among all race/Hispanic ethnicity categories reported for MA PedNSS.

No statistics for obesity were shown for American Indian or multiple race PedNSS populations aged between two and less than five years old as the group had fewer than 100 records.

Prevalence of Obesity and Overweight Combined, by Age, among MA PedNSS Children Aged Two Years to less than Five Years

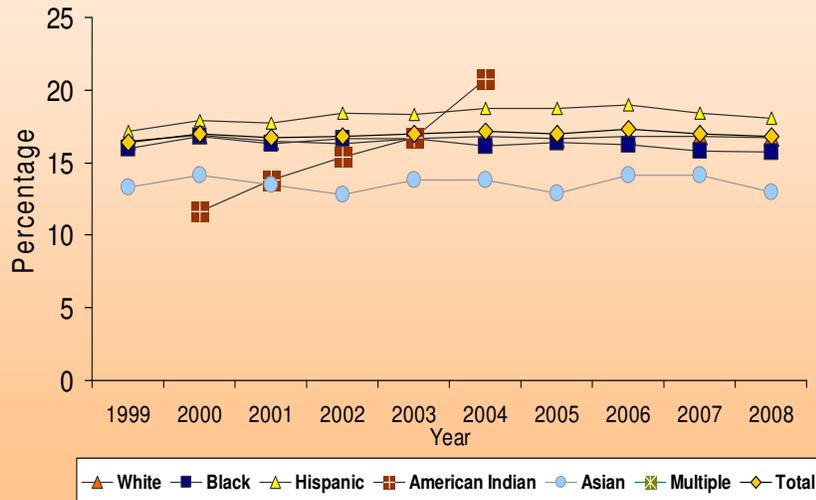


- Children two years to less than five years of age in the 2008 MA PedNSS had a higher prevalence of obesity and overweight combined (33.5%), compared to children of similar age group represented in the national 2007 PedNSS, with a combined prevalence of obesity and overweight at 31.3% (Figure 14b). The greatest proportion of children categorized as obese in MA PedNSS was observed among the four year olds year olds (18.5%), followed by children at three years old (17.4%) and two years old (14.8%) (Fig.14b).
- Similarly, the greatest proportion of children categorized as overweight in MA PedNSS was observed among the four year olds (17.7%), followed by children aged three years old (16.6%) and those aged two years old (16.2%).
- The combined prevalence of overweight and obesity for the various age groups in MA PedNSS were as follows: 31.0% for the two-year olds, 34.0% for the three-year olds, and 36.2% for the four-year olds.

The prevalence of excessive weight (obesity and overweight combined) among children appeared to increase with increasing age.

Trends in the Prevalence of Overweight by Race and Ethnicity

Figure 15-Trends in Prevalence of Overweight*
among MA PedNSS Children Aged two to Less than Five Years, by Race and Ethnicity



* \geq 85th- $<$ 95th percentile BMI-for-age, CDC Growth Charts, 2000.
10% of children are expected to fall between these percentiles.

2008 MA PedNSS

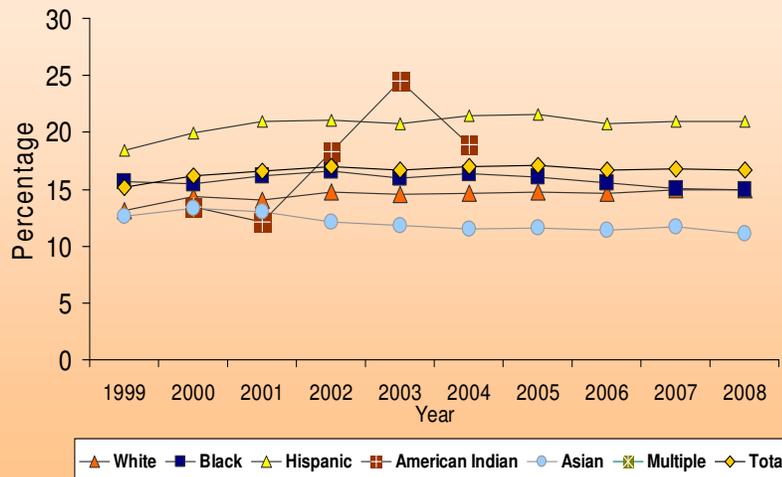
Overweight, also called high weight-for-height, may indicate excess energy intake, low energy expenditure, or both. Overweight and obesity in young children have increased in recent decades. Major health problems associated with childhood overweight and obesity include cardiovascular disease, diabetes, glucose intolerance, orthopedic disorders and obesity in adulthood (American Academy of Pediatrics Committee on Nutrition 2003). The risk for overweight denotes concern that a child may become overweight based on his/her current weight status relative to age- and sex-matched peers. It should be recognized, however, that 10.0% of normal, healthy children are expected to have a weight-for-height between the 85th and less than 95th percentiles (overweight), and five percent of children are expected to have a weight-for-height at or above the 95th percentile (obese).

- In the MA PedNSS, the prevalence of overweight among children aged two to less than five years old slightly increased in the past ten years over all race/Hispanic ethnicity categories (from 16.4% in 1999 to 16.8% in 2008).
- The highest increase in prevalence of overweight among MA PedNSS children was observed in Hispanic children whose prevalence increased from 17.1% in 1999 to 18.1% in 2008.

-
- American Indian children generated less than 100 records between 2005 and 2008; hence the CDC did not generate data on overweight for this population group as shown in Figure 15; however the prevalence of overweight was on the rise from 11.6% in 2000 to 20.7% in 2004.
 - The overall prevalence of overweight in MA PedNSS changed for all race/Hispanic ethnicity groups from 16.4% in 1999 to 16.8% in 2008.

Trends in Obesity by Race and Ethnicity among MA PedNSS Children Aged Two Years to less than Five Years

Figure 16a-Trends in Prevalence of Obesity*
among MA PedNSS Children Aged Two to Less than Five Years, by Race and Ethnicity



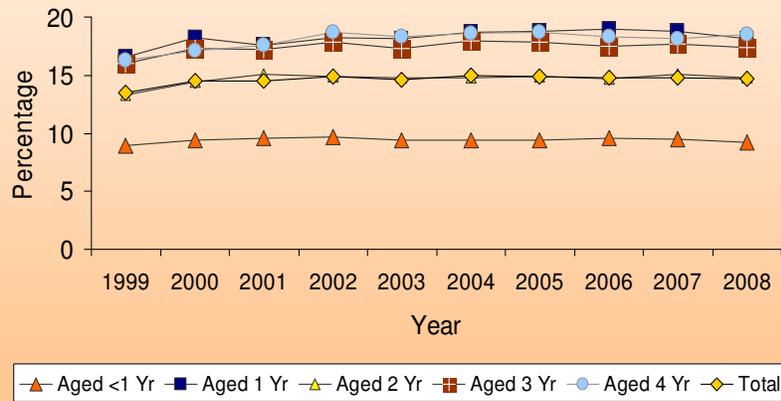
* \geq 95th percentile BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2008 MA PedNSS

- In the MA PedNSS, the overall prevalence of obesity among children aged two to less than five years old increased in the past ten years from 13.5 % in 1999 to 14.7% in 2008.
- Hispanic children experienced the greatest prevalence of obesity in each year from 16.6% in 1999 to 18.4% in 2008. White non-Hispanic children also recorded a slight increase in obesity prevalence, from 12.0% in 1999 to 13.2% in 2008.
- In 1999, there were fewer than 100 children in the American Indian PedNSS population. The obesity prevalence rose from 13.4% in 2000 to 24.5% in 2003 and later fell back to 18.9% in 2004.
- Between 2005 and 2008, the American Indian PedNSS population also had fewer than 100 records in each of these years, so no data were generated for them. The CDC does not generate statistical data if the available records are fewer than 100 as stated earlier. This explains the gaps in the graph presented in Figure 16a for American Indians.

Trends in Obesity by Age among MA PedNSS Children Aged Less than Five Years

Figure 16b-Trends in Prevalence of Obesity*
among MA PedNSS Children Aged <5 Years, by Age



* \geq 95th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

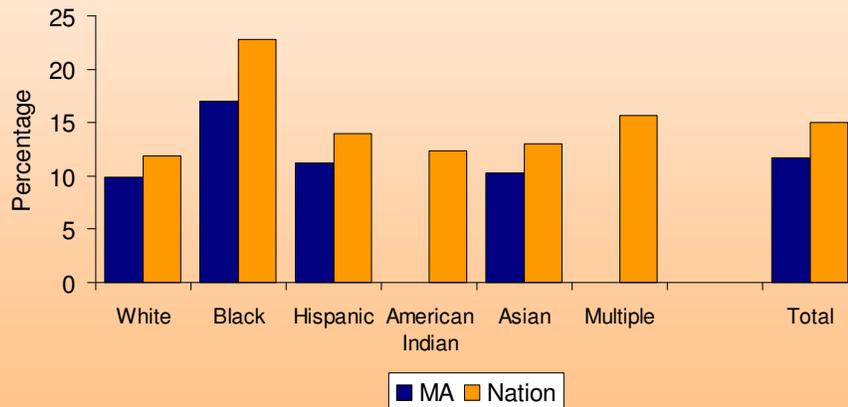
2008 MA PedNSS

- In the MA PedNSS, the overall prevalence of obesity among children under 5 years of age increased in the past ten years from 13.5 % in 1999 to 14.7% in 2008.
- The greatest increase in obesity prevalence occurred among the four-year old children in MA PedNSS (from 16.3% in 1999 to 18.5% in 2008).
- Children less than one year old consistently experienced the lowest prevalence in obesity in MA PedNSS during the ten year period (from 8.9% in 1999 to 9.2% in 2008).

Prevalence of Anemia

Figure 17a-Prevalence of Anemia*

among Children Aged Less than Five Years, by Race and Ethnicity



* Hb or Hct < 5th percentile, CDC MMWR vol. 47 (No. RR-3), 1998.

2008 MA PedNSS

Anemia (low hemoglobin/ hematocrit) is an indicator of iron deficiency, the most common nutrient deficiency in the world. Iron deficiency in children is associated with developmental delays and behavioral disturbances (Pollitt 1993, Idjradinata and Pollitt 1993). However, not all types of anemia are caused by iron deficiency; anemia can be caused by other nutritional deficiencies (e.g. folate or vitamin B12 deficiency), hereditary hemoglobinopathies (e.g., thalassemia or sickle cell disease), recent or current infection, and chronic inflammation.

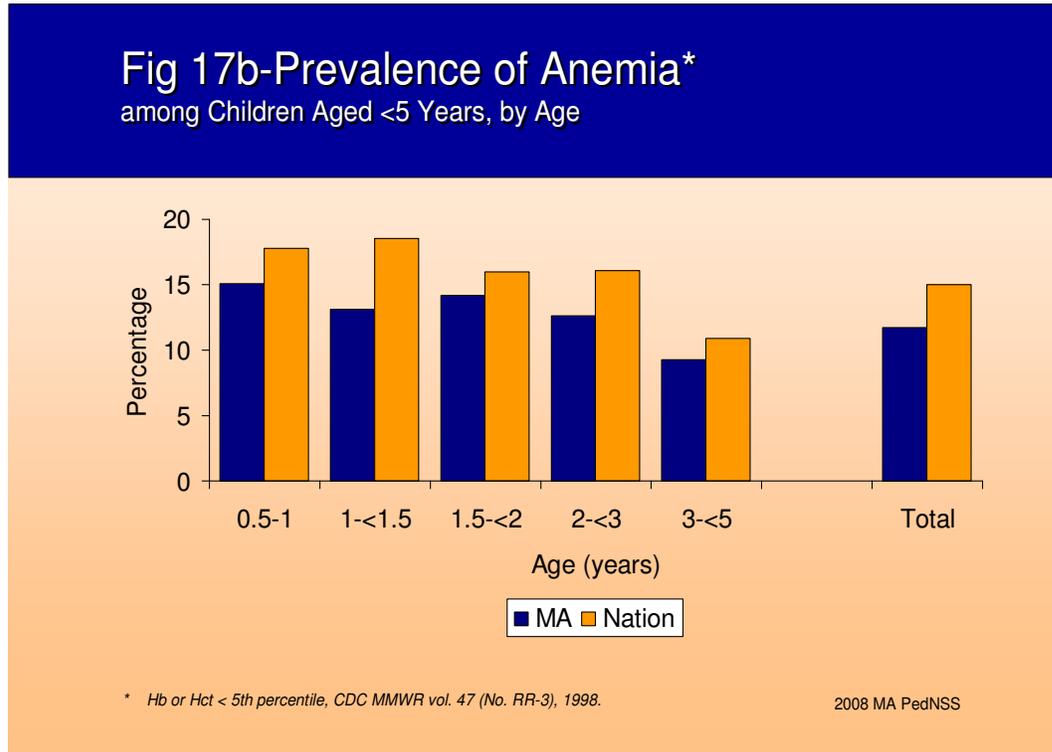
According to the CDC's 2007 PedNSS Report, children aged six months to two years are considered anemic if their hemoglobin (Hb) is less than 11.0g/dL or their hematocrit (Hct) level is less than 32.9%; children aged two to five years are considered anemic if their Hb concentration is less than 11.1g/dL or Hct level is less than 33.0%. Values are adjusted for altitude. The Hb concentration and Hct level are not reported for children younger than six months (CDC 1998). Since iron-deficiency anemia among U.S. children has declined as a result of increased iron intake during infancy, anemia has become less predictive of iron deficiency as low LBW and other factors are also good predictors of iron deficiency (Yang et al 2009). Anemia results are based on data from low-income children attending the MA WIC program. These children may have other health and nutritional factors associated with anemia that may not be present in non-WIC children.

Prevalence of Anemia by Race and ethnicity

Anemia results varied in both MA and national PedNSS.

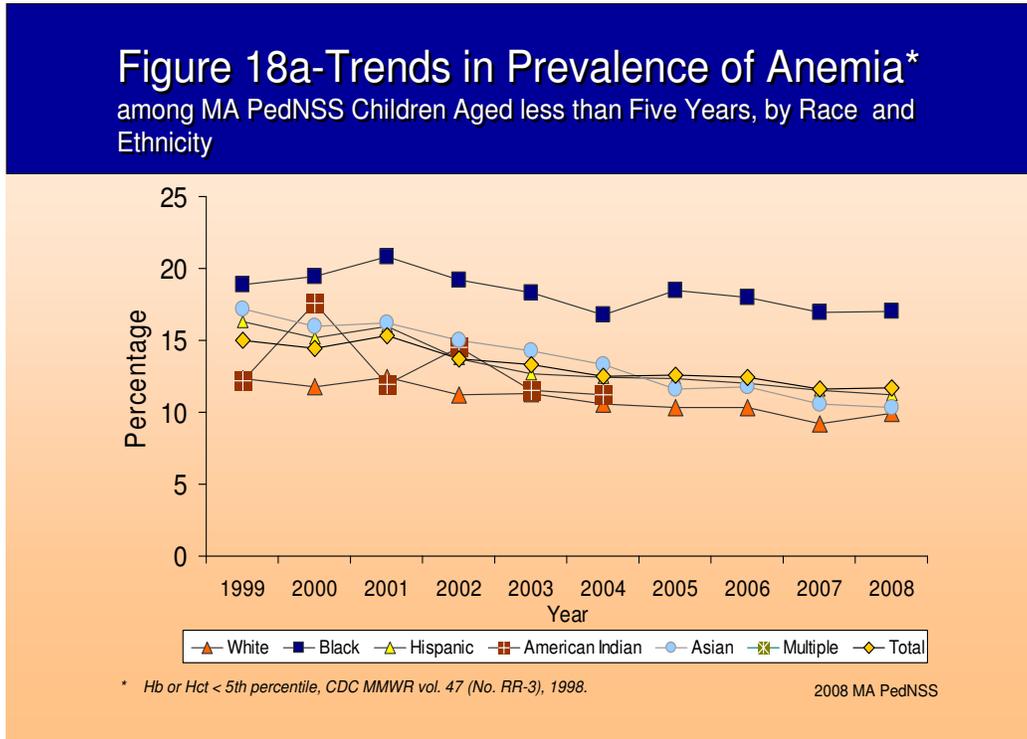
- Overall, 11.7 % of children in the 2008 MA PedNSS were anemic, compared to 15.0% in the national PedNSS.
- The prevalence of anemia varied by race/Hispanic ethnicity in MA PedNSS population with Black non-Hispanic children having the highest prevalence (17.0%), while White non-Hispanic children had the lowest prevalence (9.9%).
- A similar observation was made in the national PedNSS population with Black non-Hispanic children having the highest prevalence of anemia (22.8%), while White non-Hispanic children had the lowest prevalence (11.9%).
- No statistics for anemia were reported in MA PedNSS population among American Indian and multiple race children aged between two and less than five years old as the group had fewer than 100 records. The CDC does not generate statistics based on fewer than 100 records as the data will not be statistically significant (Figure 17a).

Prevalence of Anemia by Age



- Anemia prevalence varied by age in MA PedNSS (Fig.17b) and was highest among children between six and 12 months of age (15.1%) and lowest in children three years to less than five years of age (9.3%).
- In the national PedNSS, the prevalence of anemia was highest in children between 12 and 18 months old (18.5%), followed by children six to 12 months old (17.8%) but lowest in children three years to less than five years old (10.9%).

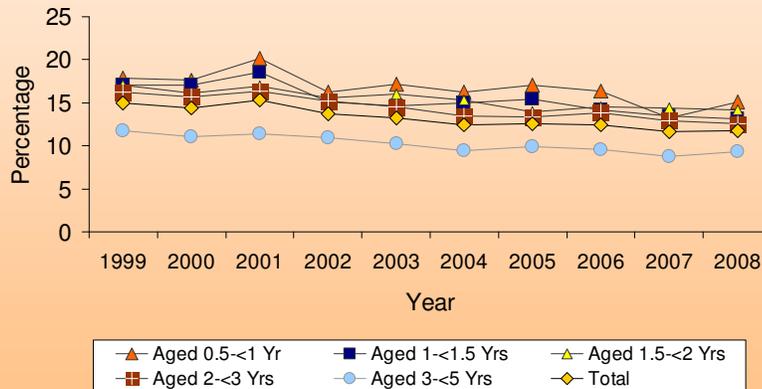
Trends in Prevalence of Anemia by Race and Ethnicity



- In the MA PedNSS, the overall prevalence of anemia decreased in the past ten years from 15.0% in 1999 to 11.7% in 2008.
- The greatest decrease in prevalence of anemia was observed among Asian children in MA PedNSS where prevalence of anemia fell from 17.2% in 1999 to 10.3% in 2008.
- White non-Hispanic children consistently had the lowest prevalence of anemia over the past 10 years, where the prevalence decreased from 12.3% in 1999 to 9.9% in 2008.
- Black non-Hispanic children consistently had the highest prevalence of anemia, and the almost rate of improvement in the same time frame going from 18.9% in 1999 to 17.0% in 2008.

Trends in Prevalence of Anemia by Age

Figure 18b: Trends in Prevalence of Anemia*
among children aged < Five Years, by Age



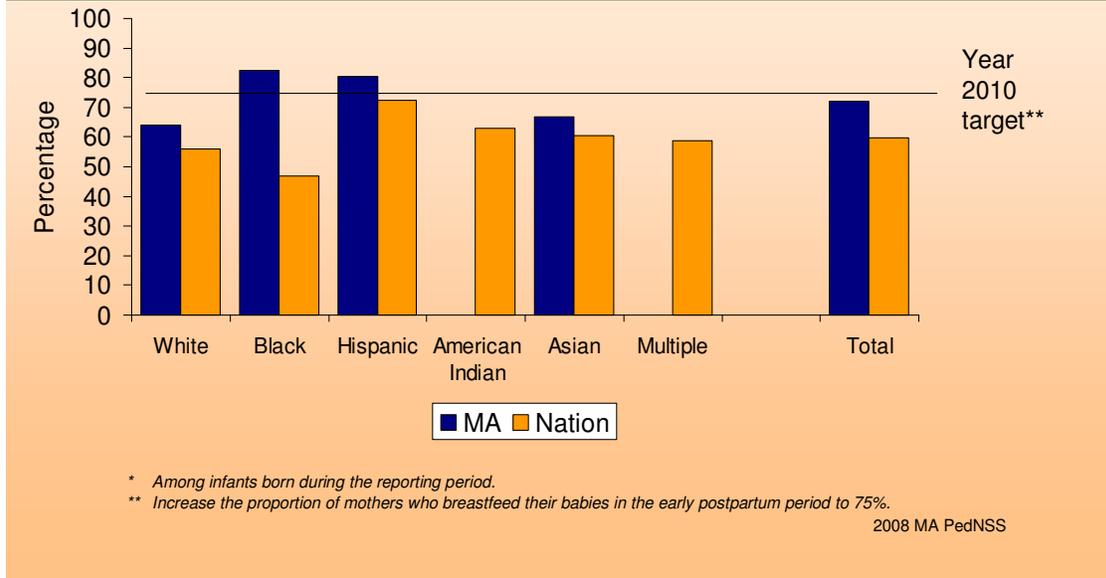
* Hb or Hct < 5th percentile, CDC MMWR vol. 47 (No. RR-3), 1998.

2008 MA PedNSS Table 21C

- In the MA PedNSS, the overall prevalence of anemia among children under five years of age decreased in the past ten years from 15.0 % in 1999 to 11.7% in 2008.
- The greatest decrease in anemia prevalence occurred among the three to less than five year old children in MA PedNSS (from 11.8% in 1999 to 9.3% in 2008), followed by children two years to less than three years old (from 16.2% in 1999 to 12.6% in 2008).
- Children six months to less than one year old consistently experienced the highest prevalence in anemia in MA PedNSS during the ten year period (from 17.9% in 1999 to 15.1% in 2008).

Breastfeeding

Figure 19a-Percentage of Infants Ever Breastfed* by Race and Ethnicity



* Among infants born during the reporting period.

** Increase the proportion of mothers who breastfeed their babies in the early postpartum period to 75%.

Breastfeeding is regarded as one of the most important contributors to infant health because human breast milk presents the most complete form of nutrition for infants. Breastfeeding is known to contribute nutritional, immunologic, developmental, allergenic, economic and psychological advantages to both the child and the mother and can also protect infants against some childhood diseases (American Academy of Pediatrics 2005). The HP 2010 targets are that the proportion of children ever breastfed be increased to 75%, and proportion of children breastfed for at least six months be increased to 50% and the proportion of children breastfed for at least one year be increased to 25% (HP 2010 in 2000). "Ever breastfed" includes those infants whose mother initiated breastfeeding (Initiation is defined as having breastfed at least one time), including both those who were breastfed exclusively, and those who were supplemented with formula, based on maternal self-report at the WIC certification visit.

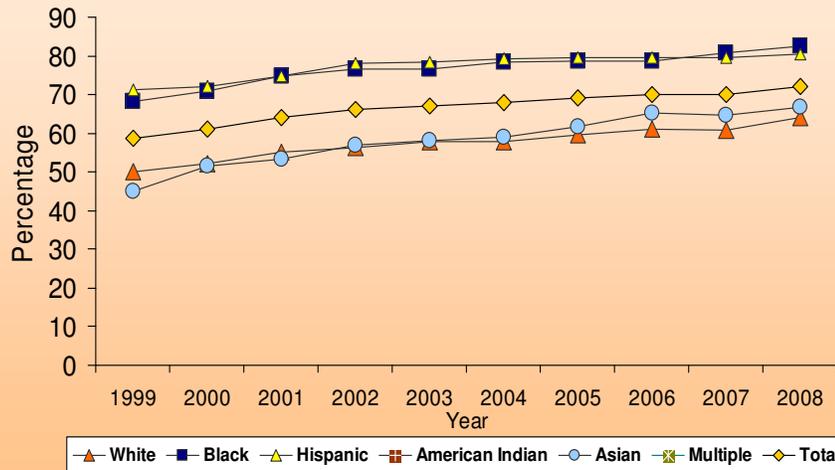
Breastfeeding Initiation and Percentage of Infants Ever Breastfed by Race and Ethnicity

Breast feeding initiation varied in both MA and national PedNSS populations.

-
- In 2008, over seventy two percent (72.1%) of infants of all races represented in the MA PedNSS were ever breastfed. In comparison, only 59.8% of infants in the national PedNSS were ever breastfed.
 - Black non-Hispanic infants in the MA PedNSS had the highest prevalence of ever breastfeeding (82.6%), followed by Hispanic infants at 80.5% and Asian infants (66.9%) while White non-Hispanic infants had the lowest prevalence of ever breastfeeding (64.1%).
 - Both Black non-Hispanic infants (82.6%) and Hispanic infants (80.5%) in the 2008 MA PedNSS surpassed the HP 2010 target of ever breastfeeding (set at 75.0%).

Trends in Percentage of Infants Ever Breastfed by Race and Ethnicity

Figure 19b-Trends in the Percentage of MA PedNSS Infants Ever Breastfed* by Race and Ethnicity



* Among infants born during the reporting period.

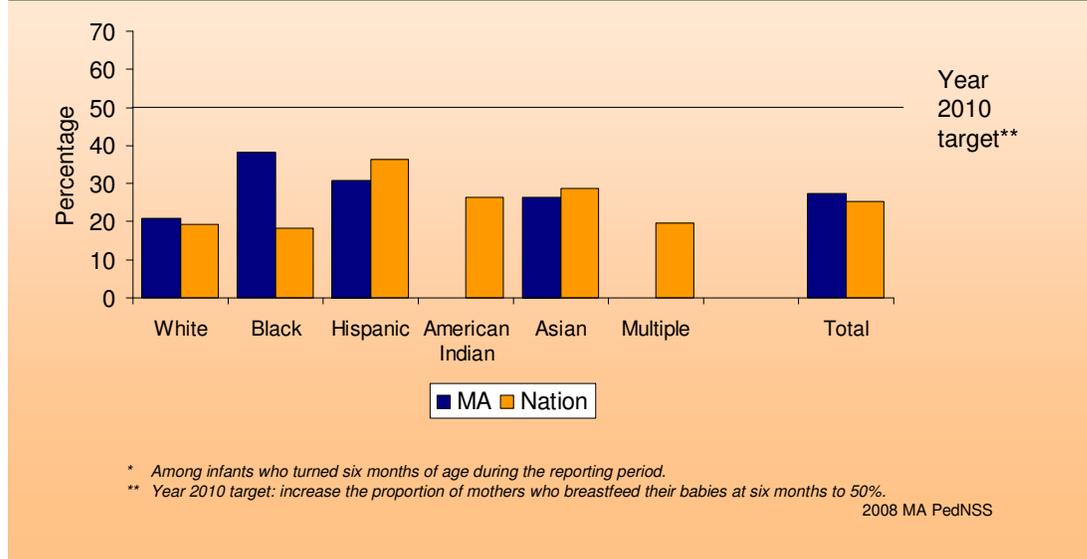
Year 2010 target: increase the proportion of mothers who breastfeed their babies in the early postpartum period to 75%.

2008 MA PedNSS

- In the last ten years, the overall percentage of infants in the MA PedNSS that were ever breastfed has increased from 58.6% in 1999 to 72.1% in 2008.
- The prevalence for infants ever breastfed in the past ten years was consistently high among Hispanic infants whose breastfeeding prevalence rose from 71.1% in 1999 to 80.5% in 2008.
- The prevalence of ever breastfeeding in MA PedNSS infants has also increased among Black non-Hispanic infants, whose prevalence jumped from 68.1% in 1999 to 82.6% in 2008 and this group showed the largest improvement for breastfeeding initiation.
- The greatest proportion of infants to be ever breastfed in 2008 MA PedNSS was observed among Black non-Hispanic infants (82.6%), surpassing Hispanic infants and other race groups.

Percentage of Infants Breastfed At Least Six Months by Race and Ethnicity

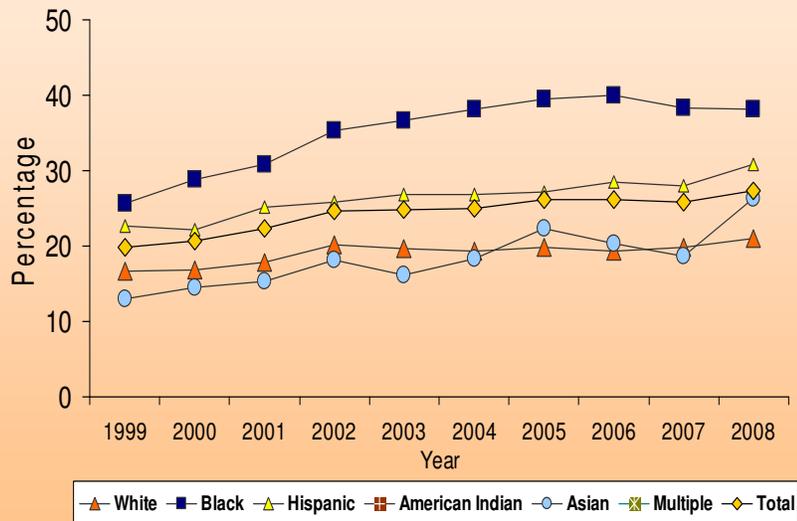
Figure 20a-Percentage of Infants Breastfed At Least Six Months* by Race and Ethnicity



- The overall proportion of infants in 2008 MA PedNSS that were breastfed for at least six months was 27.3% while the proportion of such infants in the national PedNSS was 25.4%.
- In the 2008 MA PedNSS, the greatest prevalence in breastfeeding for at least six months occurred among Black non-Hispanic infants (38.2%), followed by Hispanic (30.9%) and Asian (26.3%) infants while White non-Hispanic infants had the lowest proportion (21.0%) of infants that breastfed for at least six months.
- In the national PedNSS, the greatest prevalence of breastfeeding for at least six months occurred among Hispanic infants (36.4%), followed by Asian (28.7%), American Indian (26.3%), multiple race (19.5%) and White non-Hispanic (19.3%) infants while Black non-Hispanic infants (18.2%) had the lowest proportion that breastfed for at least six months.
- Neither MA PedNSS in 2008 nor their national counterparts met the HP-2010 goal of breast feeding for at least six months set at 50%.

Trends in the Percentage of MA PedNSS Infants Breastfed for At Least Six Months by Race and Ethnicity

Figure 20b-Trends in the Percentage of MA PedNSS Infants Breastfed At Least Six Months* by Race and Ethnicity



* Among infants who turned six months of age during the reporting period.

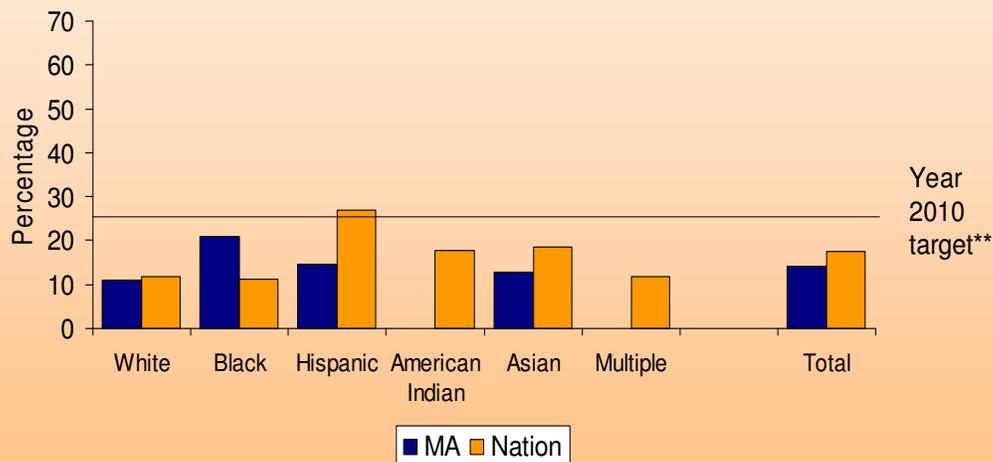
Year 2010 target: increase the proportion of mothers who breastfeed their babies at six months to 50%.

2008 MA PedNSS

- The percentage of all infants that were breastfed for at least six months has increased greatly over the past ten years among infants participating in the MA PedNSS from 19.8% in 1999 to 27.3% in 2008.
- The largest improvement in breastfeeding for at least six months was observed in Asians with a prevalence of 13.0% in 1999 and a prevalence of 26.3% in 2008, doubling the 1999 breastfeeding baseline rate.
- The next (or second) largest improvement in breastfeeding for at least six months was observed among Black non-Hispanic with a prevalence of 25.7% in 1999 and a prevalence of 38.2% in 2008.

Percentage of Infants Breastfed At Least 12 Months by Race and Ethnicity

Figure 21a-Percentage of Infants Breastfed At Least 12 Months*
by Race and Ethnicity



* Among infants who turned twelve months of age during the reporting period.

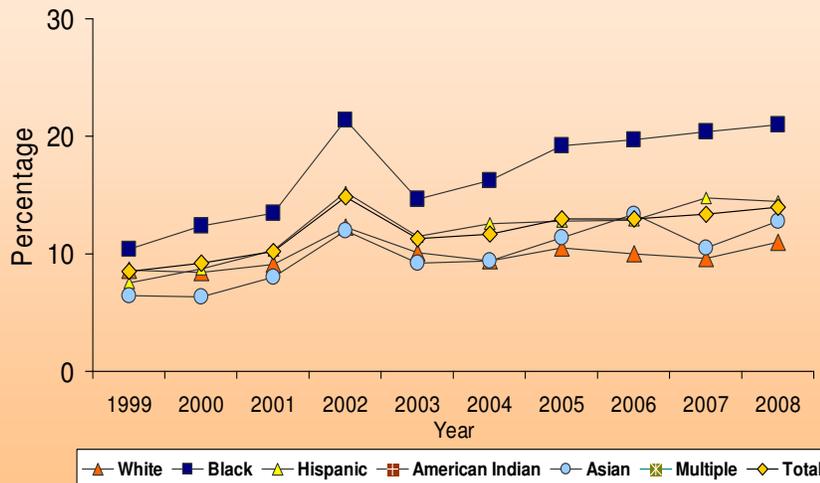
** Increase the proportion of mothers who breastfeed their babies at one year to 25%.

2008 MA PedNSS

- The overall proportion of 2008 MA PedNSS infants that have been breastfed for at least 12 months was 13.4% while the proportion in the national PedNSS used for comparison was 18.1%.
- In the 2008 MA PedNSS, the greatest prevalence in breastfeeding for at least 12 months was among Black non-Hispanic infants (20.4%), followed by Hispanic (14.8%) and Asian (10.5%) infants while White non-Hispanic infants had the lowest proportion of infants that breastfed for at least 12 months (11.0%).
- In the national PedNSS, the greatest prevalence in breastfeeding for at least 12 months occurred among Hispanic infants (26.5%), followed by American Indian (20.9%), Asian (19.2%), White non-Hispanic (13.3%) and multiple race (12.0%) infants while Black non-Hispanic infants (11.9%) had the lowest proportion that breastfed for at least 12 months.

Trends in the Percentage of MA PedNSS Infants Breastfed at Least 12 Months by Race and Ethnicity

Figure 21b-Trends in the Percentage of MA PedNSS Infants Breastfed At Least 12 Months* by Race and Ethnicity

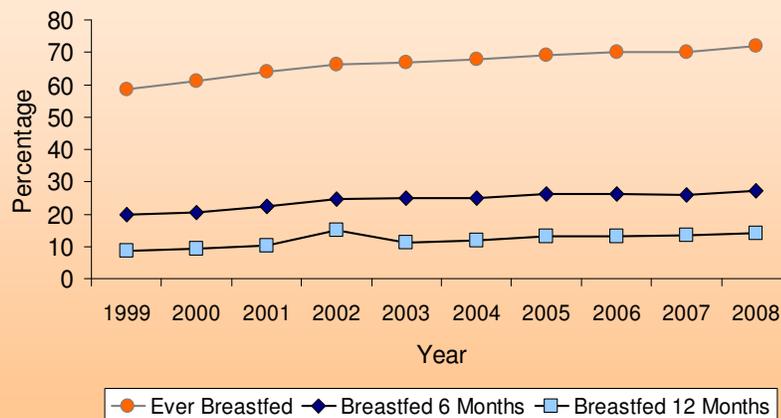


* Among infants who turned twelve months of age during the reporting period.
 Year 2010 target: increase the proportion of mothers who breastfeed their babies at one year to 25%.
 2008 MA PedNSS

- Since 1999, the overall proportion of MA PedNSS infants that have been breastfed for at least 12 months has consistently increased, from 8.5% in 1999 to 14.0% in 2008.
- The greatest increase in the prevalence in breastfeeding for at least 12 months during the 10 year period 1999 through 2008 occurred among Black non-Hispanic infants, from 10.4 % in 1999 to 21.0% in 2008. an increase of 10.6 percentage points over the 1999 baseline.
- The lowest increase in prevalence of breastfeeding for at least 12 months during the 10 year period 1999 to 2008 was observed among White non-Hispanic infants from 8.6% in 1999 to 11.0% in 2008, an increase of 2.4 percentage points.

Overall Trends in Breastfeeding Initiation and Duration

Figure 22-Trends in the Percentage of MA PedNSS Infants Ever Breastfed, and Breastfed At Least Six and 12 Months



Year 2010 targets: increase the proportion of mothers who breastfeed their babies a) in the early postpartum period to 75%, b) at six months to 50%, and c) at one year to 25%.

2008 MA PedNSS

- In the 2008 MA PedNSS, both the prevalence and the duration of breastfeeding have increased in the past ten years.
- The 'ever breastfed' category increased in the last ten years from 58.6% in 1999 to 72.1% in 2008.
- The category of 'breastfed for at least six months' increased in the last ten years from 19.8% in 1999 to 27.3% in 2008.
- The category of 'breastfed for at least 12 months' increased in the past ten years from 8.5% in 1999 to 14.0% in 2008.

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APPENDIX 1: 2008 Participating WIC Programs in MA

Local WIC Programs:

1. Berkshire North
2. Berkshire South
3. Blue Hill Corridor
4. Brighton/Roslindale
5. Brockton
6. Cambridge/Somerville
7. Cape Cod
8. Chelsea/Revere
9. Dorchester North
10. Dorchester South
11. East Boston
12. Fall River
13. Framingham/Waltham
14. Franklin/ Hampshire/No Quabbin
15. Holyoke/Chicopee
16. Jamaica Plain
17. Lawrence
18. Lowell
19. New Bedford
20. North Central
21. North Shore
22. North Suburban
23. Northern Essex
24. Outer Cape
25. Plymouth
26. Quincy
27. Roxbury
28. South Boston
29. South Central
30. South Cove
31. South End
32. Springfield North
33. Springfield South
34. Taunton/Attleboro
35. Worcester

APPENDIX 2: STATE MAPS OF COUNTY DATA

Maps

State Maps of County Data

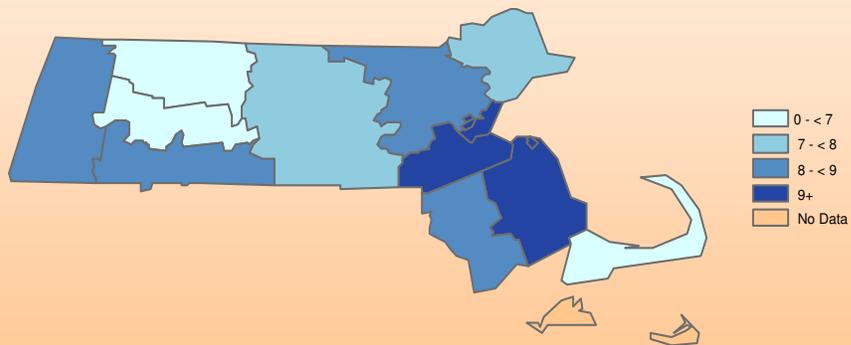
MASSACHUSETTS

Children Aged <5 Years

2008

Pediatric Nutrition
Surveillance System

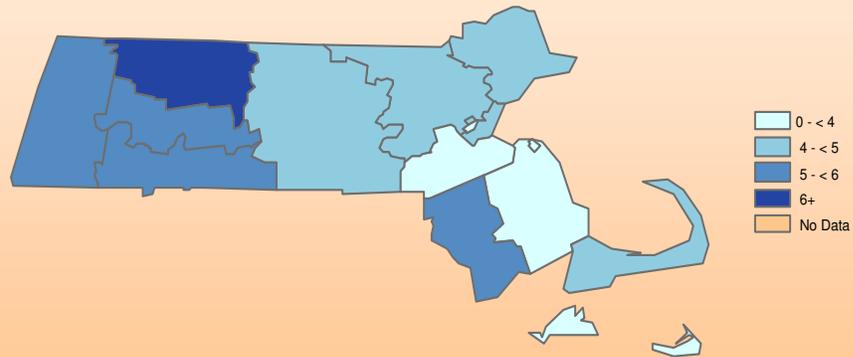
Prevalence of low birthweight* by county



* < 2500 grams, among infants born during the reporting period.
Year 2010 target: reduce low birthweight to 5% of live births.

2008 MA PedNSS Table 6B

Prevalence of short stature* among children aged <5 years, by county

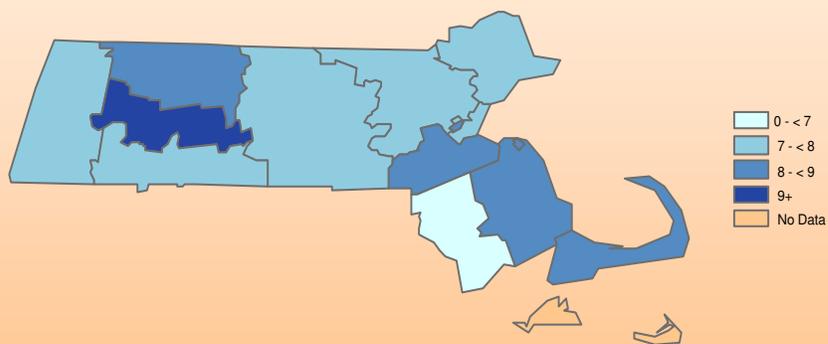


* < 5th percentile length or height-for-age, CDC Growth Charts, 2000.

Year 2010 target: reduce growth retardation (short stature) among low-income children under age five years to 5%.

2008 MA PedNSS Table 6B

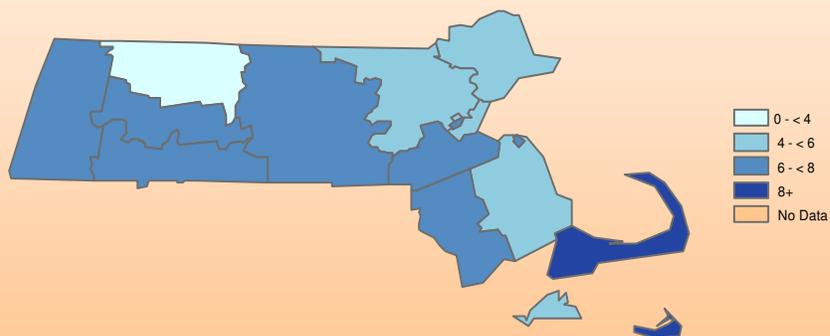
Prevalence of high birthweight* by county



* > 4000 grams, among infants born during the reporting period.

2008 MA PedNSS Table 6B

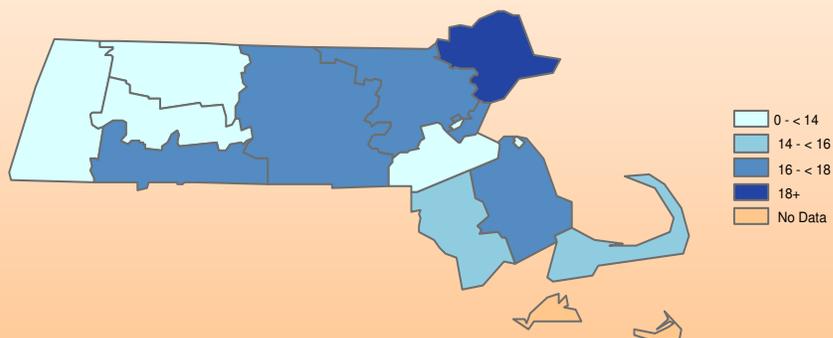
Prevalence of underweight* among children aged <5 years, by county



* < 5th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall below the 5th percentile.

2008 MA PedNSS Table 6B

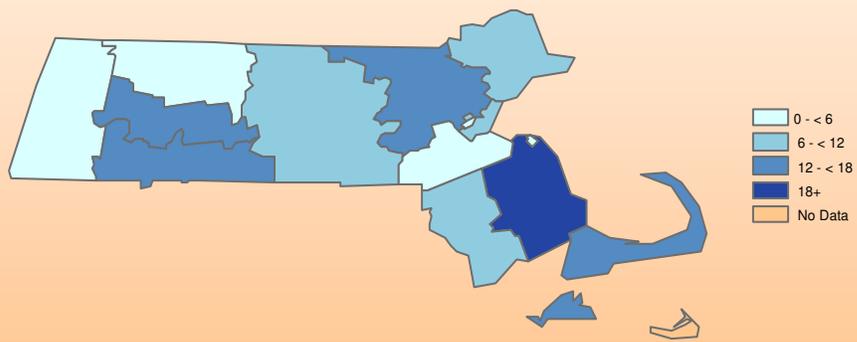
Prevalence of overweight* among children aged 2 to <5 years, by county



* \geq 95th percentile BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.
Year 2010 target: reduce overweight among children aged six to nineteen years to 5%.

2008 MA PedNSS Table 6B

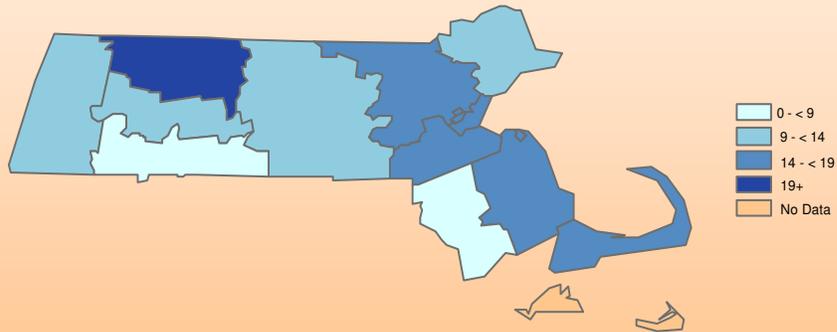
Prevalence of anemia* among children aged <5 years, by county



* Hb or Hct < 5th percentile, CDC MMWR vol. 47 (No. RR-3), 1998.

2008 MA PedNSS Table 6B

Percentage of infants breastfed at least 12 months*, by county



* Among infants who turned twelve months of age during the reporting period.
 Year 2010 target: increase the proportion of mothers who breastfeed their babies at one year to 25%.
 2008 MA PedNSS Table 7B

MASSACHUSETTS

Children Aged <5 Years

2008
 Pediatric Nutrition
 Surveillance System

Graphics

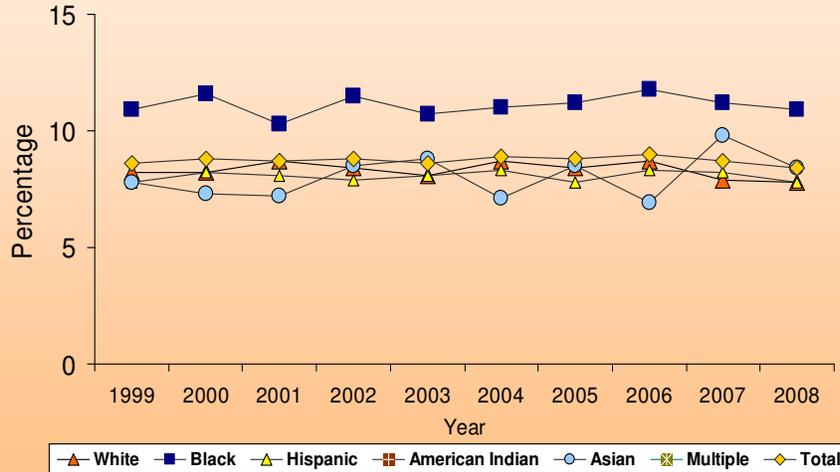
Comparing Contributor and National Data

2007 (prior year) national PedNSS data are presented.

Contributors included 44 states, the District of Columbia, 6 Indian Tribal Organizations, and 1 U.S. territory.

APPENDIX 3: TRENDS CHARTS FOR 2008 PEDNSS

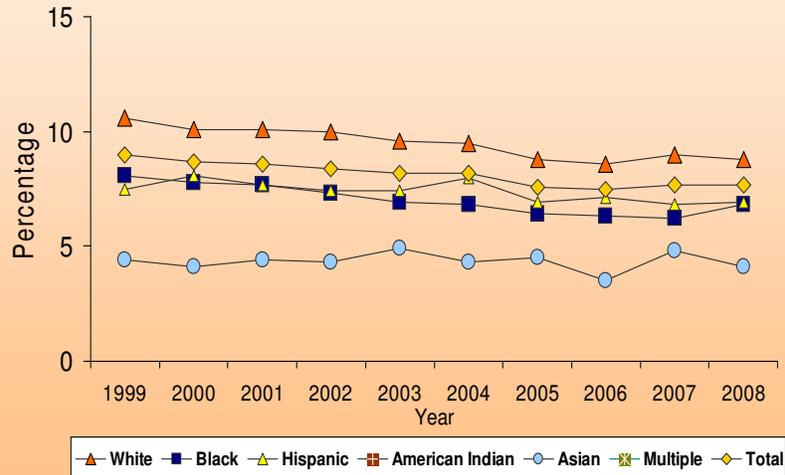
**Trends in prevalence of low birthweight*
by race and ethnicity**



* < 2500 grams, among infants born during the reporting period.
Year 2010 target: reduce low birthweight to 5% of live births.

2008 MA PedNSS Table 18C

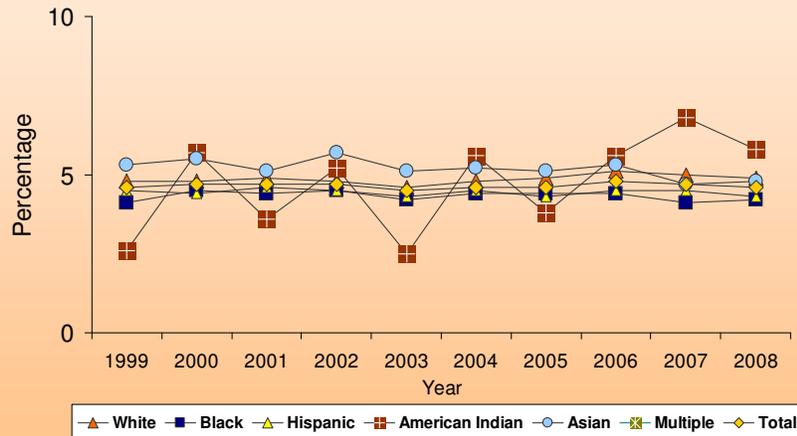
Trends in prevalence of high birthweight* by race and ethnicity



* > 4000 grams, among infants born during the reporting period.

2008 MA PedNSS Table 18C

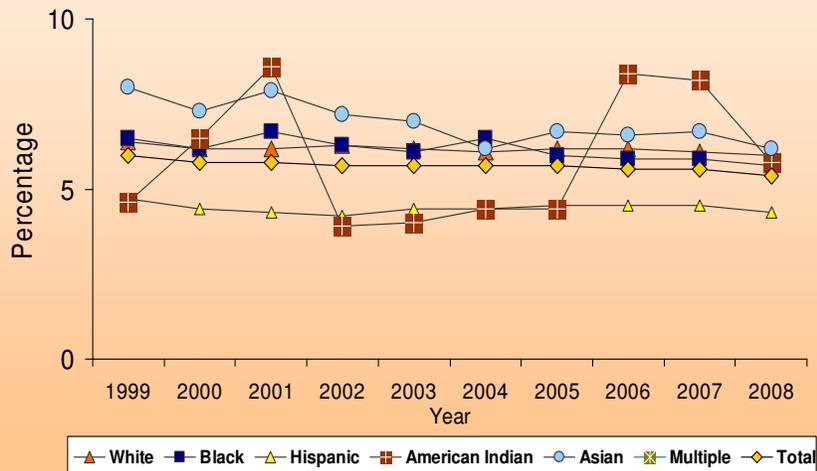
Trends in prevalence of short stature* among children aged <5 years, by race and ethnicity



* < 5th percentile length or height-for-age, CDC Growth Charts, 2000.
Year 2010 target: reduce growth retardation (short stature) among low-income children under age five years to 5%.

2008 MA PedNSS Table 18C

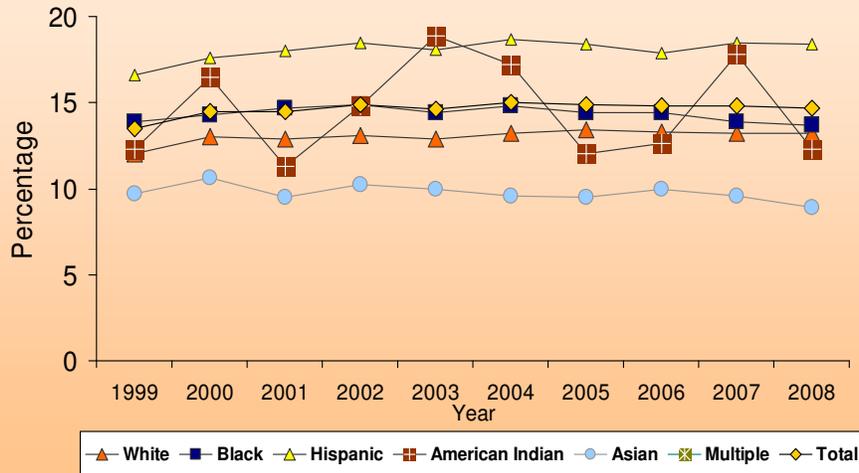
Trends in prevalence of underweight* among children aged <5 years, by race and ethnicity



* < 5th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall below the 5th percentile.

2008 MA PedNSS Table 18C

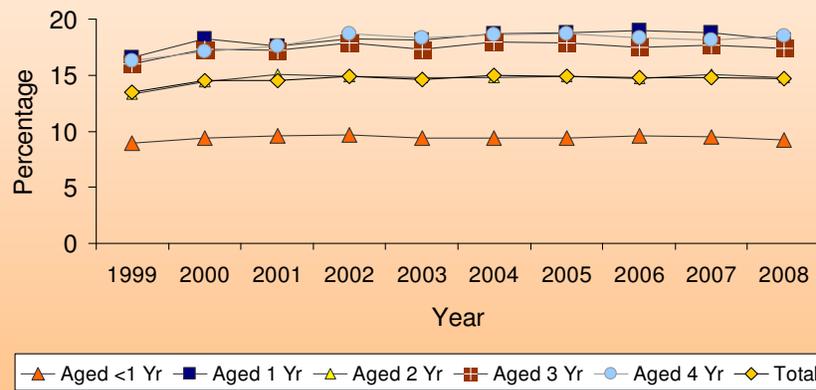
Trends in prevalence of obesity* among children aged <5 years, by race and ethnicity



* \geq 95th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2008 MA PedNSS Table 18C

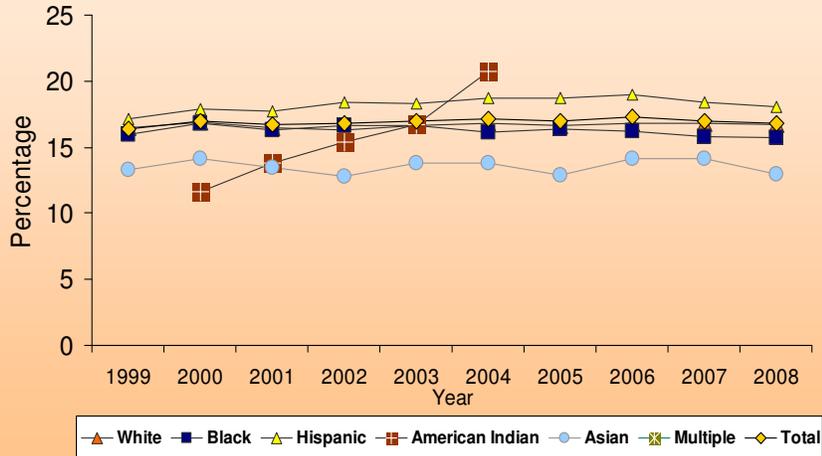
Trends in prevalence of obesity* among children aged <5 years, by age



* \geq 95th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2008 MA PedNSS Table 20C

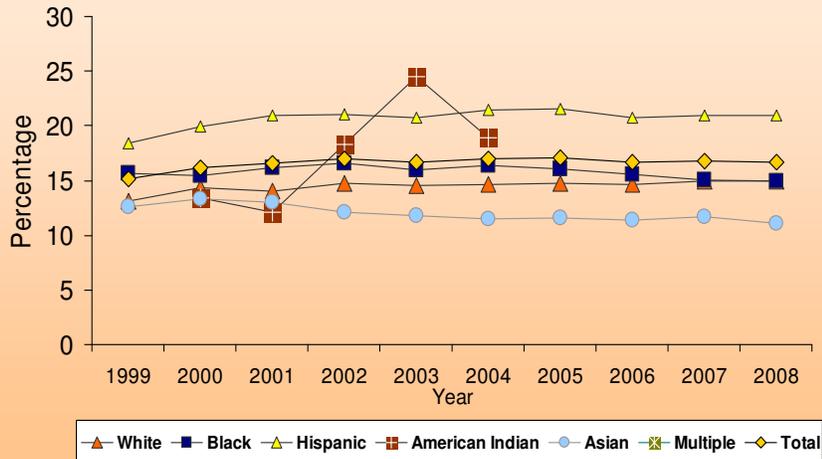
Trends in prevalence of overweight* among children aged 2 to <5 years, by race and ethnicity



* $\geq 85^{\text{th}}$ -<95th percentile BMI-for-age, CDC Growth Charts, 2000.
10% of children are expected to fall between these percentiles.

2008 MA PedNSS Table 18C

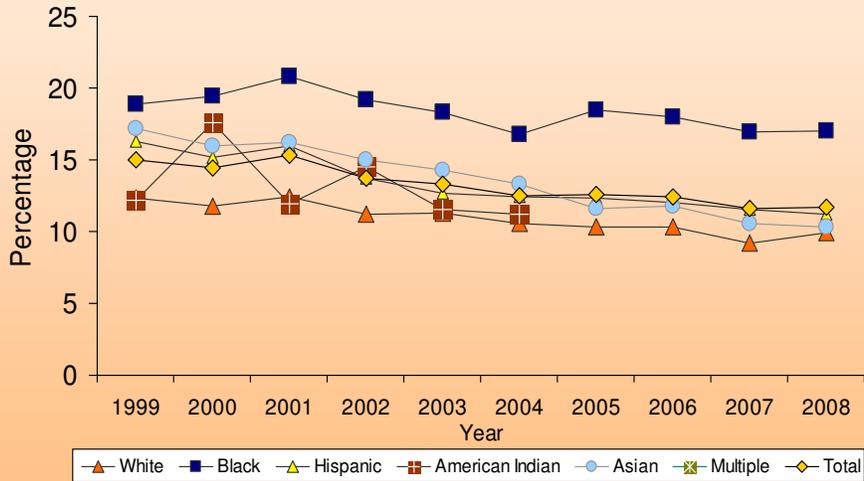
Trends in prevalence of obesity* among children aged 2 to <5 years, by race and ethnicity



* $\geq 95^{\text{th}}$ percentile BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2008 MA PedNSS Table 18C

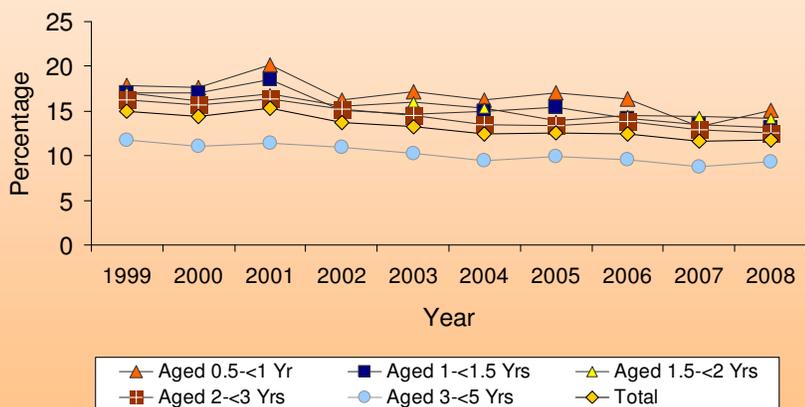
Trends in prevalence of anemia* among children aged <5 years, by race and ethnicity



* Hb or Hct < 5th percentile, CDC MMWR vol. 47 (No. RR-3), 1998.

2008 MA PedNSS Table 18C

Trends in prevalence of anemia* among children aged <5 years, by age

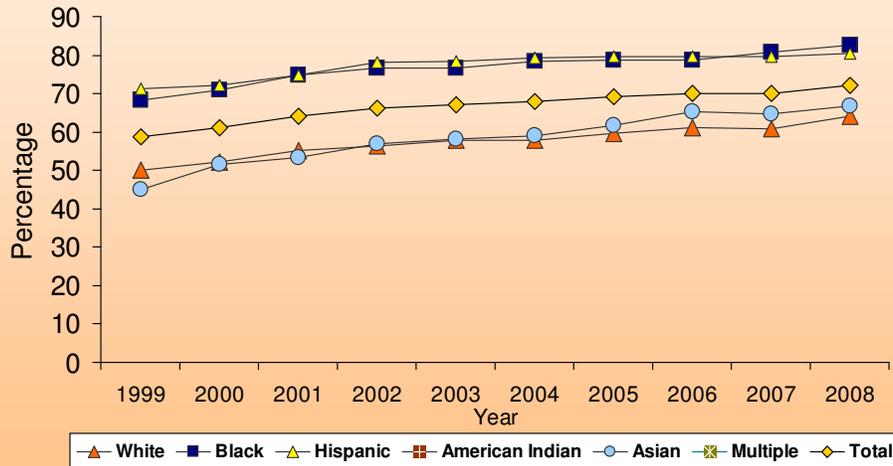


* Hb or Hct < 5th percentile, CDC MMWR vol. 47 (No. RR-3), 1998.

2008 MA PedNSS Table 21C

Trends in the percentage of infants ever breastfed*

by race and ethnicity



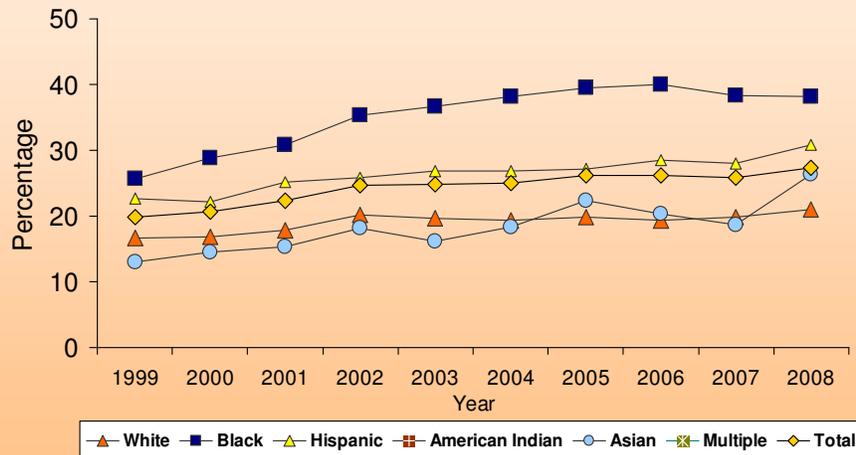
* Among infants born during the reporting period.

Year 2010 target: increase the proportion of mothers who breastfeed their babies in the early postpartum period to 75%.

2008 MA PedNSS Table 19C

Trends in the percentage of infants breastfed at least 6 months*

by race and ethnicity



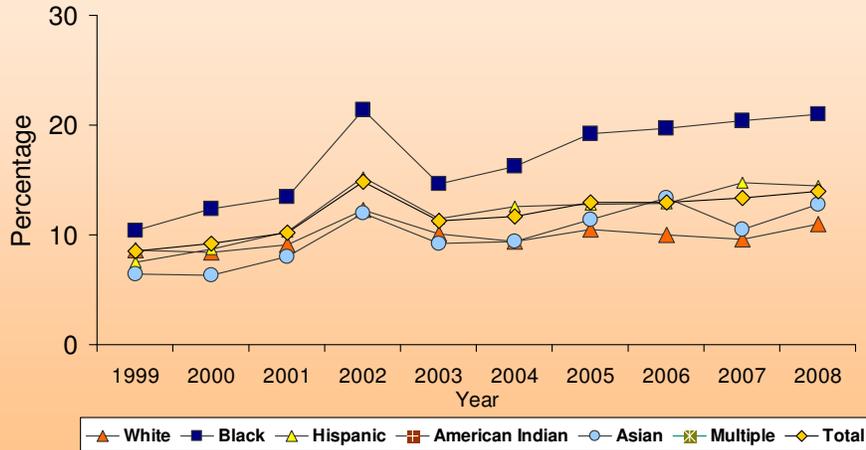
* Among infants who turned six months of age during the reporting period.

Year 2010 target: increase the proportion of mothers who breastfeed their babies at six months to 50%.

2008 MA PedNSS Table 19C

Trends in the percentage of infants breastfed at least 12 months*

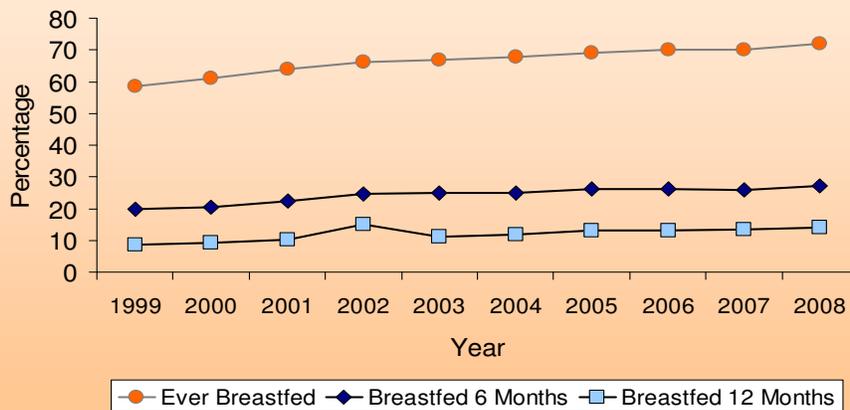
by race and ethnicity



* Among infants who turned twelve months of age during the reporting period.

Year 2010 target: increase the proportion of mothers who breastfed their babies at one year to 25%. 2008 MA PedNSS Table 19C

Trends in the percentage of infants ever breastfed, and breastfed at least 6 and 12 months



Year 2010 targets: increase the proportion of mothers who breastfed their babies a) in the early postpartum period to 75%, b) at six months to 50%, and c) at one year to 25%.

2008 MA PedNSS Table 13C

MASSACHUSETTS

Children Aged <5 Years

2008

Pediatric Nutrition
Surveillance System

