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

2010 PEDIATRIC DATA REPORT

DECEMBER 2012

PEDIATRIC NUTRITION SURVEILLANCE SYSTEM

CDC / MASSACHUSETTS WIC NUTRITION PROGRAM

2010 Pediatric Data Report

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Purpose of Nutrition Monitoring

Nutritional status affects every aspect of a child's health, including 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 2010, the Pediatric Nutrition Surveillance System (PedNSS) had expanded to include 46 states, the District of Columbia, six Indian Tribal Organizations (ITOs) and two U.S. territories. 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. 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 2010, 85.8% of national PedNSS data were obtained through the Special Supplemental Nutrition Program for Women, Infants and Children (the WIC Program), and the remaining data were obtained from the Early Periodic Screening Diagnosis and Treatment (EPSDT) program (4.6%), the Title V Maternal and Child Health (MCH) program (0.1%), and others such as Head Start (9.4%).

Pediatric Nutrition Surveillance in Massachusetts

Massachusetts (MA) has participated in the national PedNSS since 1993. All MA data are collected on infants and children up to age five years, who attend WIC clinics for routine care, nutrition education, and supplemental foods. 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. Furthermore, income eligibility for WIC requires that applicants present income equal to or less than the federal guidelines. Adjunctive eligibility is based on participation in certain programs like Supplemental Nutrition Assistance Program (SNAP) formerly known as Food Stamps, Transitional Assistance to Needy Families (TANF) formerly known as Aid to Families with Dependent Children (AFDC), 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 2010 data analysis and graphics were also done by the CDC. This report is a summary of all Massachusetts PedNSS data collected during the 2010 calendar year. It also highlights data trends from 2001 through 2010. 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 2010 MA PedNSS data are compared with the 2009 national PedNSS data, 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.

With regards to the second purpose, this report will assist the Massachusetts WIC Program in identifying specific risk factors and needs among the participant population. These data also support and facilitate the planning, implementation, and evaluation of specific nutrition interventions.

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 Objectives is to reduce prevalence of low birth weight to no more than 5% of all live births; other targets aim to reduce short stature among low income children aged less than 5 years to 5%, to reduce underweight among low income children aged less than 5 years to 5%, and to increase prevalence of breastfeeding initiation in the early post partum period to 75%.

Limitations

Massachusetts 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. The CDC does not generate statistics based on fewer than 100 records as the data will not be statistically stable. Therefore, the rates and proportions based on fewer than 100 observations are suppressed and should be interpreted cautiously. Statistics for some variables are missing for some racial or ethnic groups, such as American Indian and multiple race MA PedNSS populations aged two years to less than five years, if the groups presented fewer than 100 records.

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

Executive Summary

Demographic Characteristics

- The 2010 Massachusetts Pediatric Nutrition Surveillance System (MA PedNSS) report includes records representing 125,341 children ages zero to 59 months (Table1).

- Fifty-seven percent (57.3%) of the 2010 MA PedNSS population were children of color compared to the 2010 national PedNSS population, where 67.3% were children of color (Figure 2).

- Almost one-third (29%) of MA PedNSS population is less than one year old; compared to 33.7% nationally (Table 1 & Figure 3a).

- Over ninety eight percent (98.8%) of MA PedNSS population were participants of the WIC program, 29.9% were SNAP recipients, and 69.6% of the MA PedNSS children received Medicaid, while 5.9% received TANF (Figure 3b).

Birth Weight Characteristics

- The overall prevalence of low birth weight (LBW), defined as birth weight less than 2500 grams, and was 8.7% in 2010 MA PedNSS. This rate was slightly lower than the national LBW prevalence of 9.0% (Figure 4a).

- Low birth weight in MA PedNSS was most prevalent among Black non-Hispanic (10.8%) children and least prevalent among White non-Hispanic (7.9%) children (Figure 4a).

- The overall prevalence of LBW has remained stable during the past ten years in MA PedNSS, from 8.7% in 2001 to 8.7% in 2010 (Figure 4b).

- The overall prevalence of high birth weight (HBW), represented as birth weight greater than 4000g, was 7.4% in 2010 MA PedNSS. This rate was slightly higher than the HBW prevalence of 6.3% in the 2010 national PedNSS (Figure 5a).

- The overall prevalence trend of HBW in MA PedNSS has decreased slightly from 8.6% in 2001 to 7.4% in 2010 (Figure 5b).

Indicators of Nutritional Status

Short Stature

The prevalence of short stature (height-for-age < 5th percentile) was 4.8% and 6.0%, among children represented in the 2010 MA PedNSS and their 2010 national counterparts respectively (Figure 6).

- Multiple race children aged less than five years had the highest prevalence of short stature (9.2%) and American Indian/ Alaskan Native had the lowest prevalence (3.1%) in 2010 MA PedNSS (Figure 7a).

- Among 2010 MA PedNSS, children aged less than one year had the highest prevalence (7.5%) of short statue whereas four year old children had the lowest prevalence (2.8%) of short stature (Figure 7b).

- Overall, the percentage of MA PedNSS children with short stature has not changed significantly in the past ten years (from 4.7% prevalence in 2001 to 4.8% prevalence in 2010) (Figure 7c).

Underweight

- The prevalence of underweight (weight-for-height < 5th percentile as per CDC Growth Charts 2000) was 5.5% among all children represented in the 2010 MA PedNSS and 4.5% among children in the 2010 national PedNSS during the same period (Figure 8a).

- Multiple race children (8.5%) had the highest prevalence of underweight in MA PedNSS while Hispanic children had the lowest (4.4%) (Figure 8a).

- While over ten percent (10.2%) of children from birth to 11 months of age represented in 2010 MA PedNSS were considered underweight, the proportion of children in all other age groups who were categorized as underweight was less than 5.5%, approaching the Healthy People 2010 target of 5% (Figure 8b).

Overweight and Obesity

- Nearly one third (32.4%) of children aged two years to less than five years represented in the 2010 MA PedNSS by race and ethnicity were overweight and obese combined, compared to 30.5% among children in the 2010 national PedNSS (Figure 11a).

- In the 2010 MA PedNSS, Hispanic children had the highest combined percentage (38.3%) of excessive weight in obesity (20.5%) and overweight (17.8%) while Asian children had the lowest combined percentage (19.9%) of obesity (8.5%) and overweight (11.4%) (Figure 11a).

- Obesity also varied by age. Four year old children had the highest combined percentage (34.9%) of obesity (18.5%) and overweight (16.4%) and two year old children had the lowest combined percentage (29.6%) of obesity (13.9%) and overweight (15.7%) (Figure 11b).

- The overall prevalence of overweight among MA PedNSS children aged two years to less than five years decreased slightly in the past ten years among all race/ethnicity categories from 16.7% in 2001 to 16.3% in 2010 (Figure 12).

Similarly, the overall prevalence of obesity among MA PedNSS children aged two years to less than five years decreased slightly in the past ten years among all race/ethnicity categories from 16.6% in 2001 to 16.1% in 2010 (Figure 13).

Anemia

- The overall prevalence of anemia in 2010 for children represented in the MA PedNSS was 10.7%, compared to 14.6% in the 2010 national PedNSS (Figure 14a).

- Anemia prevalence in 2010 MA PedNSS varied by race and ethnicity and was highest among Black non-Hispanic children (16.3%), and lowest among White non-Hispanic children (8.6%) (Figure 14a).

- Anemia prevalence also varied by age in MA PedNSS. It was highest among children aged 18 months to less than 24 months (13.5%) and lowest in children aged three years to less than five years (8.4%).(Figure 14b).

- The overall prevalence of anemia in MA PedNSS decreased in the past ten years in all race/ ethnicity categories from 15.3% in 2001 to 10.7% in 2010. (Figures 15a & 15b).

Infant-Feeding Practices

- About seventy four percent (73.8%) of all infants in the 2010 MA PedNSS were ever breastfed (Fig.16a) compared to 63.2% of infants in the 2010 national PedNSS (Figure 16a).

- Black non-Hispanic infants (83.0%) had the highest prevalence of breastfeeding initiation, where as White non-Hispanic infants had the lowest prevalence of 66.7% according to the 2010 MA PedNSS (Figure 16a).

- In the last ten years, the percentages of infants in the MA PedNSS that were ever breastfed increased in all race and ethnicity categories from 64.1% in 2001 to 73.8% in 2010. In the same period, the trend in the national PedNSS increased from 50.1 % to 63.2% (Figure 16b).

- For infants breastfed for at least 6 months, the percentage increased from 22.3% in 2001 to 25.2% in 2010 (Figure 17b).

- For infants breastfed for at least 12 months, the percentage increased from 10.2% in 2001 to 13.9% in 2010 (Figure 18b).

- About fourteen percent (13.7%) of all infants in the 2010 MA PedNSS were exclusively breastfed for three months compared to 10.7% in the 2010 national PedNSS (Figure 19).

- About nine percent (9.1%) of infants were exclusively breastfed for six months in the 2010 MA PedNSS compared to 13.7% for three months. The 2010 national PedNSS prevalence is lower than that of MA, at 6.1% for six months and 10.7% for three months respectively (Figure 20).

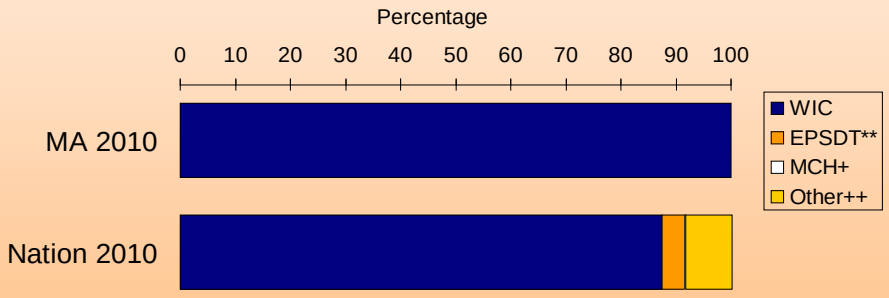
Conclusions

Healthy People 2010 (HP 2010) target a few nutritional indicators pertinent to the 2010 MA PedNSS. The targets for low birth weight, short stature, and underweight were each set at 5%. Massachusetts' short stature prevalence was 4.8%, meeting the HP 2010 target. Low birth weight (8.7%) and underweight (5.5%) were not met based on the 2010 MA PedNSS data or general MA data for LBW.

Breastfeeding targets for HP 2010 were to increase breastfeeding initiation to 75%, breastfeeding at six months to 50% and breastfeeding at 12 months to 25%. In 2010, 73.8% of MA PedNSS children were ever breastfed, slightly below the HP 2010 goal. However, both Black non-Hispanic (83%) and Hispanic (79.3%) populations did meet the target. As only twenty five percent (25.2%) of Massachusetts infants were breastfed at least 6 months and 13.9% were breastfed at least 12 months, Massachusetts WIC participants did not meet the HP 2010 breastfeeding targets of 50% at 6 months and 25% at 12 months, respectively.

Demographics: Source of Data

Figure 1-Source of Data
among Children Aged Less Than FiveYears



* *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.*

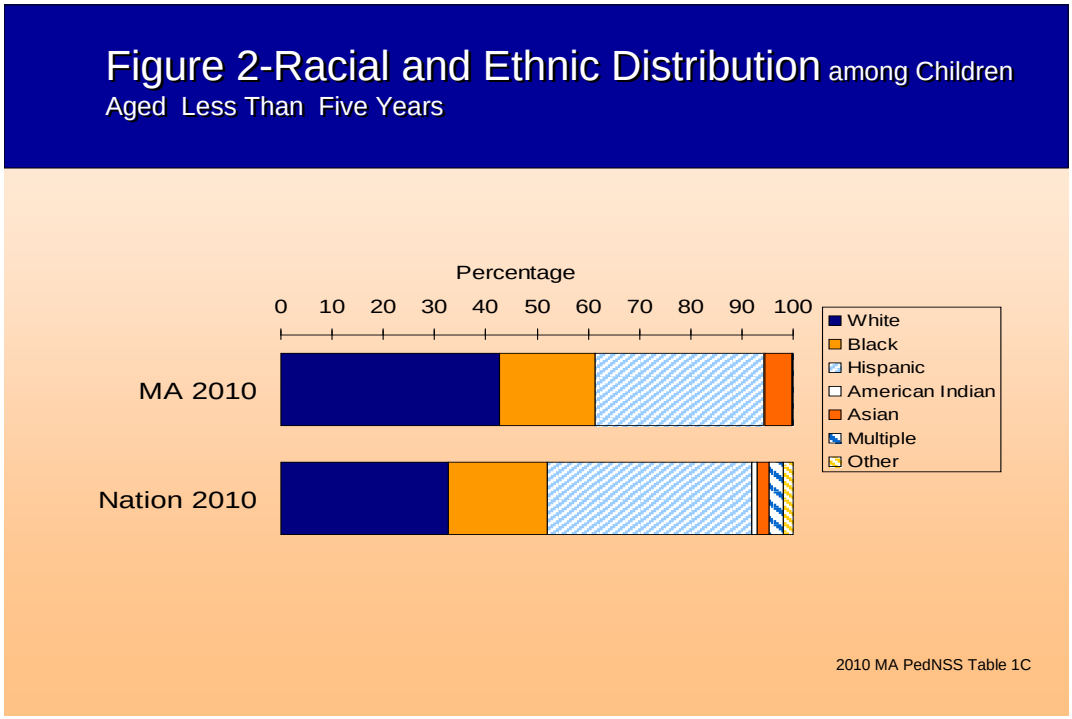
2010 MA PedNSS Table 1C

- The 2010 MA PedNSS included records representing 125,341 children ages zero (0) to 59 months.

- In the 2010 MA PedNSS, the entire (100.0%) dataset was derived from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

- Among the national PedNSS population, 87.5% of the 2010 dataset was based on data derived from WIC. Other data sources included the Early Periodic Screening Diagnosis and Treatment or EPSDT Program (4.1%), the Title V Maternal and Child Health Program or MCH (0.1%), and other programs including Head Start (8.4%).

Demographics: Race and Ethnicity

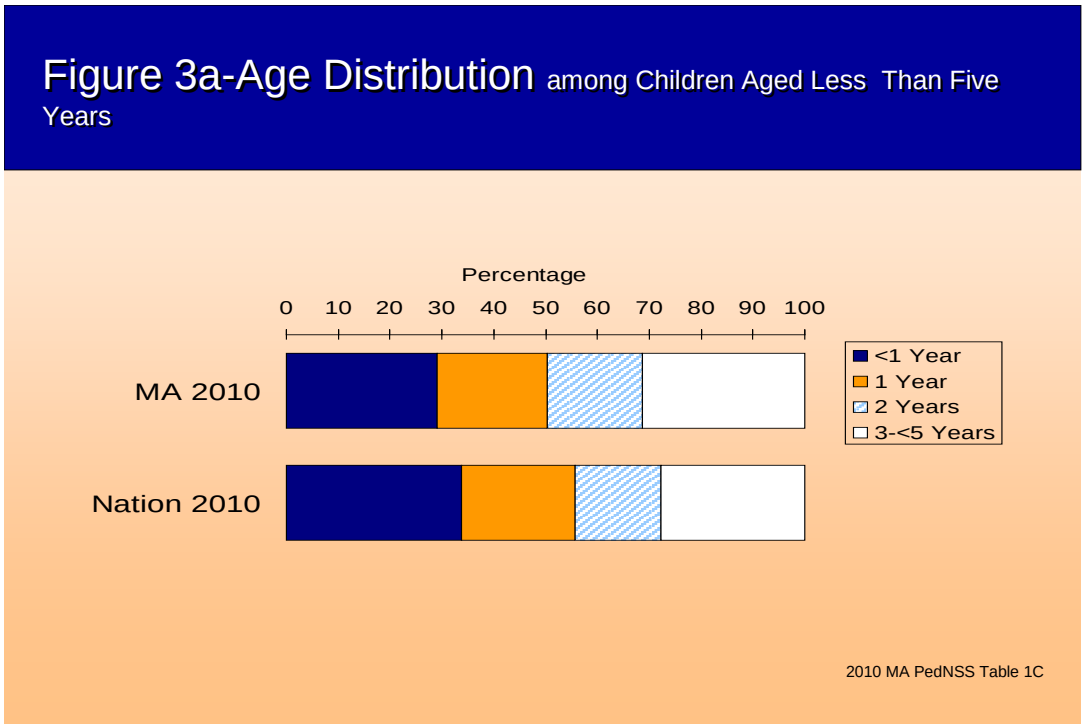


- In 2010, the racial and ethnic distribution of the MA PedNSS population was comprised of 42.7% White non-Hispanic, 33.0% Hispanic, 18.6% Black non-Hispanic, 5.3% Asian/Pacific Islander, 0.2% American Indian/Alaskan Native children, and 0.2% of children from all other races or multiple races.

- Over fifty seven percent (57.3%) of the 2010 MA PedNSS and 67.3% of the 2010 national PedNSS population consisted of children of color.

- While the proportion of Black non-Hispanic children varied only slightly between the 2010 MA PedNSS (18.6%) and the 2010 national PedNSS (19.3%), the MA PedNSS population had a larger proportion of White non-Hispanic (42.7%) and Asian (5.3%) children than the national PedNSS population (with 32.7% White non-Hispanic and 2.5% Asian children).However, there was a greater proportion of Hispanic children nationally (41.1%) than in the MA PedNSS population (33.0%).

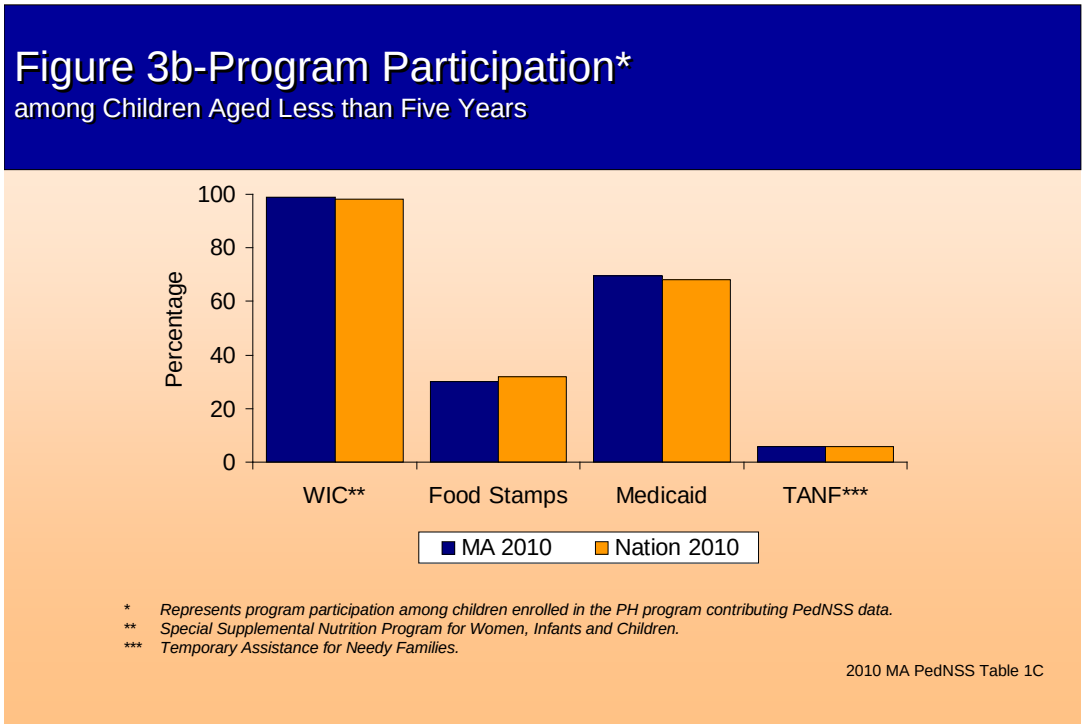
Demographics: Age Distribution



- Almost a third (29.0%) of the total 2010 MA PedNSS population was less than one year of age, 21.4% were one year old, 18.2% were two years old, and 31.4% were between three and five years old.

- The national data displays a similar picture. However a greater proportion of children nationally (33.7%) were less than one year of age.

Demographics: Program Participation



- Over ninety eight percent (98.8%) of 2010 MA PedNSS population were participants of the WIC program, 29.9% were SNAP recipients, 69.6% of the MA PedNSS children received Medicaid while 5.9% received TANF.

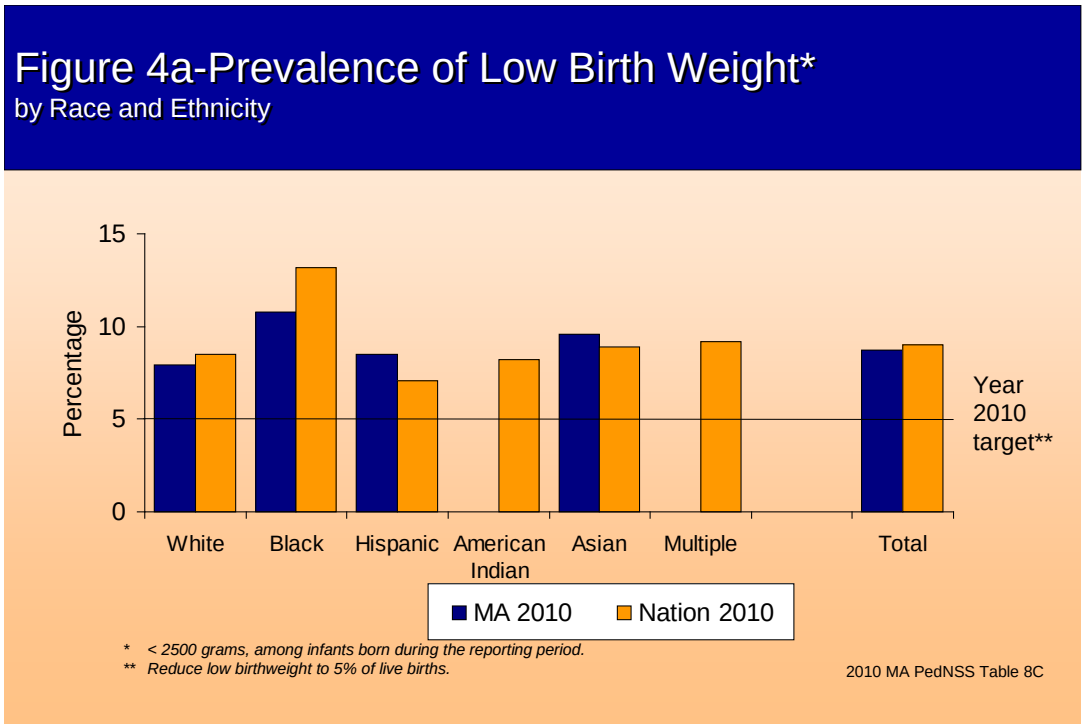
- In the 2010 national PedNSS, 98.1% of the population were participants of the WIC program, 31.8% were SNAP recipients; 68.1% of the national PedNSS children received Medicaid while 5.8% received TANF.

Demographics: Race/Ethnicity and Age Distribution of Children

Table 1. Race/Ethnicity and Age Distribution of Children Participating in the Massachusetts 2010 PedNSS

Race and Ethnic Distribution	Number	Percent
White non-Hispanic	53, 549	42.7
Black non-Hispanic	23, 292	18.6
Hispanic	41,327	33.0
American Indian	236	0.2
Asian/Pacific Islander	6659	5.3
Multiple Races	278	0.2
All Other	0	0.0
Total	**125,341**	**100.0**
Age Distribution		
0 - 5 months	27,315	21.8
6 - 11 months	9,046	7.2
12 - 23 months	26,842	21.4
24 - 35 months	22,810	18.2
36-59 months	39,328	31.4
Total	**125,341**	**100.0**

Low Birth Weight: Race and Ethnicity



One of the important determinants of neonatal and post neonatal mortality is low birth weight (LBW), defined as birth weight less than 2500 grams (IOM 1985). Low birth weight infants are also at increased risk for 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, Sharma & Mishra 2013).

- The overall prevalence of LBW in the 2010 MA PedNSS (8.7%) was higher than in the general MA population reported at 7.8% (according to the 2010 MA Birth Report published by MA Department of Public Health in 2011).

- The overall prevalence of LBW in the 2010 MA PedNSS was 8.7% while in the 2010 national PedNSS it was 9.0%.

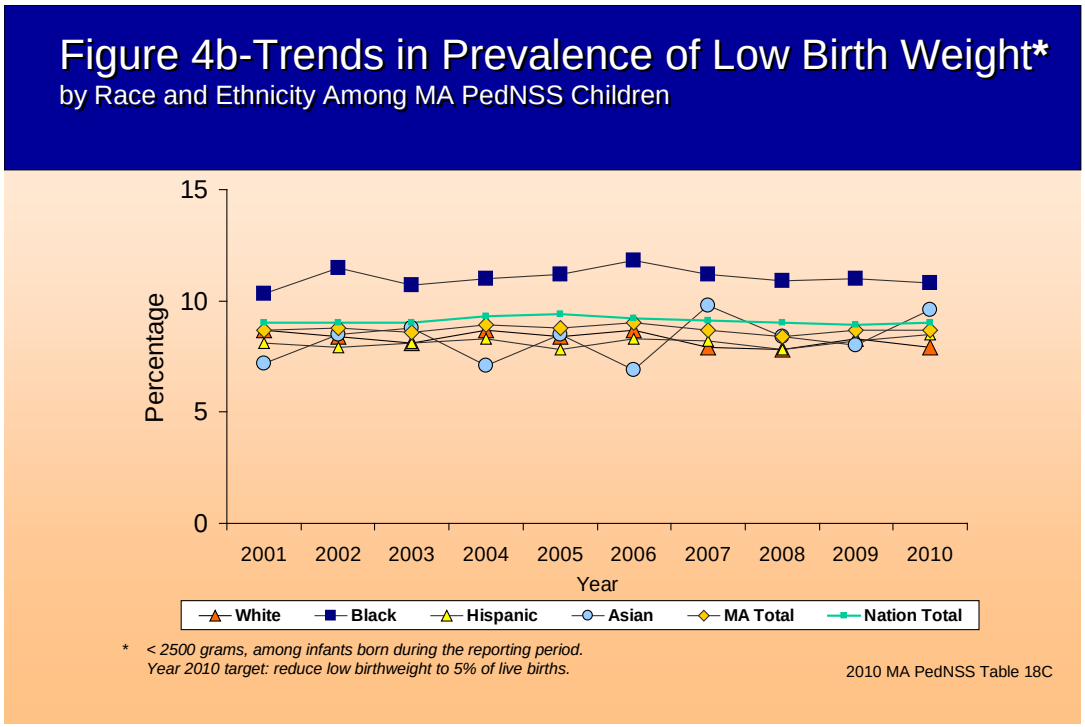
- Among the 2010 MA PedNSS population, the prevalence of LBW was highest for Black non-Hispanic infants (10.8%) compared to Asian (9.6%), Hispanic (8.5%) and White non-Hispanic (7.9%) infants**.**

- Similarly, in the 2010 national PedNSS, the prevalence of LBW was higher for Black non-Hispanic infants (13.2%) than for infants with multiple races (9.2%), White non-Hispanic (8.5%), Asian (8.3%), American Indian (8.2%) and Hispanic (7.1%) infants.

- The HP 2010 target is to reduce LBW to no more than 5% of all live births. Since the prevalence of LBW was high among all PedNSS infants both in MA (8.7%) and nationally (9.0%) 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 in 2010 for American Indian and multiple race MA PedNSS populations aged two years to less than five years 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.

Low Birth Weight Trends: Race and Ethnicity



- In the MA PedNSS, the overall prevalence of LBW has remained stable in the past ten years across all race/ethnicity categories, from 2001 (8.7%) to 2010 (8.7%).
- An increase in LBW was seen among Asian infants from 7.2% in 2001 to 9.6% in 2010.

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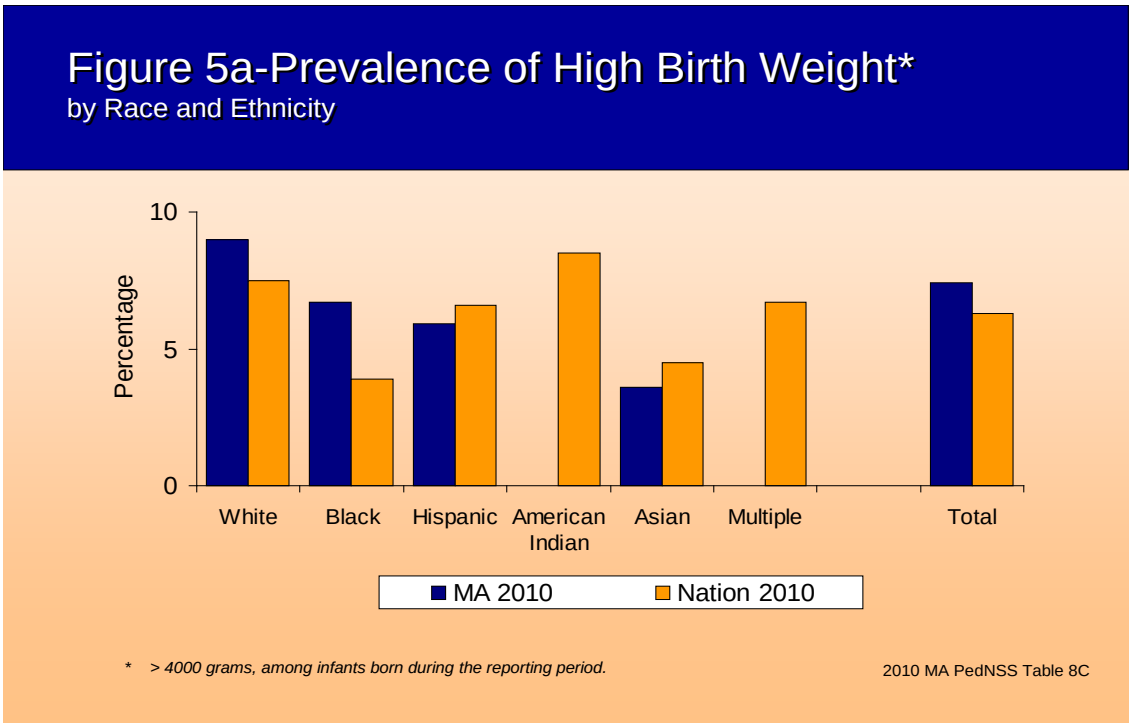
- The prevalence of LBW among Black non-Hispanic infants has remained consistently high, compared to other races, from 2001 (10.3%) to 2010 (10.8%).

High Birth Weight: Race and Ethnicity

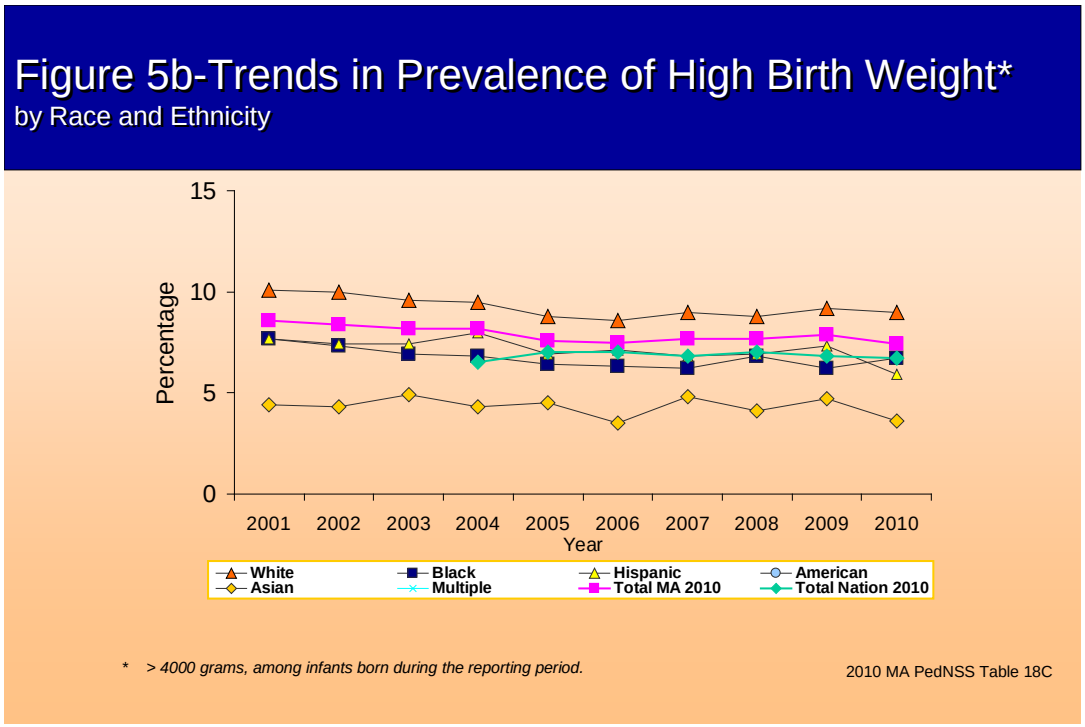


High birth weight (HBW), defined as birth weight greater than 4000 grams, also called macrosomia, increases the risk for injury and or death during delivery. Such risks include birth injuries such as shoulder dystocia, broken clavicles, neurological damage, prolonged vaginal delivery associated with 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).

The overall prevalence of HBW for 2010 MA PedNSS infants was 7.4% and 6.3% in the 2010 national PedNSS.

White non-Hispanic (9.0%) infants had the highest prevalence of HBW in the 2010 MA PedNSS, while Asian (3.6%) infants in the 2010 MA PedNSS had the lowest prevalence. The prevalence of HBW in other groups is as follows: Black non-Hispanic (6.7%) and Hispanic (5.9%). The prevalence of HBW for 2010 MA PedNSS was not calculated for American Indian /Alaskan Native and multiple race children, and hence not displayed in the above graph because fewer than 100 records were available for analysis.

High Birth Weight Trends: Race and Ethnicity

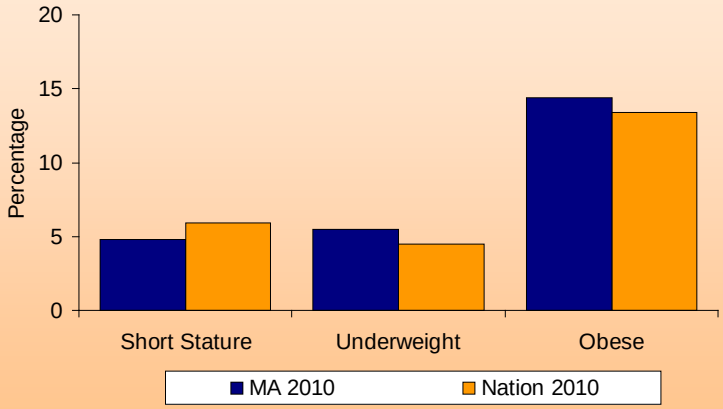


- In the past ten years, the overall trend showed a slight decrease in HBW, from 8.6% in 2001 to 7.4% in 2010. Asian infants also experienced a small decrease in HBW from 4.4% in 2001 to 3.6% in 2010.

- Between 2001 and 2010, 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 because fewer than 100 records were available for analysis.

Short Stature, Underweight and Obesity

Figure 6-Prevalence of Short Stature, Underweight, and Obesity* among Children Aged Less Than Five Years

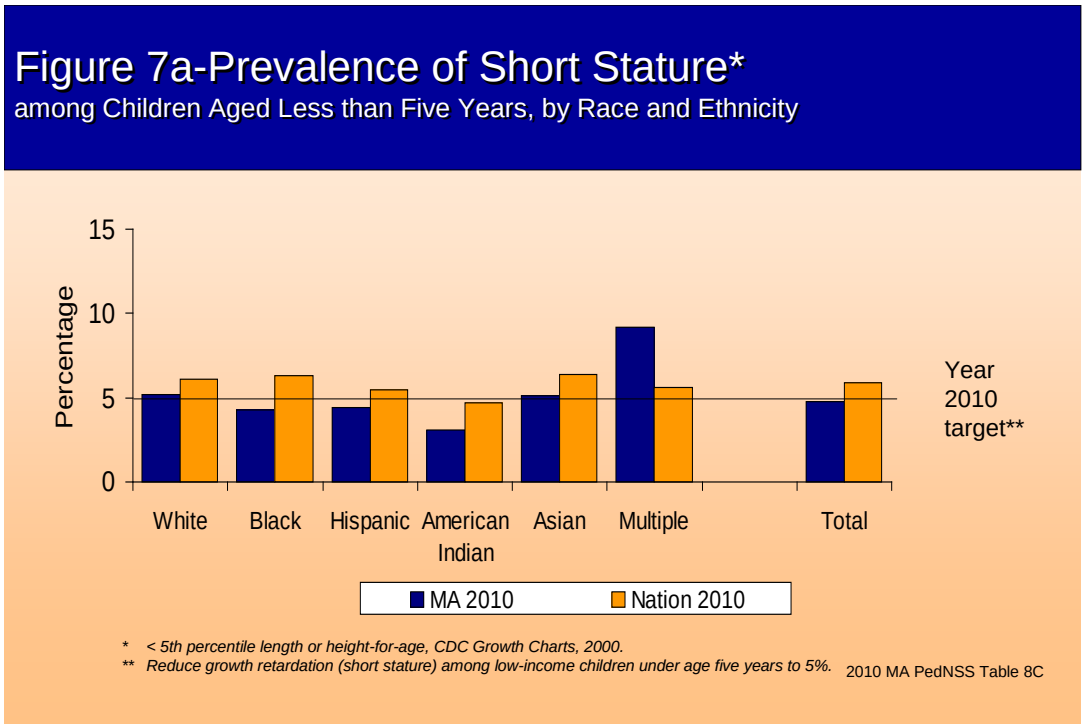


* *Short stature: < 5th percentile length or height-for-age; underweight: < 5th percentile weight-for-length or BMI-for-age; obese: ≥ 95th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.*

2010 MA PedNSS Table 2C

- Among children aged less than five years in the 2010 MA PedNSS, 4.8% were of short stature, 5.5% were underweight and 14.4% were obese.
- The prevalence of short stature (4.8%) in the 2010 MA PedNSS achieved the Healthy People 2010 target level of 5% or less.
- The prevalence of short stature (4.8%) among 2010 MA PedNSS children aged less than five years was lower than the prevalence among their counterparts in the 2010 national PedNSS (5.9%). However, the prevalence of underweight was slightly higher in MA PedNSS children (5.5%) compared to their counterparts in the 2010 national PedNSS (4.5%). The overall proportion of obese children was slightly higher among MA PedNSS children aged less than five years (14.4%) than among their national counterparts (13.4%).

Short Stature: Race and Ethnicity



- 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 height-for-age (measured standing) for children aged two years or older.

- For children aged less than two years, short stature is defined, based on the 2006 WHO growth charts percentiles, as stature equal to or less than the 2.3rd percentile length-for-age (measured recumbently).

- Short stature 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, 5% of healthy children are expected to fall below the established cut-off 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.

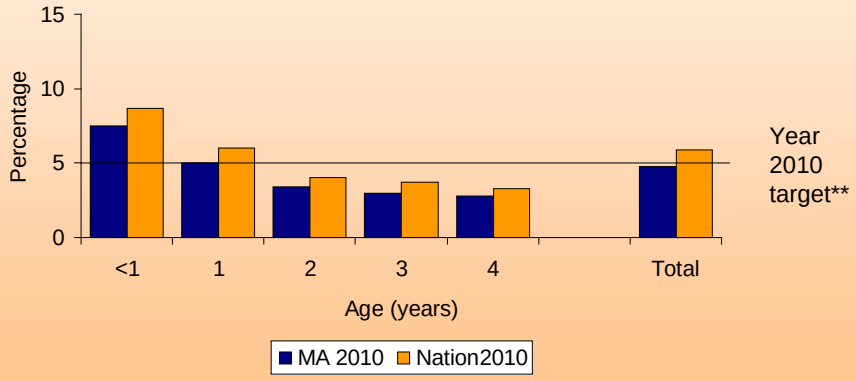
- The prevalence of short stature was consistently lower in the 2010 MA PedNSS children (4.8%) in all race/Hispanic ethnicity groups compared to the national PedNSS data (5.9%).

- In the 2010 MA PedNSS, multiple race (9.2%), White non-Hispanic (4.3%), Asian (5.1%), Hispanic (4.4%), and Black non-Hispanic (4.3%) children had the highest prevalence of short stature. The lowest prevalence was found in American Indian/Alaskan native children (3.1%).

- While short stature prevalence varied in both 2010 MA PedNSS and the national PedNSS by race and ethnicity, most ethnic groups in MA PedNSS (except multiple race children) met the Healthy People 2010 objective for prevalence of short stature less than or equal to 5%.

Short Stature: Age Distribution

Figure 7b-Prevalence of Short Stature* among Children Aged Less than Five Years, by Age



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

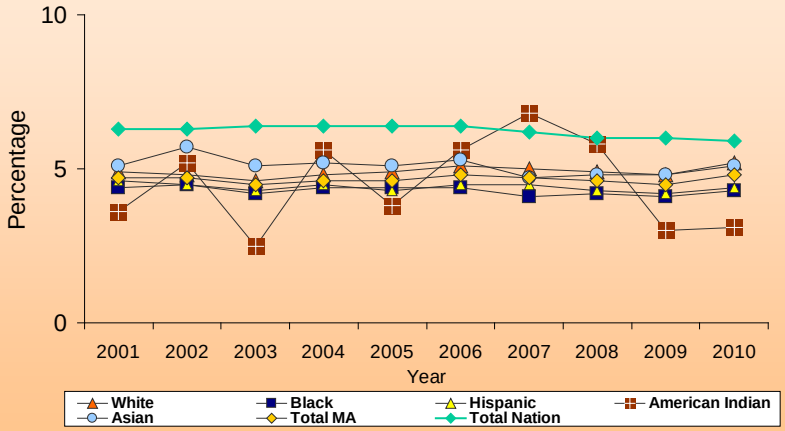
2010 MA PedNSS Table 8C

- Short stature also varied by age. Among the 2010 MA PedNSS population, children aged less than one year had the highest prevalence (7.5%) of short stature compared to one year old (5.0%), two year old (3.4%) and three year old (3.0%) children. Four year old children in MA PedNSS had the lowest prevalence (2.8%) of short stature.

- Similarly, among the 2010 national PedNSS population, children aged less than one year had the highest prevalence (8.7%) of short stature compared to one year old (6.0%), two year old (4.0%) and three year old (3.7%) children. Four year old children in 2010 national PedNSS had the lowest prevalence (3.3%) of short stature.

Short Stature Trends: Race and Ethnicity

Figure 7c-Trends in Prevalence of Short Stature*
among Children Aged Less than Five Years, by Race and Ethnicity

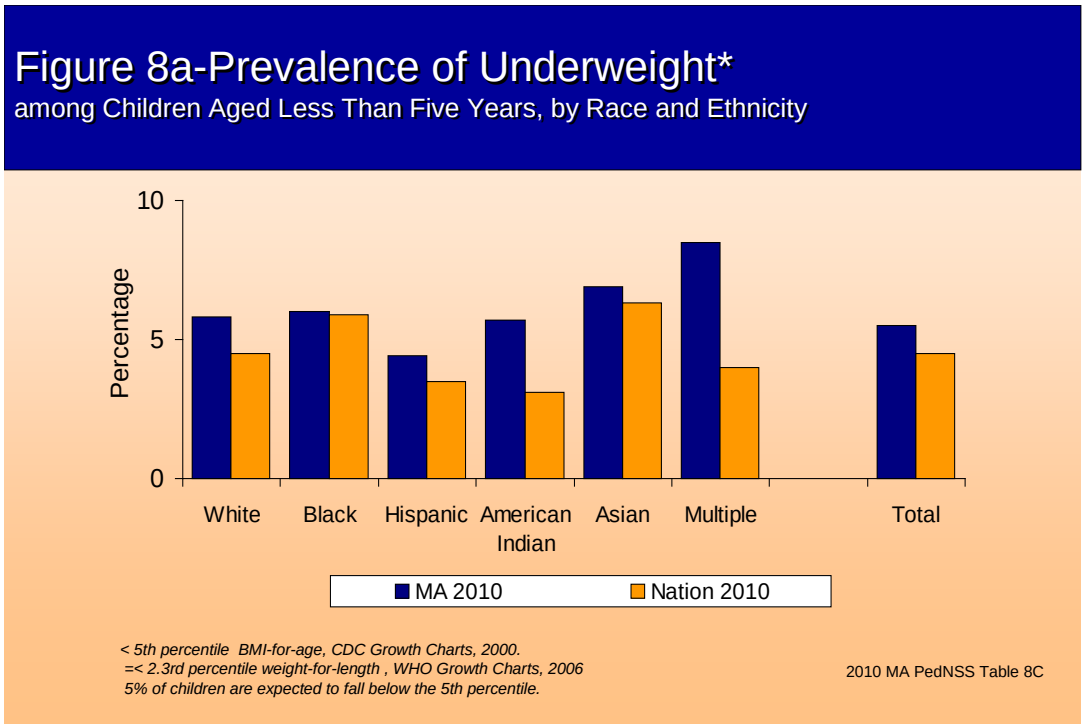


* *< 5th percentile length or height-for-age, CDC Growth Charts, 2000.*
Year 2010 target: reduce growth retardation (short stature) among low-income children under age five years to 5%.

2010 MA PedNSS Table 18C

- Overall, the percentage of MA PedNSS children with short stature has remained steady in the last ten years among all race/ ethnicity groups (from 4.7% in 2001 to 4.8% in 2010).
- The proportion of short stature among American Indian children decreased from 3.6% in 2001 to 3.1% in 2010 MA PedNSS; however, their total population data has varied.

Underweight: Race and Ethnicity



Underweight in children is defined using the 2000 CDC gender-specific growth charts or the 2006 WHO growth charts depending on child's age. For children aged 2 years or older the CDC growth chart is used and underweight is defined as BMI-for-Age less than 5th percentile. For children aged less than 2 years, the 2006 WHO growth chart is used and underweight is defined as weight-for-length less than the 2.3rd percentile. 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.

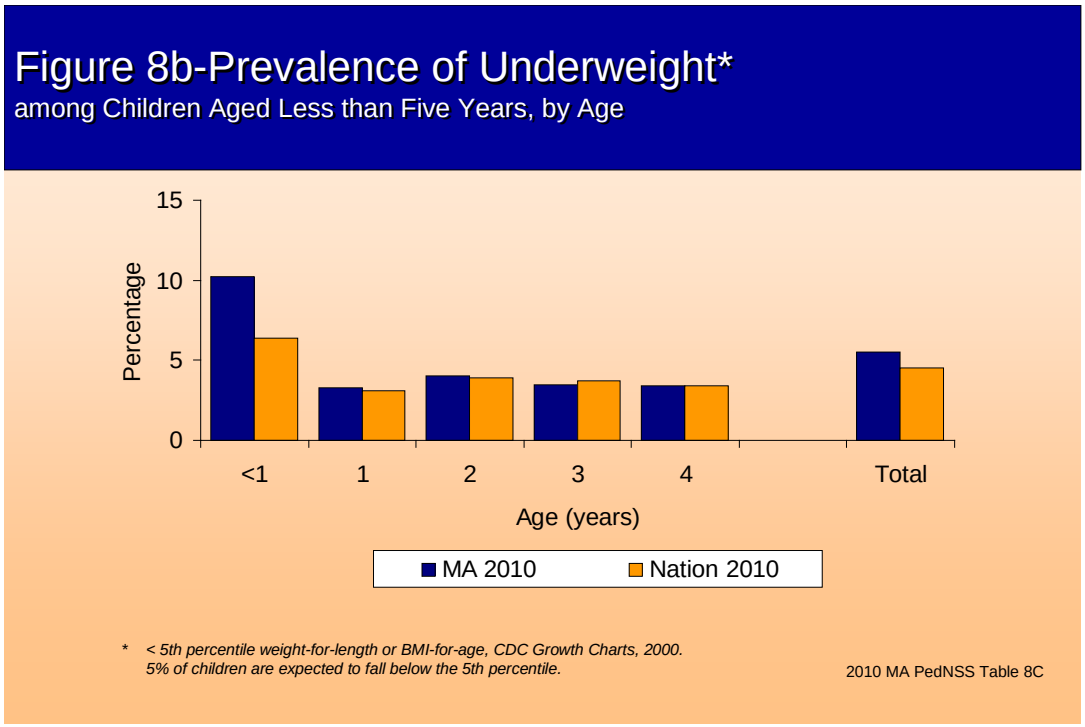
Underweight in children was compared between the 2010 MA and 2010 national PedNSS among children aged less than five years by race and ethnicity.

- The overall prevalence of underweight was slightly higher in children represented in the 2010 MA PedNSS (5.5%) compared to those in the national PedNSS (4.5%).
- Multiple race children (8.5%), followed by Asian (6.9%) and Black non-Hispanic (6.0%) children aged less than five years had the highest prevalence of underweight in MA PedNSS.
- Hispanic (4.4%), American Indian (5.7%) and White non-Hispanic (5.8%) children had the lowest prevalence of underweight among children aged less than five years in 2010 MA PedNSS.

- In the national PedNSS, Asian (6.3%) and Black non-Hispanic (5.9%) children showed the highest prevalence of underweight.

- Hispanic children aged less than five years had the lowest prevalence of underweight in MA PedNSS (4.4%), while American Indian children had the lowest prevalence of underweight in the national PedNSS (3.1%).

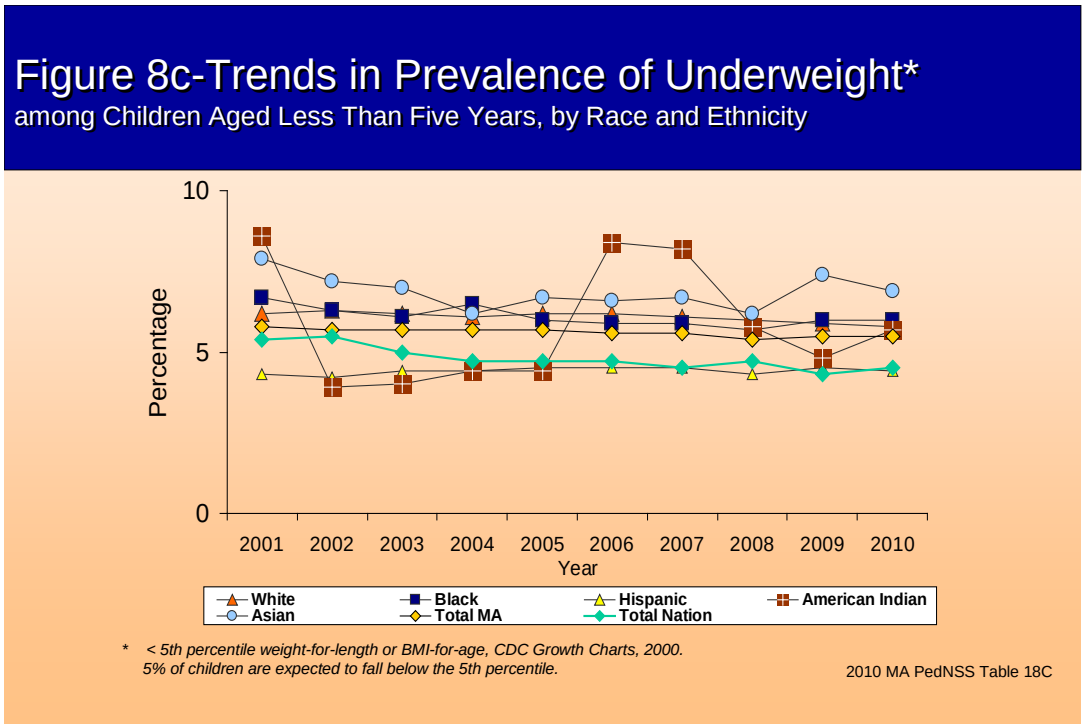
Underweight: Age Distribution



- With the exception of the youngest age group, which had a prevalence of underweight of 10.2% in 2010 MA PedNSS and 6.4% nationally, all age groups had a prevalence of underweight below 5% and thus met the HP 2010 goal for underweight reduction.

- The high prevalence of underweight among the youngest age group is most likely attributable to infants who were born with a low birth weight, and who had not yet achieved catch-up growth in weight at the time of measurement.

Underweight Trends: Race and Ethnicity

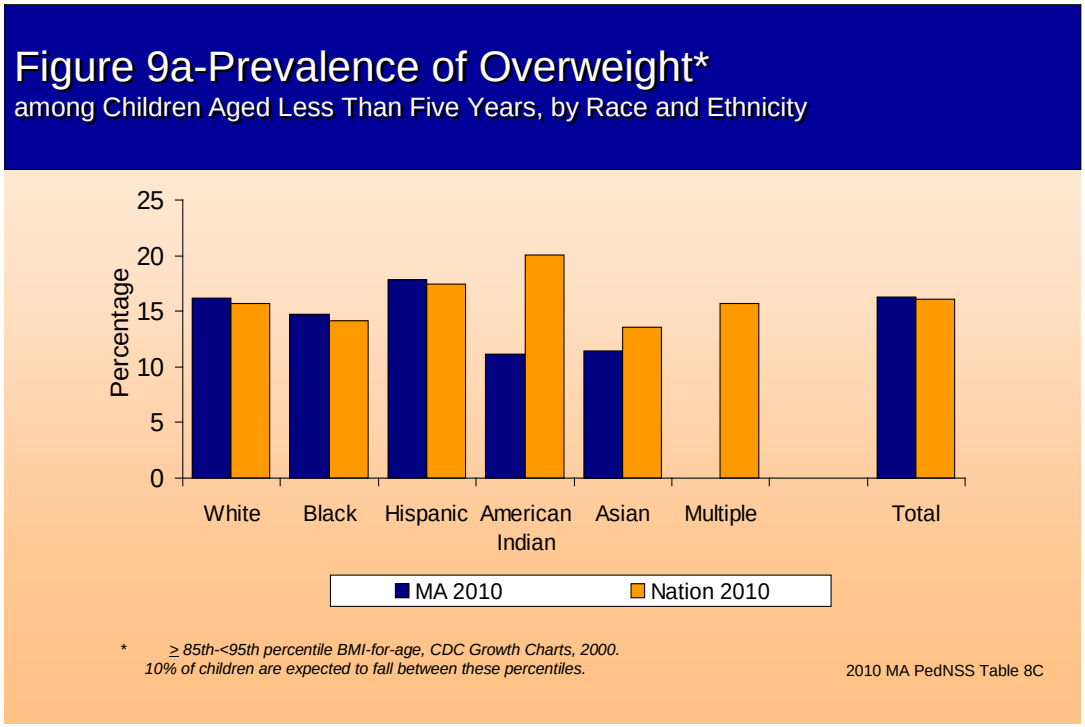


- Overall, the proportion of underweight children decreased slightly among all racial/ethnicity categories in MA PedNSS in the past ten years, from 5.8% in 2001 to 5.5% in 2010.

- Although a decreasing overall trend was observed, the percentage of underweight was consistently higher among Asian MA PedNSS children (from 7.9% in 2001 to 6.9% in 2010) than the percentage for the total state PedNSS population in the same time period.

- The prevalence of underweight was consistently low among the Hispanic MA PedNSS population: from 4.3% in 2001 to 4.4% in 2010.

Overweight: Race and Ethnicity



Overweight in children, also called high weight-for-height, or high weight-for- length is defined using the 2000 CDC gender-specific growth charts or the WHO 2006 growth chart depending on child's age.

For children aged 2 years or older the CDC growth chart is used. "Overweight" is defined as BMI-for-Age less than 95th percentile but equal to or greater than 85th percentile.

For children aged less than 2 years, the 2006 WHO growth charts are used. "High weight-for-length" is the preferred terminology for describing "overweight," which is defined as weight-for-length equal to or greater than 97.7th percentile.

Overweight may indicate excess energy intake, low energy expenditure, or both. Overweight in young children has increased nationally 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 (Fowler-Brown and Kahwati 2004). It should be recognized, however, that 10% of normal, healthy children above two years of age 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).

Overweight in children was compared between the 2010 MA and 2010 national PedNSS among children aged less than five years by race and ethnicity.

- The overall prevalence of overweight was slightly higher in children represented in the 2010 MA PedNSS (16.3%) compared to those in the 2010 national PedNSS (16.1%).

- Hispanic (17.8%) children, followed by White non-Hispanic (16.2%), and Black non-Hispanic (14.7%) children had the highest prevalence of overweight among MA PedNSS children aged less than five years.

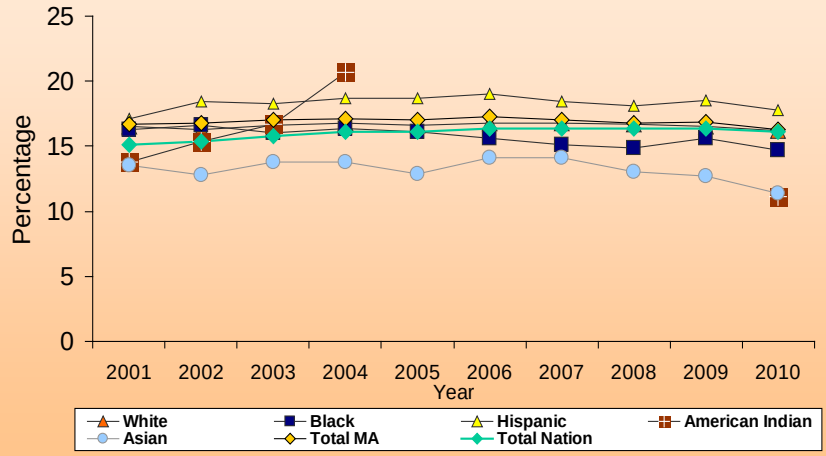
- American Indian (11.1%) and Asian (11.4%) children aged less than five years had the lowest prevalence of overweight in MA PedNSS.

- In the 2010 national PedNSS, American Indian (20.1%), Hispanic (17.4%), multiple race (15.7%) and White non-Hispanic (15.7%) children showed the highest prevalence of overweight.

- Asian (13.6%) and Black non-Hispanic (14.1%) children aged less than five years had the lowest prevalence of overweight in national PedNSS.

Overweight Trends: Race and Ethnicity

Figure 9b-Trends in Prevalence of Overweight*
among MA PedNSS Children Aged Less Than Five Years, by Race and Ethnicity



* ≥ 85th-<95th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

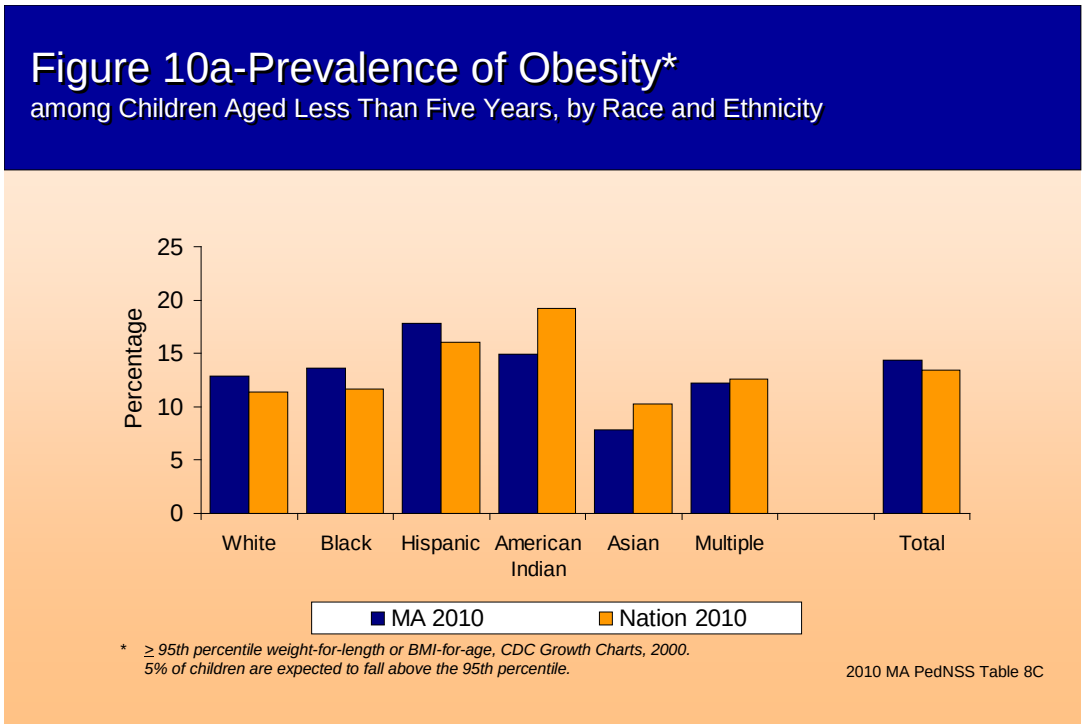
2010 MA PedNSS Table 18C

- Overall, the proportion of overweight children aged less than five years slightly decreased among all racial/Hispanic ethnicity categories in MA PedNSS in the past ten years, from 16.7% in 2001 to 16.3% in 2010. An increasing overall trend was observed nationally in the overall proportion of overweight children aged less than five years (from 15.1% in 2001 to 16.1% in 2010).

- Although a decreasing overall trend was observed in MA PedNSS, the percentage of overweight was consistently higher among Hispanic (from 17.1% in 2001 to 17.8% in 2010) and White non-Hispanic (from 16.5% in 2001 to 16.2% in 2010) children, compared to the percentage for the total state PedNSS population within the same time period.

- The prevalence of overweight was consistently low among American Indian children in MA PedNSS population (from 13.8% in 2001 to 11.1% in 2010), followed by Asian children (from 13.5% in 2001 to 11.4% in 2010).

Obesity: Race and Ethnicity



Obesity in children (aged two to 20 years) is defined as BMI-for-age equal to greater than the 95th percentile based on the 2000 CDC gender-specific growth charts. Children less than 2 years old are not categorized as obese by the 2006 WHO growth charts. 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, Anderson and Butcher 2006, Cali and Caprio 2008, Ford and Mokdad 2008, Lee 2008 Ogden et al 2008).

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 over the age of two 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.

- Overall, the prevalence of obesity among all children aged less than five years participating in the 2010 MA PedNSS (14.4%) was slightly higher than that of their national 2010 PedNSS counterparts (13.4%) in all race/ ethnicity categories.

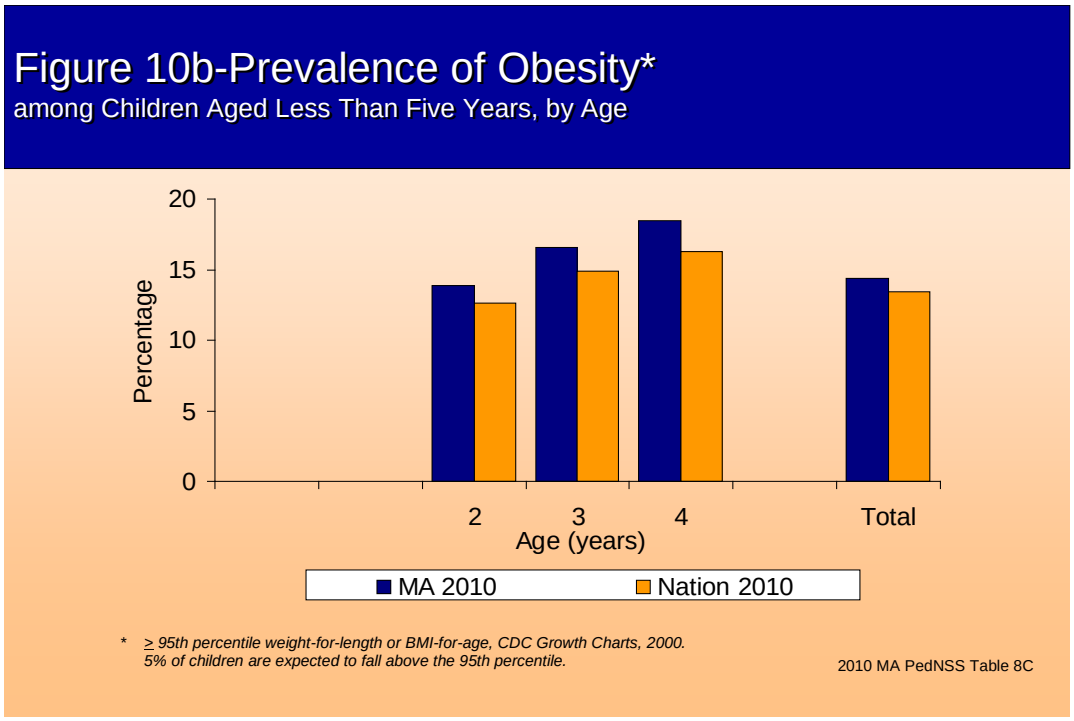
- The prevalence of obesity among the 2010 MA PedNSS children was highest among Hispanic children (17.8%), followed by American Indian (14.9%), Black non-Hispanic (13.6%) and White non-Hispanic (12.9%) children.

- Asian (7.8%) and multiple race (12.2%) children had the lowest prevalence of obesity in the 2010 MA PedNSS.

- Among the 2010 national PedNSS children, the prevalence of obesity was highest among American Indian children (19.2%), followed by Hispanic (16.0%) and multiple race (12.6%) children.

- In the national PedNSS the lowest obesity rates were observed in Asian (10.3%), White non-Hispanic children (11.4%), and Black non-Hispanic (11.7%) children.

Obesity: Age Distribution

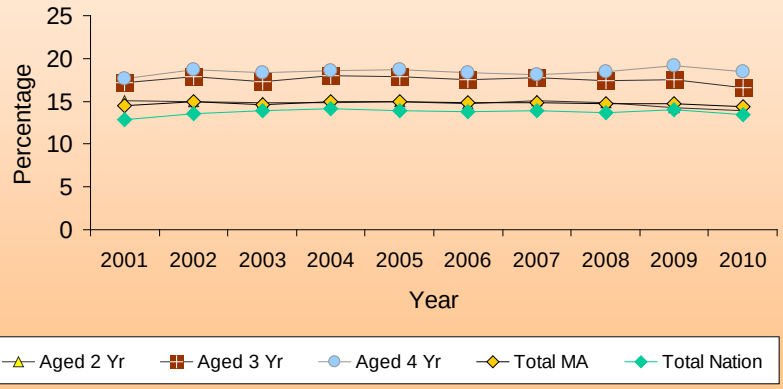


- In both the 2010 MA PedNSS and the 2010 national PedNSS, obesity varied by age. The overall prevalence of obesity in children aged less than five years was 14.4% among MA PedNSS while it was 13.4% among national PedNSS children.

- The greatest proportion of children categorized as obese in 2010 MA PedNSS was observed among the four year olds (18.5%), followed by children who were , three years old (16.6%) and two years old (13.9%).
- In the national 2010 PedNSS, 16.3% of those who were four years old, 14.9% of those who were three years old, 12.6% of those who were two years old, were described as obese. Children in the MA PedNSS population had higher overall prevalence of obesity when compared to their counterparts in the national PedNSS population for all the sampled age groups.

Obesity Trends: Age Distribution

Figure 10c-Trends in Prevalence of Obesity*
among Children Aged Less Than Five Years, by Age



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

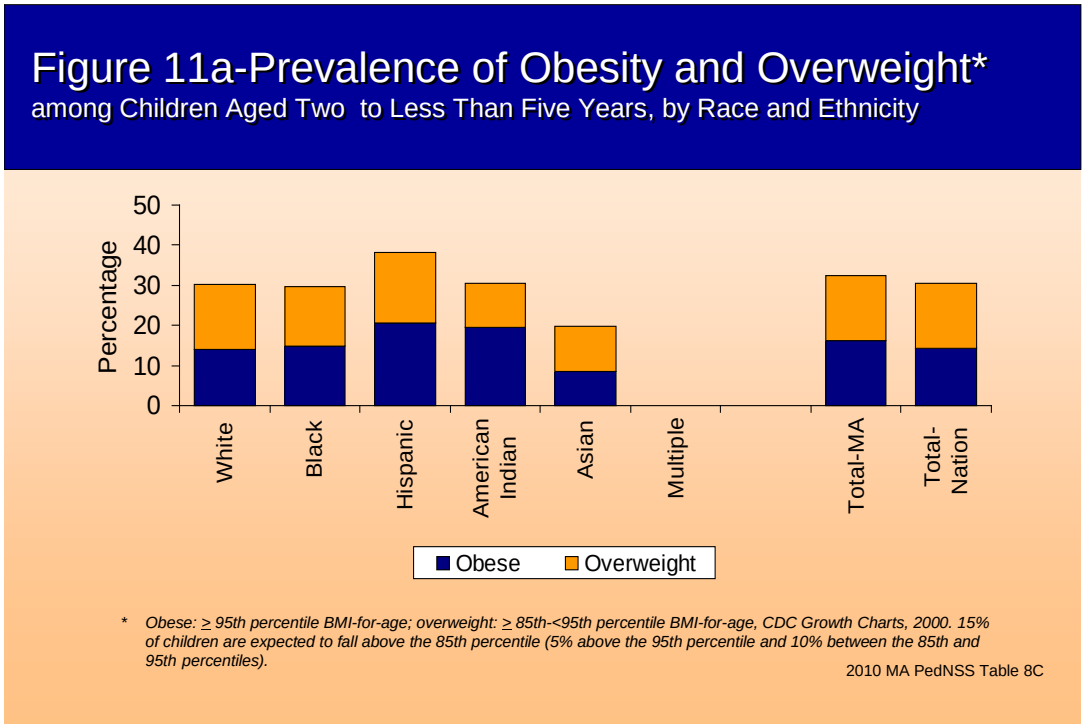
2010 MA PedNSS Table 20C

- In the MA PedNSS, the overall prevalence of obesity among children aged less than 5 years decreased in the past ten years from 14.5 % in 2001 to 14.4% in 2010. In the national PedNSS, obesity prevalence in the same age group increased in the same period from 12.9% in 2001 to 13.4% in 2010.

- The greatest increase in obesity prevalence occurred among the four-year old children in MA PedNSS (from 17.6% in 2001 to 18.5% in 2010).

- The prevalence for three-year olds decreased from 17.2% in 2001 to 16.6% in 2010. A decreasing trend was also observed in the two-year olds (from 15.1% in 2001 to 13.9% in 2010).

Obesity and Overweight Combined: Race and Ethnicity



- Children aged two years to less than five years by race and ethnicity in the 2010 MA PedNSS had a higher prevalence of obesity and overweight combined (32.4%) compared to their counterparts represented in the national PedNSS, whose prevalence of obesity and overweight combined was 30.5%.

- More than one in five Hispanic children (20.5%) aged two years to less than five years were obese and 17.8% were overweight, with the highest combined percentage (38.3%) of both overweight and obesity among all race/ ethnicity categories reported for MA PedNSS.

- In comparison, 8.5% of Asian children aged two years to five years in MA PedNSS were obese and 11.4% were overweight, with the lowest combined percentage (19.9%) of both overweight and obese children among all race/Hispanic ethnicity categories reported for MA PedNSS.

- No statistics for obesity and overweight were shown for multiple race PedNSS populations aged two to less than five years as the group had fewer than 100 records.

Obesity and Overweight Combined: Age Distribution

Figure 11b-Prevalence of Obesity and Overweight*
among Children Aged Two to Less Than Five Years, by Age in 2010

* *Obese: ≥ 95th percentile BMI-for-age; overweight: ≥ 85th-<95th percentile BMI-for-age, CDC Growth Charts, 2000. 15% of children are expected to fall above the 85th percentile (5% above the 95th percentile and 10% between the 85th and 95th percentiles).*

2010 MA PedNSS Table 8C

- Children aged two years to less than five years in the 2010 MA PedNSS had a higher prevalence of obesity and overweight combined (32.4%), compared to children of similar age group represented in the national PedNSS, with an overall combined prevalence of obesity and overweight at 31.1%.

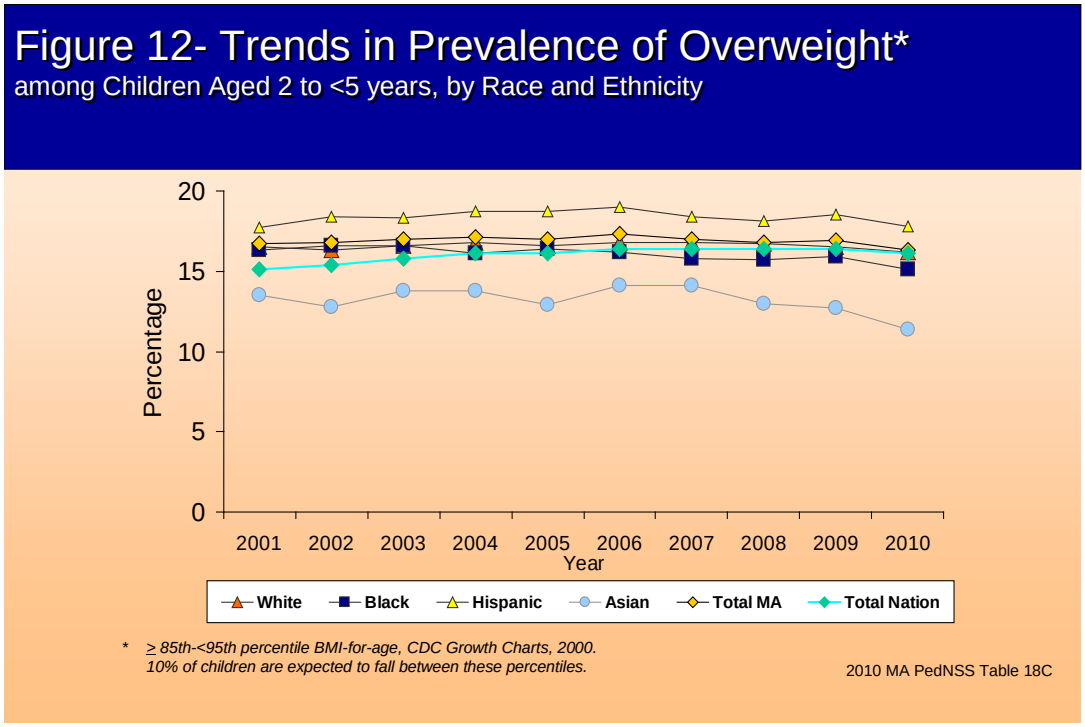
- The highest proportion of children categorized as obese in MA PedNSS was observed among the four year olds (18.5%), followed by children at three years old (16.6%) and two years old (13.9%).

- The proportion of children categorized as overweight in MA PedNSS was 16.8% among the three-year olds, 16.4% among the four-year olds, and 15.7% among the two-year olds.

- The combined prevalence of overweight and obesity for the various age groups in 2010 MA PedNSS were as follows: 34.9% for four-year olds, 33.4% for three-year olds, and 29.6% for two-year olds.

- The prevalence of excessive weight (obesity and overweight combined) among children appeared to increase with increasing age in MA PedNSS population. A similar prevalence was observed in the national PedNSS population in previous studies (Barlow 2007, Krebs and Jacobson 2003).

Overweight Trends: Race and Ethnicity



- In the MA PedNSS, the overall prevalence of overweight among children aged two to less than five years slightly decreased in the past ten years over all race/ethnicity categories (from 16.7% in 2001 to 16.3% in 2010). In the national PedNSS, the overall prevalence of overweight among children of similar age groups slightly increased in the same period over all race/ethnicity categories (from 15.1% in 2001 to 16.1% in 2010).

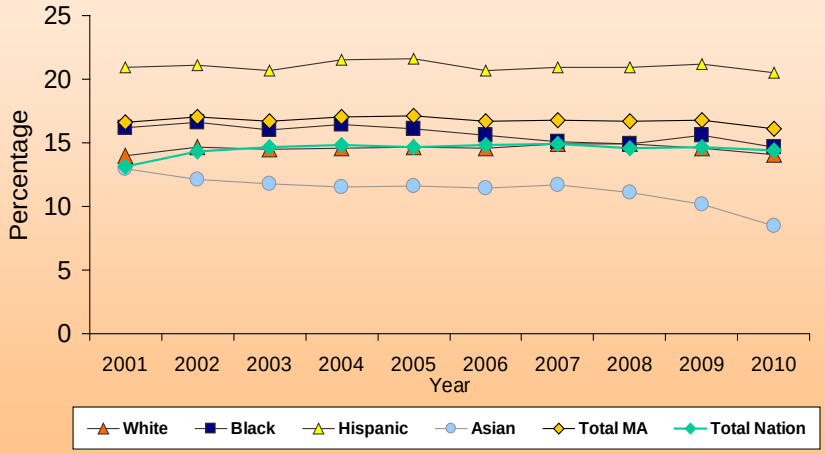
- The highest prevalence of overweight among MA PedNSS children was observed in Hispanic children whose prevalence ranged from 17.7% in 2001 to 17.8% in 2010.

- The lowest prevalence of overweight among MA PedNSS children was observed in Asian children whose prevalence ranged from 13.5% in 2001 to 11.4% in 2010.

- There were less than 100 records for American Indian children between 2001 and 2010; hence the CDC did not generate data on overweight for this population.

Obesity Trends: Race and Ethnicity

Figure 13-Trends in Prevalence of Obesity*
among MA PedNSS Children Aged Two to Less Than Five Years, by Race and Ethnicity



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

2010 MA PedNSS Table 18C

- In the MA PedNSS, the overall prevalence of obesity among children aged two to less than five years old decreased in the past ten years from 16.6% in 2001 to 16.1% in 2010. In the national PedNSS, the overall prevalence of obesity among children aged two to less than five years old increased in the same period from 13.1% in 2001 to 14.4% in 2010.

- Hispanic children aged two years to less than five years experienced the greatest prevalence of obesity in each year from 20.9% in 2001 to 20.5% in 2010, though the trend was decreasing. White non-Hispanic children recorded a slight increase in obesity prevalence, from 14.0% in 2001 to 14.1% in 2010.

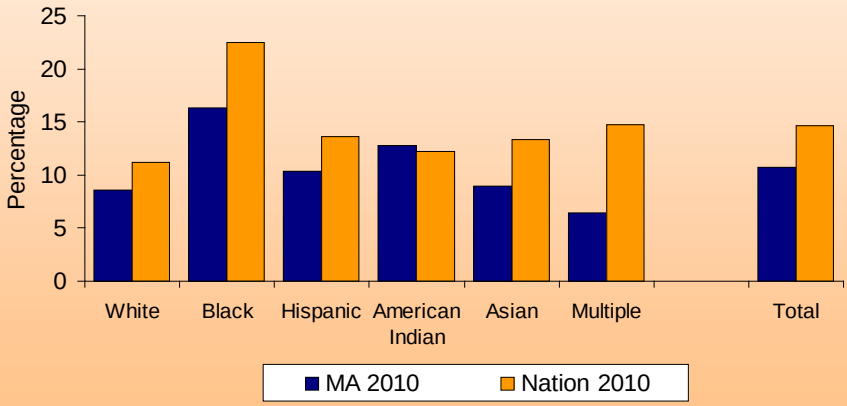
- The lowest prevalence of obesity was recorded in Asian children, ranging from 13% in 2001 to 8.5% in 2010, and the trend was decreasing.

- American Indian PedNSS population had fewer than 100 records in each of these years, so no data were generated for them between 2001 and 2010 according to the CDC guidelines stated earlier.

Anemia: Race and Ethnicity

Figure 14a-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.*

2010 MA PedNSS Table 8C

Anemia is a blood disorder and an indicator of iron deficiency, the most common nutrient deficiency in the world. Anemia occurs when blood has fewer red blood cells than normal, or when the hematocrit (percentage of red blood cells in a specific volume of blood) is low, and/or when there is a low blood concentration of hemoglobin (the iron-bearing blood protein that carries oxygen from lungs to the tissues). Anemia can develop from excessive blood loss (hemorrhage), deficient production of red blood cells or excessive destruction of red blood cells.

When the three blood parameters (hematocrit, hemoglobin or heme iron) are reduced, the ability of blood to carry oxygen to the tissues is reduced. This causes a condition called hypoxia (low oxygenation of tissues).

Anemia in children is defined as a hemoglobin level of less than the 5th percentile-for-age (Janus and Moeschel 2010). Iron deficiency in children is associated with developmental delays and behavioral disturbances (Polllitt 1993, Lozzoff et al 2000, Saloojee and Pettifor 2001, WU et al 2002). However, not all types of anemia are caused by iron deficiency; anemia can be caused by other nutritional deficiencies (e.g. folate, vitamin-B12, or vitamin C deficiency), hereditary hemoglobinopathies (e.g., thalassemia or sickle cell disease), recent or current infection, certain medications (e.g. cancer drugs), chemical toxins and chronic inflammation.

According to the CDC's 2007 PedNSS Report, children aged six months to two years are considered anemic if their hemoglobin (Hgb) is less than 11.0g/dL or

their hematocrit (Hct) level is less than 32.9%; children aged two years to five years are considered anemic if their Hgb concentration is less than 11.1g/dL or Hct level is less than 33.0%. Values are adjusted for altitude. The Hgb concentration and Hct level are not reported for children younger than six months (CDC 1998).

Anemia results varied in both MA and national PedNSS for children aged less than five years.

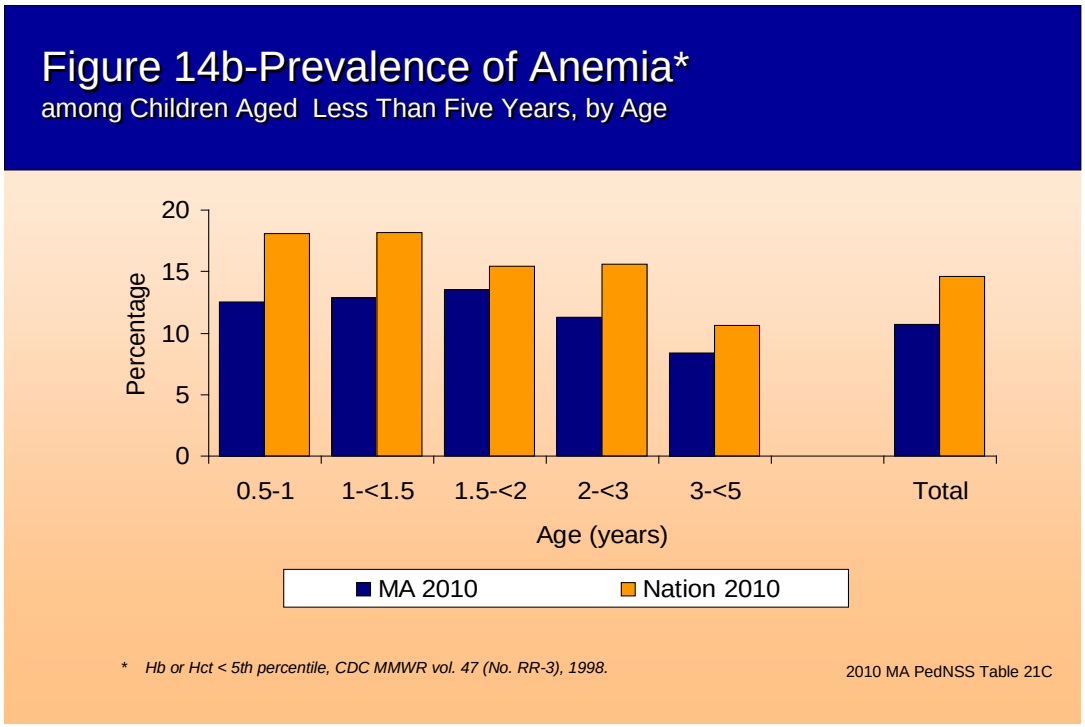
- Overall, 10.7% of children in the 2010 MA PedNSS were anemic, compared to 14.6% in the 2010 national PedNSS.

- The prevalence of anemia varied by race/ethnicity in MA PedNSS population with Black non-Hispanic children having the highest prevalence (16.3%), while multiple race children had the lowest prevalence (6.4%).

- A similar observation was made in the national PedNSS population with Black non-Hispanic children having the highest prevalence of anemia (22.5%), while White non-Hispanic children had the lowest prevalence (11.2%).

- Statistics for anemia were not reported in MA PedNSS population among American Indian children aged less than five years old, as the group had fewer than 100 records.

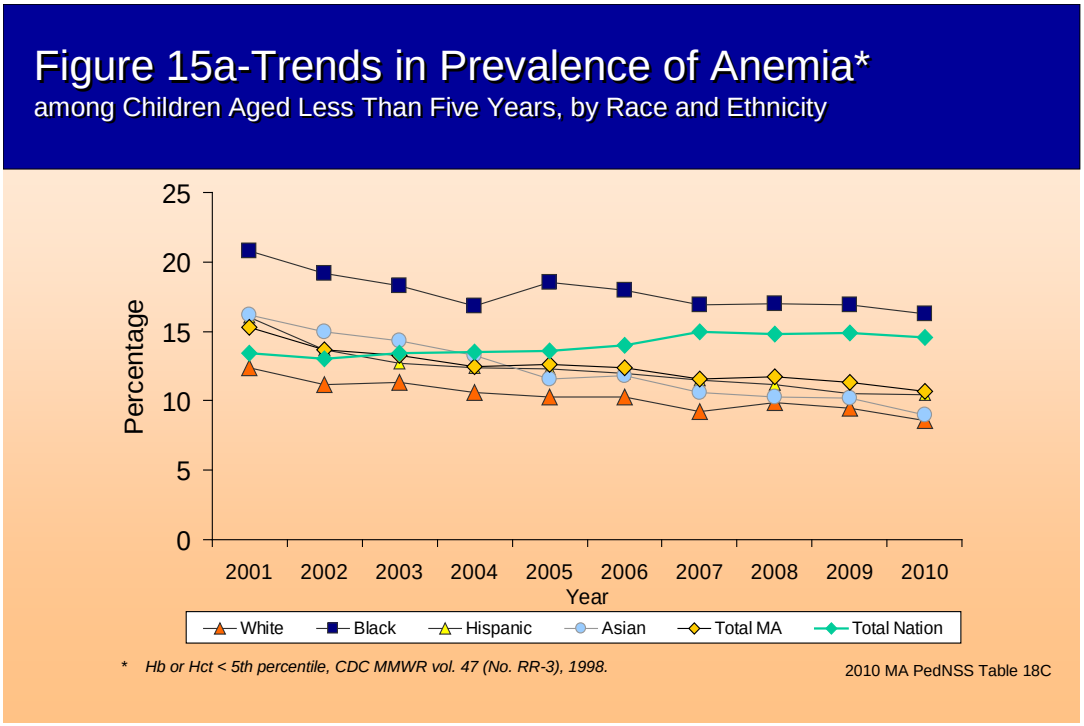
Anemia: Age Distribution



- Anemia prevalence varied by age in 2010 MA PedNSS) and was highest among children aged 18 to 24 months (13.5%) and lowest in children aged three years to less than five years (8.4%).

- In the 2010 national PedNSS, the prevalence of anemia was highest in children aged 12 to less than 18 months (18.2%), followed by children aged 6 to 12 months (18.1%) but lowest in children aged three years to less than five years (10.6%).

Anemia Trends: Race and Ethnicity



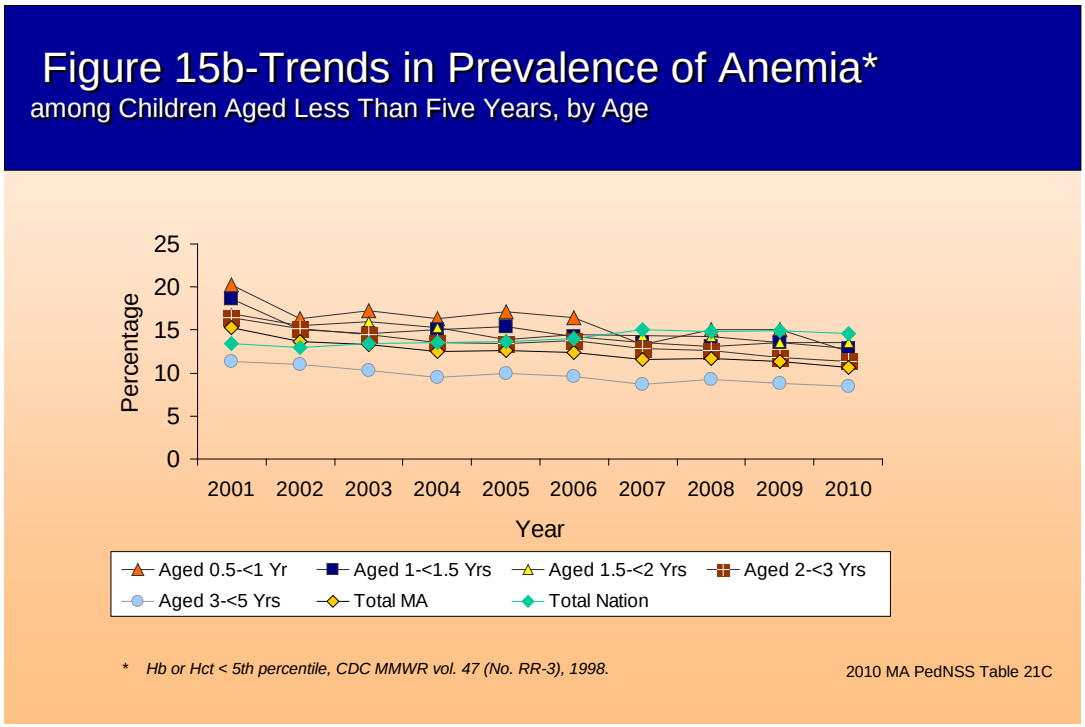
- In the MA PedNSS, among children aged less than five years by all races and ethnicities, the overall prevalence of anemia decreased in the past ten years from 15.3% in 2001 to 10.7% in 2010. In the national PedNSS, the overall prevalence, in the same age group by race and ethnicities increased from 13.4% in 2001 to 14.6% in 2010.

- The greatest decrease in anemia prevalence was observed among Asian children in MA PedNSS, where the prevalence fell from 16.2% in 2001 to 9.0% in 2010.

- White non-Hispanic children consistently had the lowest prevalence of anemia over the past 10 years, where the prevalence decreased from 12.4% in 2001 to 8.6% in 2010.

- Black non-Hispanic children consistently had the highest prevalence of anemia, but improved from 20.8% in 2001 to 16.3% in 2010.

Anemia Trends: Age Distribution

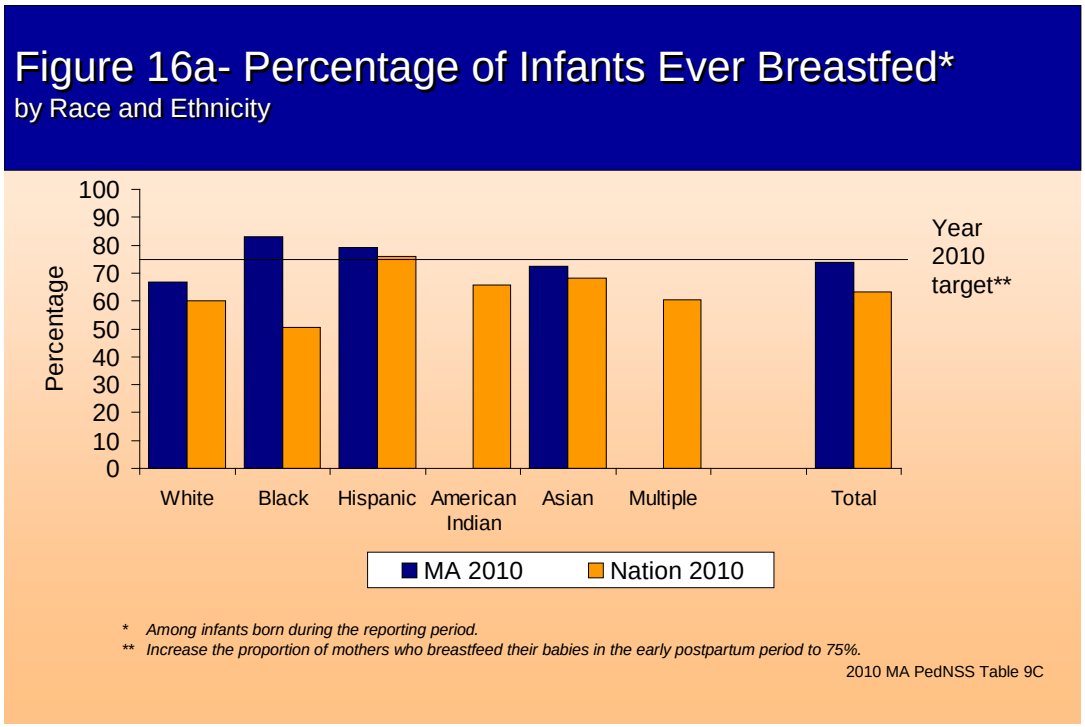


- In the 2010 MA PedNSS, the overall prevalence of anemia, among children aged less than five years, decreased in the past ten years from 15.3% in 2001 to 10.7% in 2010. In the national PedNSS, the overall prevalence, in the same age groups increased from 13.4% in 2001 to 14.6% in 2010.

- The largest decrease in anemia prevalence in 2010 MA PedNSS occurred among children aged two years to less than three years (from 16.4% in 2001 to 11.3% in 2010). And in children aged three years to less than five years (from 11.4% in 2001 to 8.4% in 2010) and in children

- Although rates decreased over time, children aged six months to less than one year consistently experienced the highest prevalence in anemia in MA PedNSS during the ten year period (from 20.2% in 2001 to 12.5% in 2010).

Ever Breastfed: Race and Ethnicity



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 infant and the mother and can also protect infants against some childhood diseases (American Academy of Pediatrics 2012).

The HP 2010 targets are that the proportion of children ever breastfed be increased to 75%, the 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, including both those who were breastfed exclusively, and those who were supplemented with formula, based on maternal self-report at the WIC certification visit. "Initiation" is defined as having breastfed at least one time.

Breastfeeding initiation varied in both MA and national PedNSS populations.

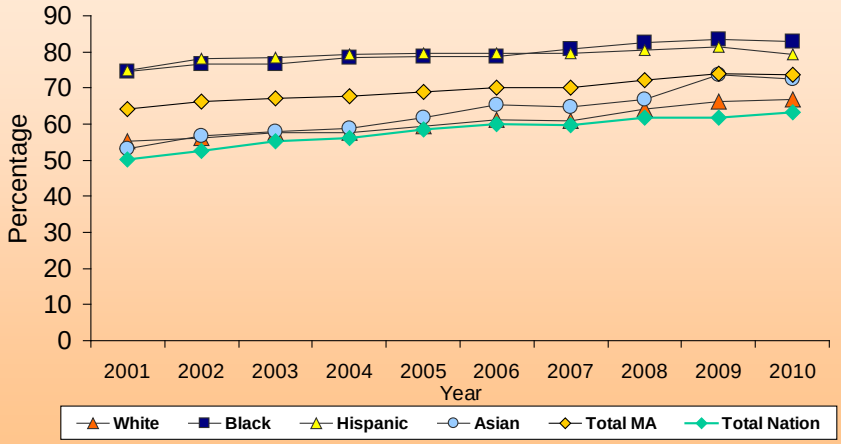
- In 2010, 73.8% of infants of all races represented in the MA PedNSS were ever breastfed. In comparison, only 63.2% of infants in the 2010 national PedNSS were ever breastfed.

- Black non-Hispanic infants in the MA PedNSS had the highest prevalence of ever breastfeeding (83.0%), followed by Hispanic infants (79.3%) and Asian infants (72.4%), while White non-Hispanic infants had the lowest prevalence of ever breastfeeding (66.7%).

- Both Black non-Hispanic infants (83.0%) and Hispanic infants (78.3%) in the 2010 MA PedNSS surpassed the HP 2010 the 75% target of ever breastfeeding.

Ever Breastfed Trends: Race and Ethnicity

Figure 16b-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%.

2010 MA PedNSS Table 19C

- In the last ten years, the overall percentage of infants among observed races/ethnicities in the MA PedNSS that were ever breastfed has increased from 64.1% in 2001 to 73.8% in 2010. The overall proportion of ever breastfed infants was higher in MA PedNSS than in their national counterparts where the proportion of ever breastfed infants increased from 50.1% in 2001 to 63.2% in 2010.

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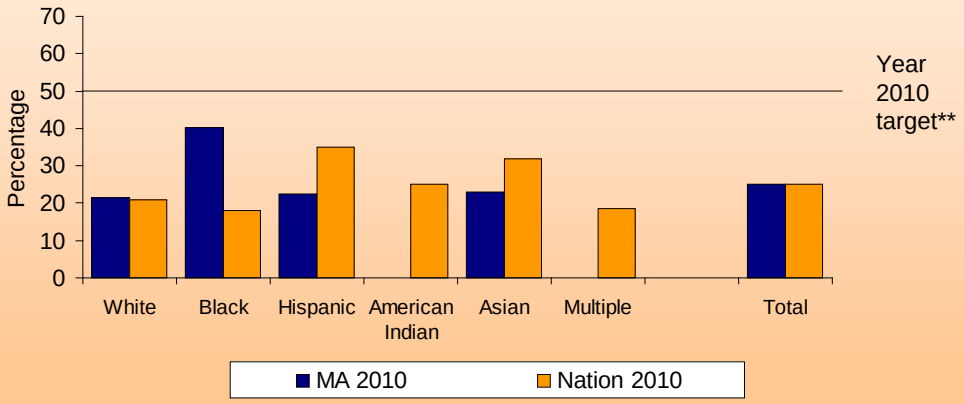
- The prevalence for infants ever breastfed in the past ten years was consistently high among Hispanic infants whose breastfeeding prevalence increased from 74.9% in 2001 to 79.3% in 2010.

- The prevalence of ever breastfeeding in MA PedNSS infants has also increased among Black non-Hispanic infants, whose prevalence jumped from 74.7% in 2001 to 83.0 % in 2010; this group showed the largest improvement for breastfeeding initiation.

Breastfed At Least Six Months: Race and Ethnicity

Figure 17a-Percentage of 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%.*

2010 MA PedNSS Table 9C

- The overall proportion of infants in 2010 MA PedNSS that were breastfeed for at least six months was 25.2%, while the proportion of such infants in the 2010 national PedNSS was 25.1%.

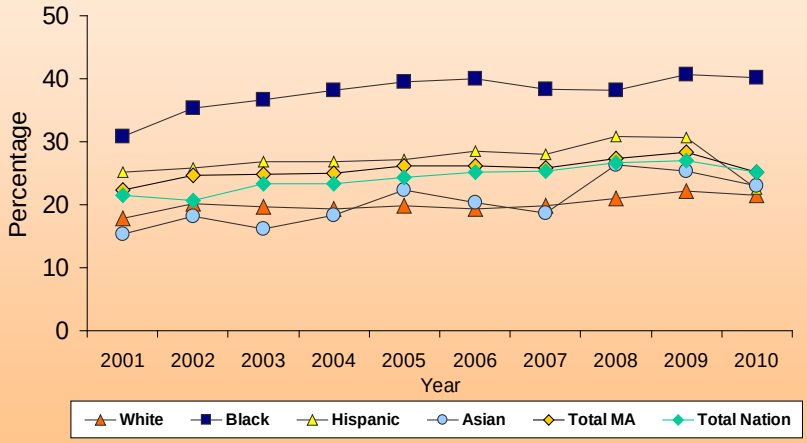
- In the 2010 MA PedNSS, the greatest prevalence of breastfeeding for at least six months occurred among Black non-Hispanic infants (40.1%); followed by Asian (23.0%), while Hispanic (22.5%) and White non-Hispanic (21.5%) infants had the lowest proportion of infants that breastfed for at least six months.

- In the 2010 national PedNSS, the greatest prevalence of breastfeeding for at least six months occurred among Hispanic infants (35.1%), followed by Asian (31.8%), American Indian (25.1%), White non-Hispanic (20.8%) and multiple race (18.6%) infants while Black non-Hispanic infants (18.0%) had the lowest proportion that breastfed for at least six months.

- Neither the Massachusetts PedNSS population, nor their 2010 national counterparts, met the HP 2010 goal of breastfeeding for at least six months set at 50%.

Breastfed for At Least Six Months Trends: Race and Ethnicity

Figure 17b-Trends in the Percentage of 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%.

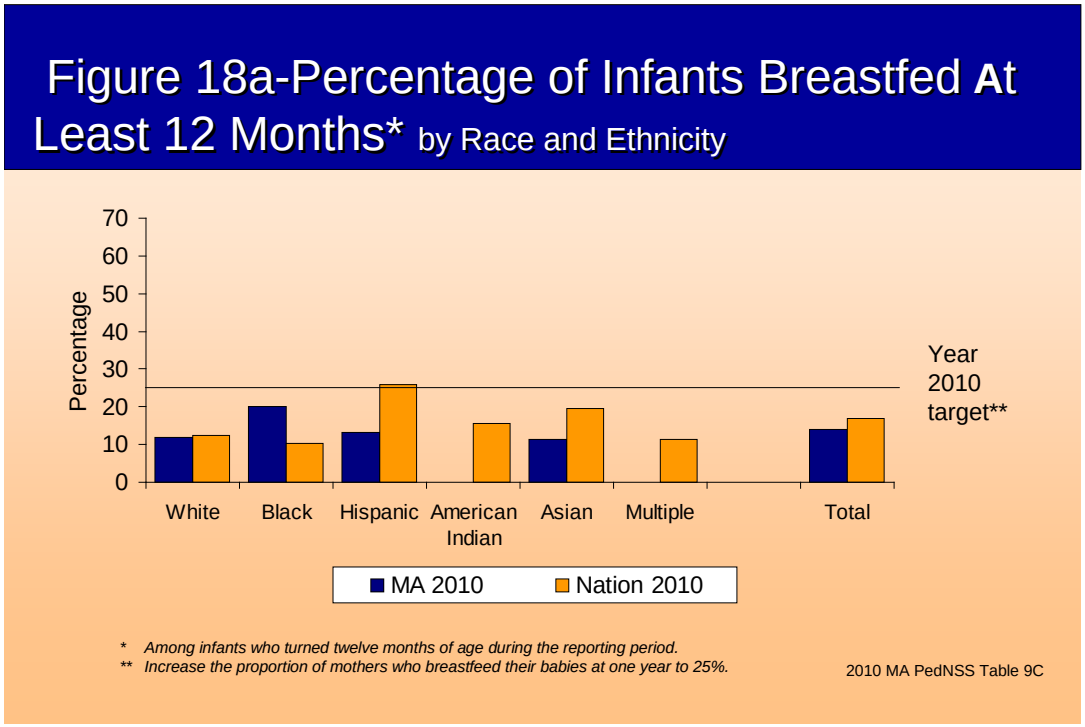
2010 MA PedNSS Table 19C

- The percentage of all infants that were breastfed for at least six months has increased over the past ten years among infants participating in the MA PedNSS from 22.3% in 2001 to 25.2% in 2010. Similarly, the overall percentage of all infants that were breastfed for at least six months has increased over the past ten years among infants participating in the national PedNSS from 21.5% in 2001 to 25.1% in 2010.

- The largest improvement in breastfeeding for at least six months was observed in Black non-Hispanic infants with a prevalence of 30.9% in 2001 and 40.1% in 2010.

- The second largest improvement in breastfeeding for at least six months was observed among Asian infants with a prevalence of 15.3% in 2001 and a prevalence of 23.0% in 2010.

Breastfed At Least 12 Months: Race and Ethnicity



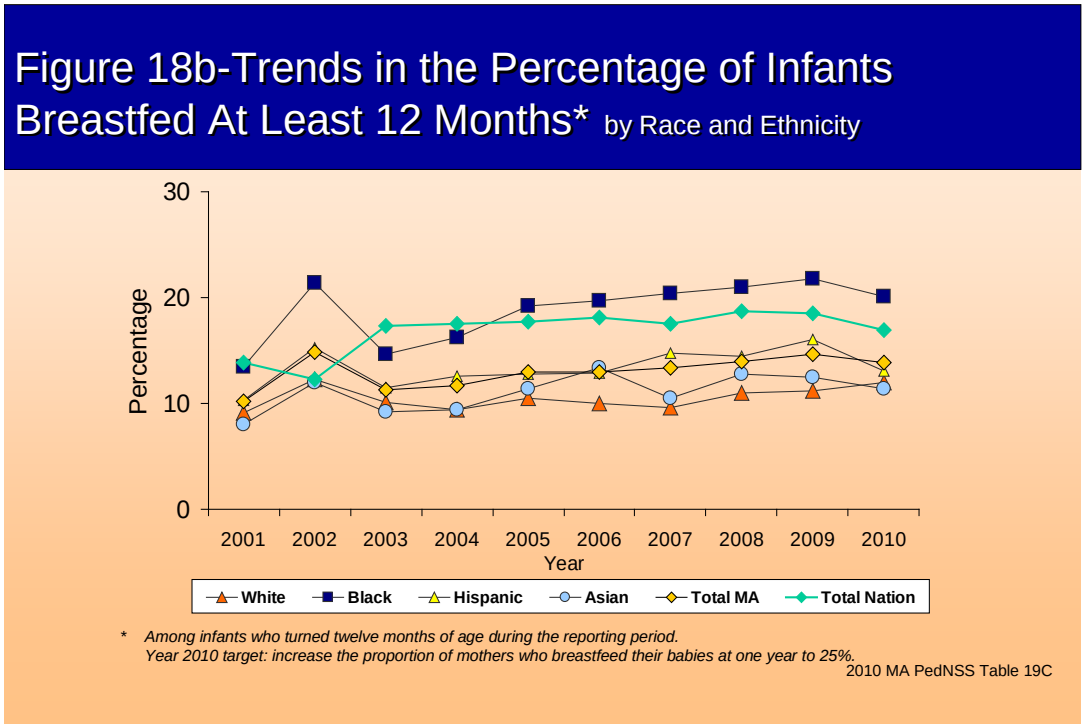
- The overall proportion of 2010 MA PedNSS infants that have been breastfeed for at least 12 months was 13.9% while the proportion in the 2010 national PedNSS used for comparison was 16.9%.

- In the 2010 MA PedNSS, the highest prevalence of breastfeeding for at least 12 months was among Black non-Hispanic infants (20.1%), followed by Hispanic (13.1%) and White non-Hispanic infants (12.0%) while Asian infants (11.4%) had the lowest prevalence of breastfeeding for at least 12 months.

- In the 2010 national PedNSS, the highest prevalence of breastfeeding for at least 12 months occurred among Hispanic infants (25.8%), followed by Asian (19.5%), American Indian (15.7%), White non-Hispanic (12.5%), multiple race (11.4%) and Black non-Hispanic infants (10.4%).

- The HP 2010 target of 25% breastfed at 12 months was not met by the MA or the national PedNSS.

Breastfed at Least 12 Months Trends: Race and Ethnicity



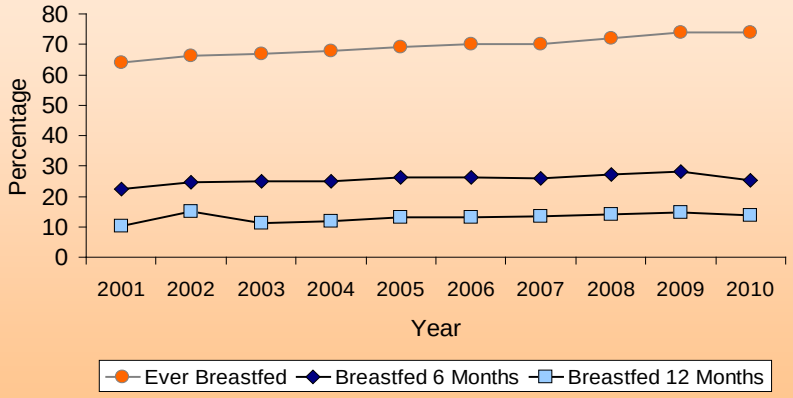
- Since 2001, the overall proportion of MA PedNSS infants that have been breastfeed for at least 12 months has increased, from 10.2% in 2001 to 13.9% in 2010, while the overall proportion of national PedNSS infants that have been breastfed for the same duration has increased, from 13.9% in 2001 to 16.9% in 2010.

- The greatest increase in the prevalence of breastfeeding for at least 12 months, during the 10 year period, among MA PedNSS infants occurred among Black non-Hispanic infants, from 13.5% in 2001 to 20.1% in 2010, an increase of 6.6 percentage points above the 2001 baseline.

- The lowest increase in prevalence of breastfeeding for at least 12 months, during the 10 year, was observed among Hispanic infants whose prevalence went from 10.3% in 2001 to 13.1% in 2010, an increase of 2.8 percentage points above the 2001 baseline.

Breastfeeding Initiation and Duration Trends

Figure 19-Trends in the Percentage of MA PedNSS Infants Ever Breastfed, and Breastfed At Least Six and 12 Months



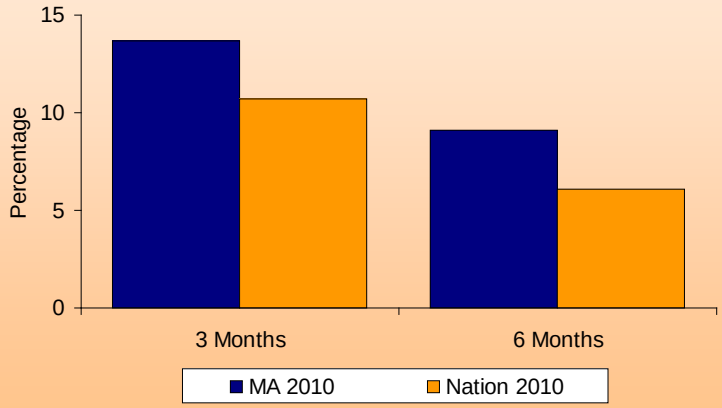
Year 2010 targets: increase the proportion of mothers who breastfeed their babies a) in the early postpartum period to 75%, b) at six months to 50%, and c) at one year to 25%.

2010 MA PedNSS Table 13C

- According to the 2010 MA PedNSS, both the initiation and duration of breastfeeding have increased in the past ten years.
- The prevalence of children who were ever breastfed increased in the last ten years from 64.1% in 2001 to 73.8% in 2010.
- The prevalence of children who were breastfed for at least six months increased in the last ten years from 22.3% in 2001 to 25.2% in 2010.
- The prevalence of children who were breastfed for at least 12 months increased in the past ten years from 10.2% in 2001 to 13.9% in 2010.

Exclusive Breastfeeding

Figure 20-Percentage of Infants Exclusively Breastfed At Least Three and Six Months*



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

2010 MA PedNSS Table 3C

- The overall proportion of 2010 MA PedNSS infants that have been breastfed exclusively for at least three months was 13.7%, while the proportion in the 2010 national PedNSS was 10.7%.

- The overall proportion of 2010 MA PedNSS infants that have been breastfed exclusively for at least six months was 9.1%, while the proportion in the 2010 national PedNSS was 6.1%.

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APPENDIX 1: 2010 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

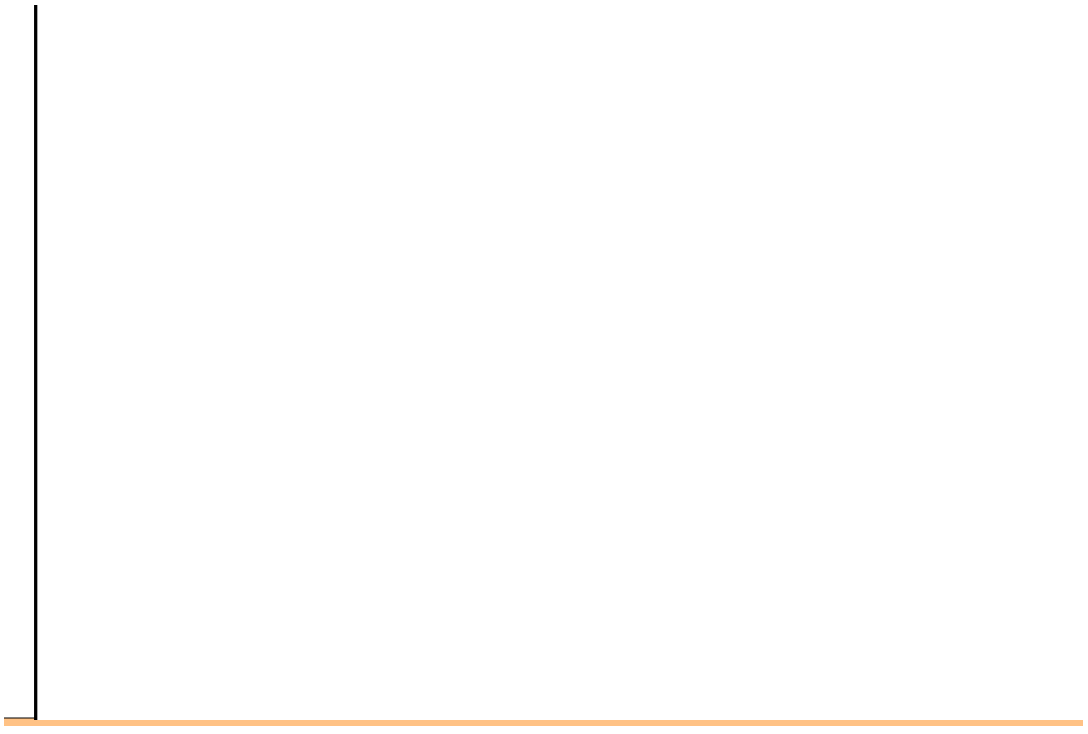
APPENDIX 2: STATE MAPS OF COUNTY DATA

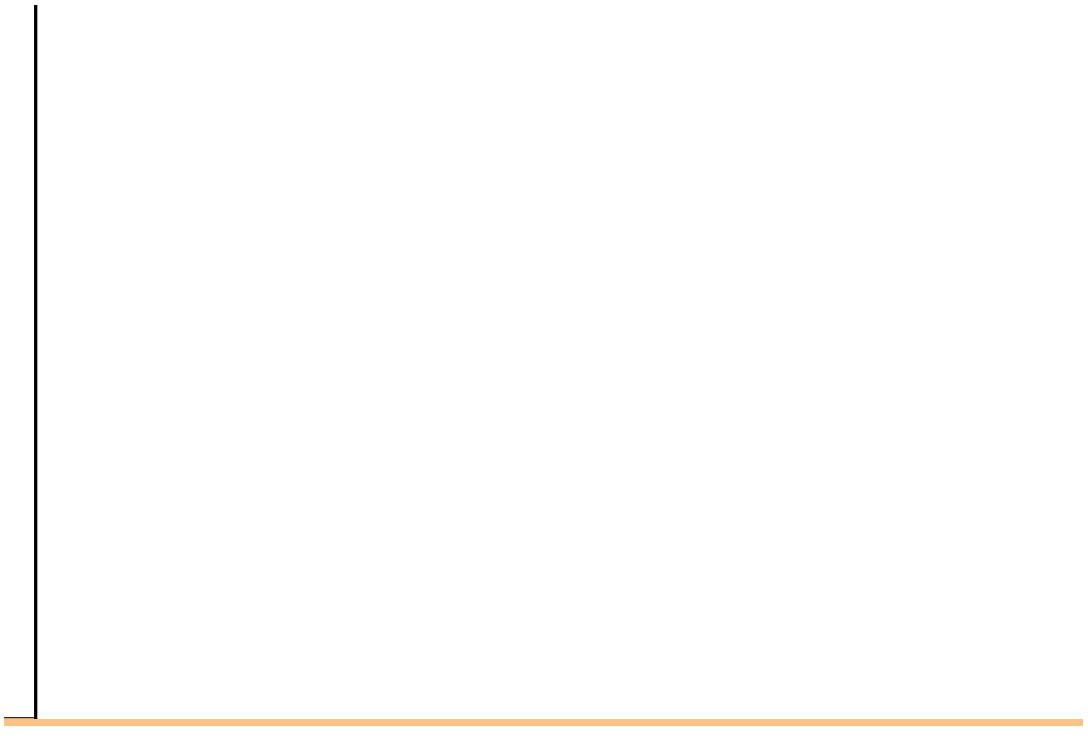
MASSACHUSETTS

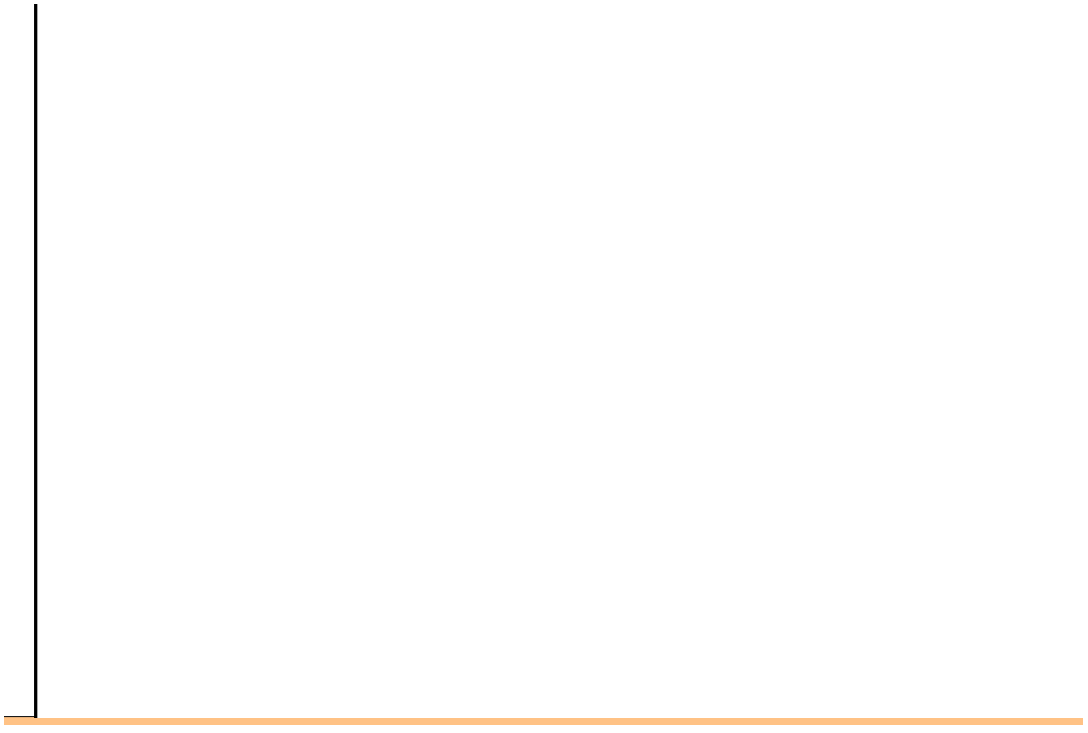
Children Aged <5 Years

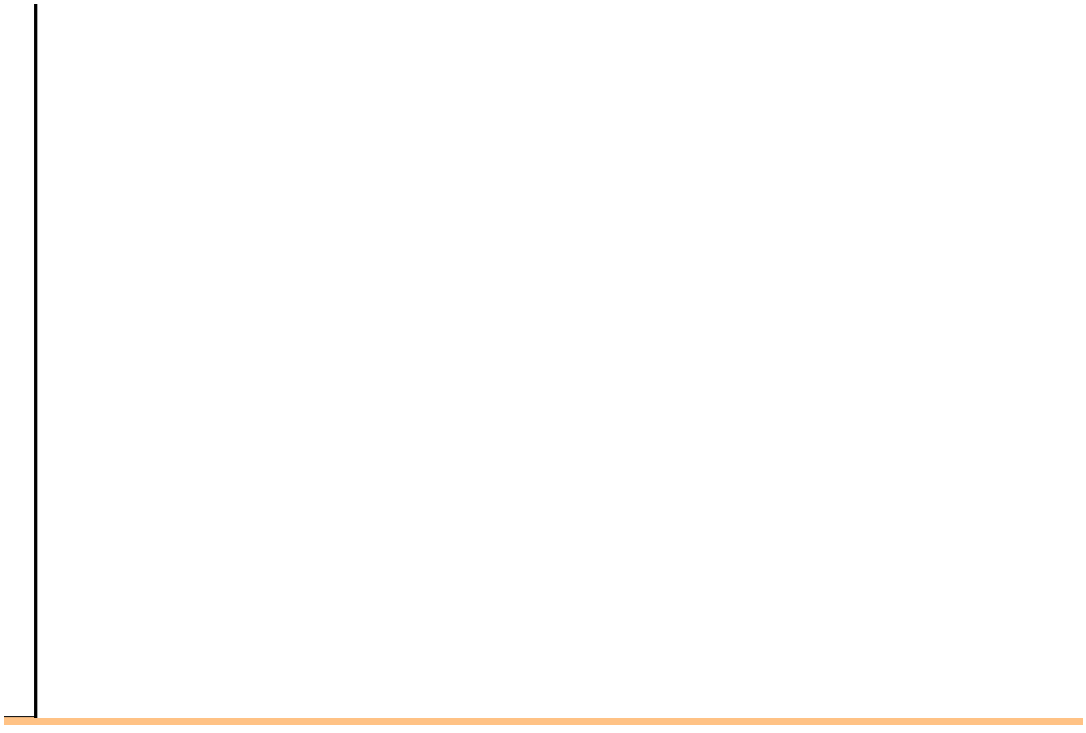
2010

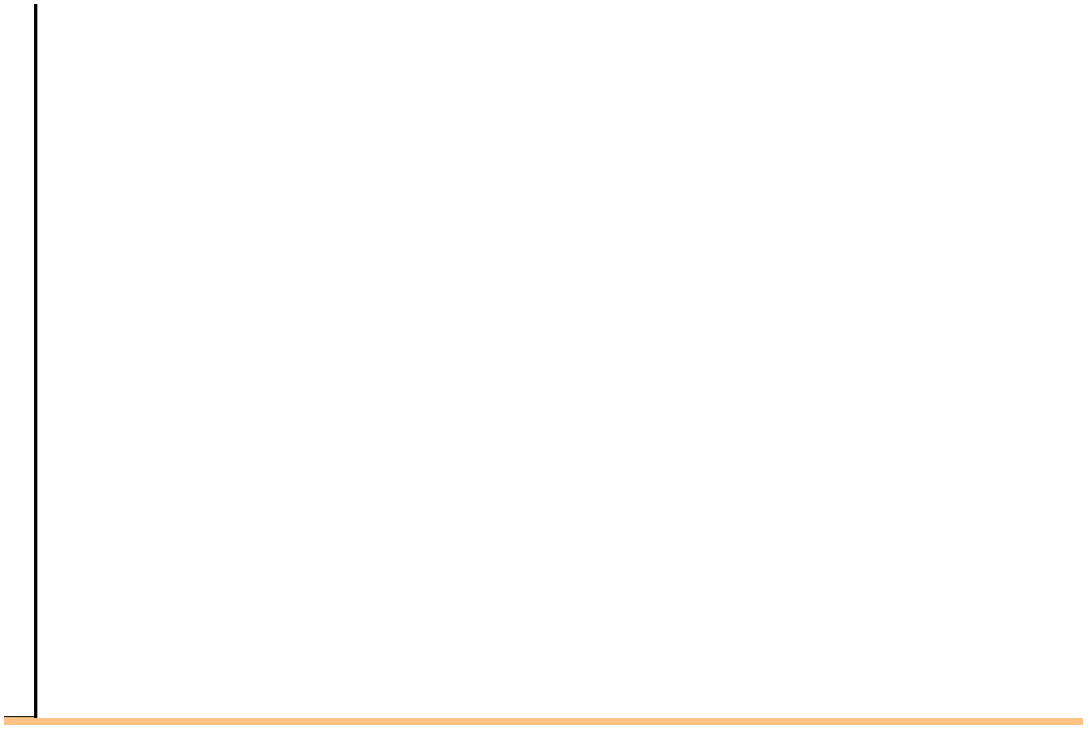
Pediatric Nutrition
Surveillance System











Percentage of children aged 2 to <5 years who view TV ≤2 hours/day, by county

Insufficient Data

Year 2010 target: increase the proportion of children and adolescents who view TV two or fewer hours per day to 75%.

2010 MA PedNSS Table 7B

Percentage of children aged <5 years who live in households with smokers*, by county

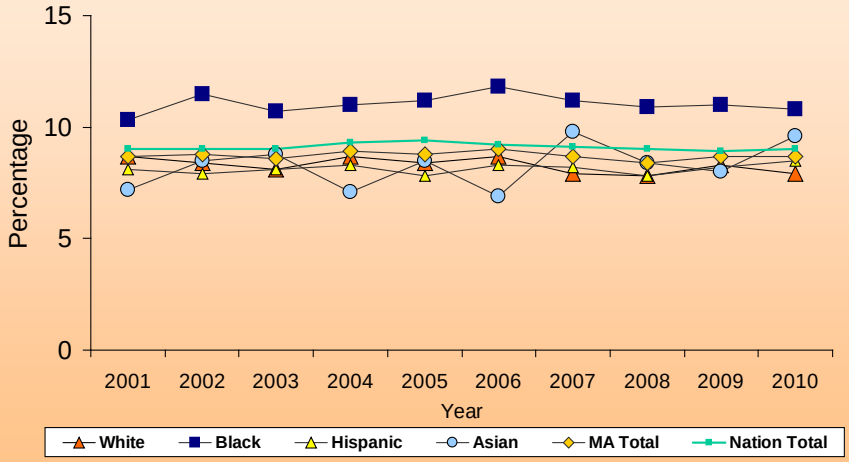
Insufficient Data

** Defined as smokers who smoke inside the home.*
Year 2010 target: reduce the proportion of children who are regularly exposed to tobacco smoke at home to 10%.

2010 MA PedNSS Table 7B

APPENDIX 3: TRENDS CHARTS FOR 2010 PEDNSS

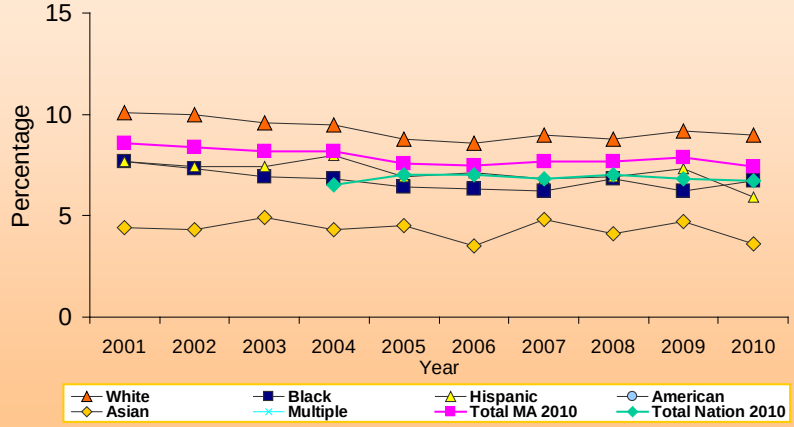
Trends in Prevalence of Low Birth Weight*
by Race and Ethnicity Among MA PedNSS Children



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

2010 MA PedNSS Table 18C

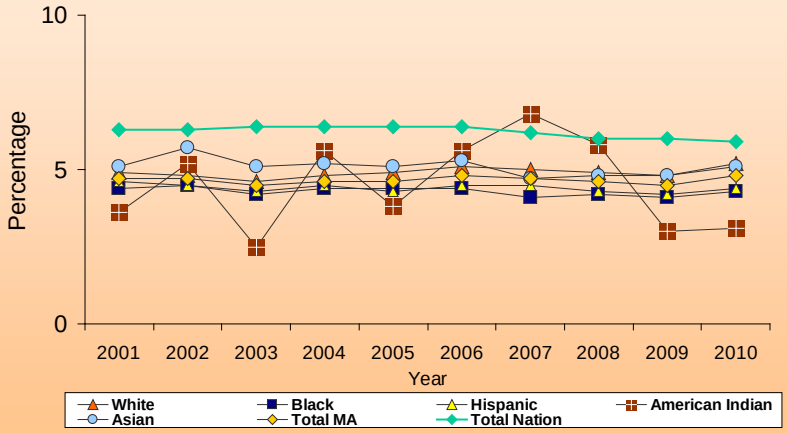
Trends in Prevalence of High Birth Weight*
by Race and Ethnicity



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

2010 MA PedNSS Table 18C

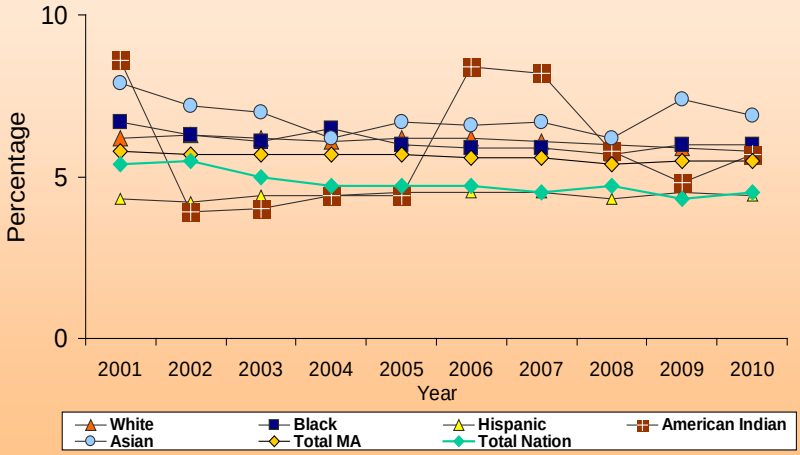
Trends in Prevalence of Short Stature*
among Children Aged Less than Five Years, by Race and Ethnicity



* *< 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%.

2010 MA PedNSS Table 18C

Trends in Prevalence of Underweight*
among Children Aged Less Than Five Years, by Race and Ethnicity

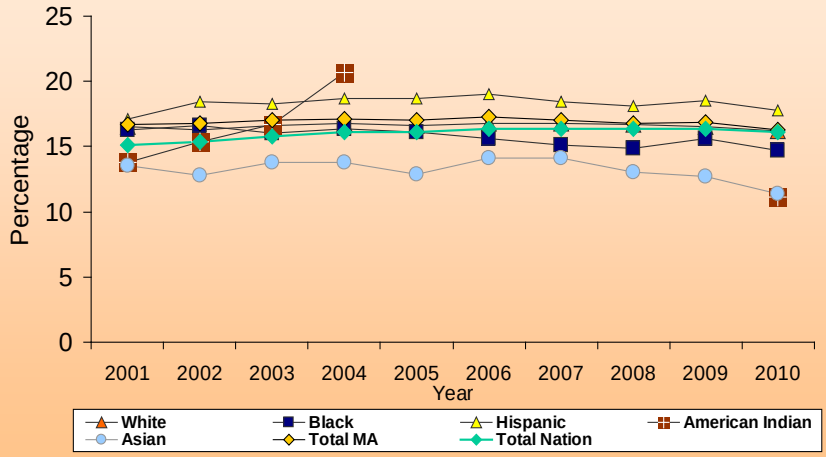


* *< 5th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.*
5% of children are expected to fall below the 5th percentile.

2010 MA PedNSS Table 18C

Trends in Prevalence of Overweight*

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

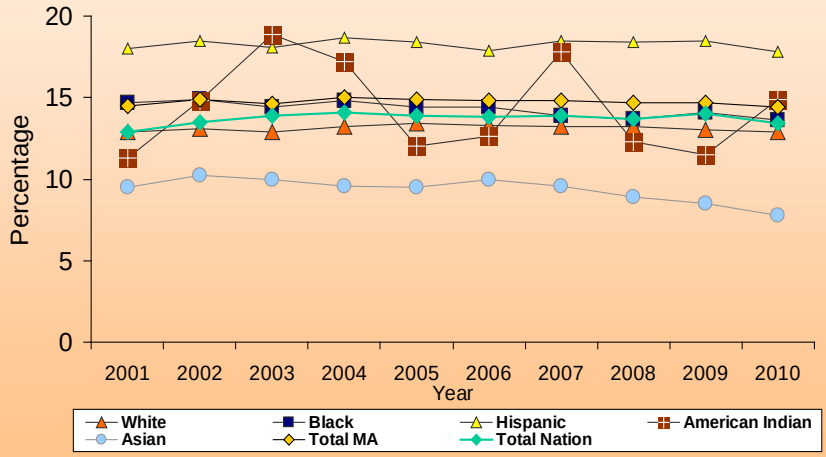


* ≥ 85th-<95th percentile weight-for-length or BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2010 MA PedNSS Table 18C

Trends in Prevalence of Obesity*

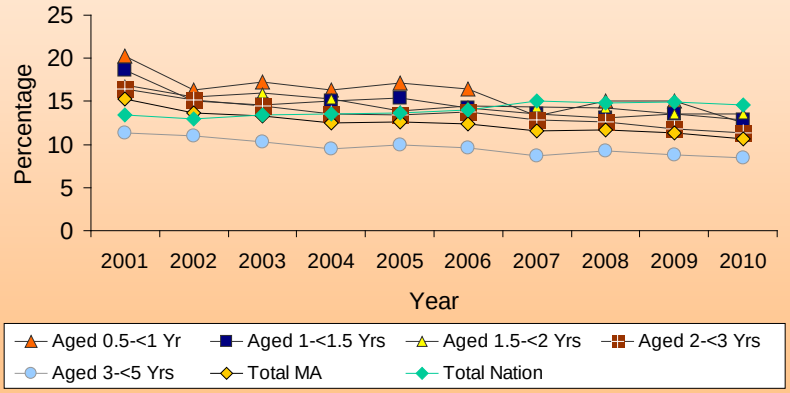
among MA PedNSS Children Aged Less Than Five Years, by Race and Ethnicity



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

2010 MA PedNSS Table 18C

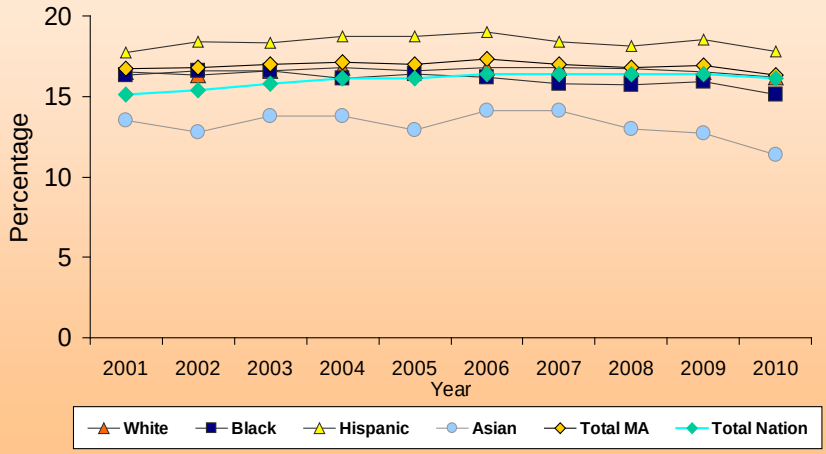
Trends in Prevalence of Anemia*
among Children Aged Less Than Five Years, by Age



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

2010 MA PedNSS Table 21C

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

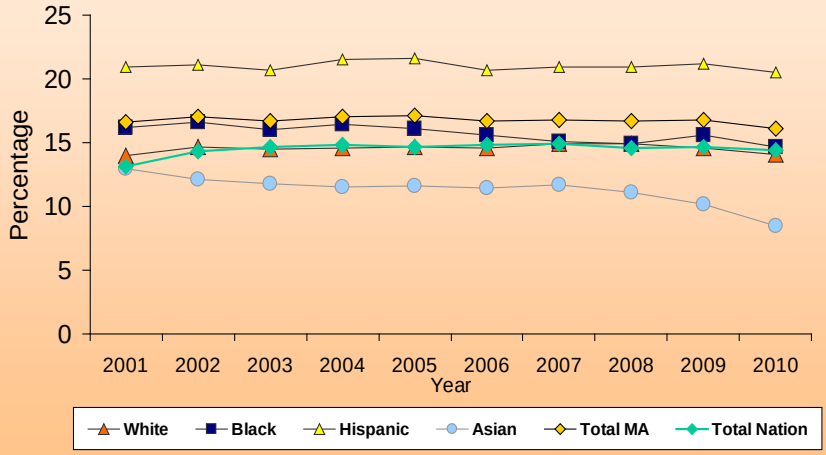


* *≥ 85th-<95th percentile BMI-for-age, CDC Growth Charts, 2000.*
10% of children are expected to fall between these percentiles.

2010 MA PedNSS Table 18C

Trends in Prevalence of Obesity*

among MA PedNSS Children Aged Two to Less Than Five Years, by Race and Ethnicity

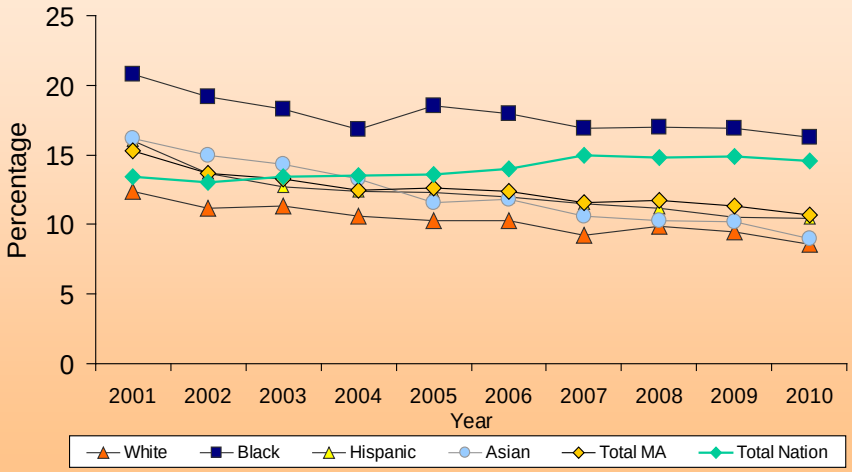


* ≥ 95th percentile BMI-for-age, CDC Growth Charts, 2000.
5% of children are expected to fall above the 95th percentile.

2010 MA PedNSS Table 18C

Trends in Prevalence of Anemia*

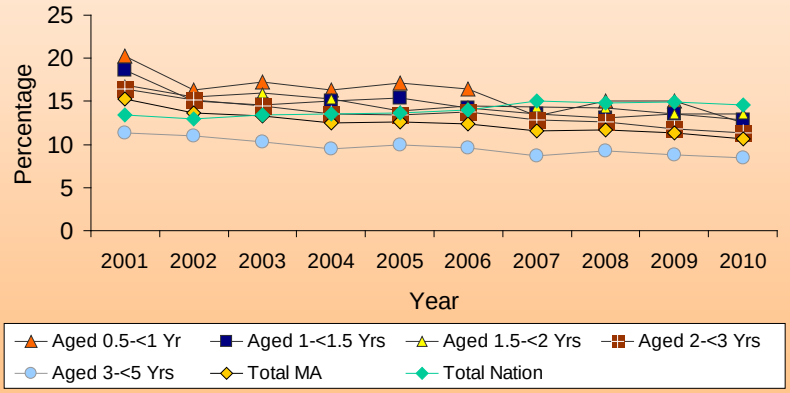
among Children Aged Less Than Five Years, by Race and Ethnicity



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

2010 MA PedNSS Table 18C

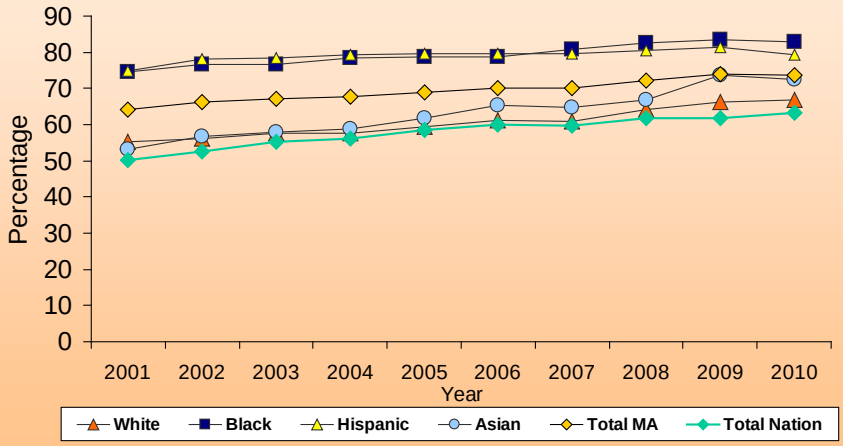
Trends in Prevalence of Anemia*
among Children Aged Less Than Five Years, by Age



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

2010 MA PedNSS Table 21C

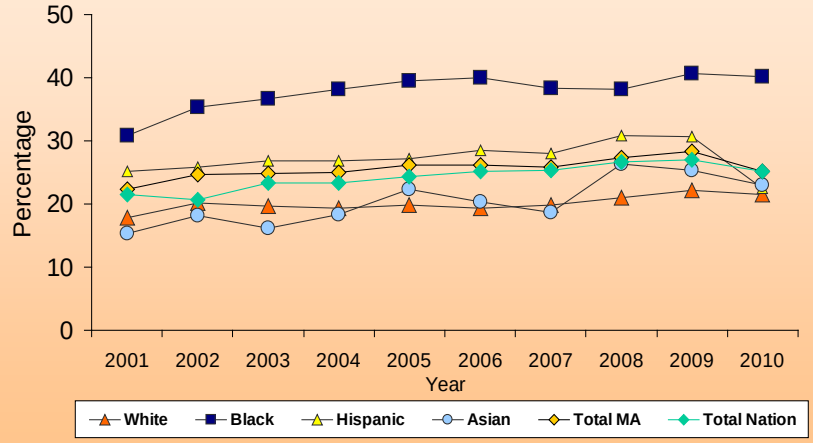
Trends in the Percentage of MA PedNSS Infants Ever Breastfed*
by Race and Ethnicity



* *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%.

2010 MA PedNSS Table 19C

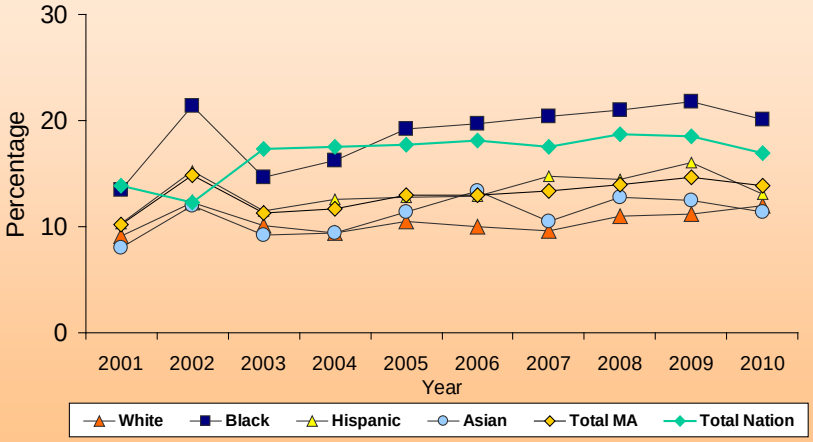
Trends in the Percentage of Infants Breastfed At Least Six Months* by Race and Ethnicity



* *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%.

2010 MA PedNSS Table 19C

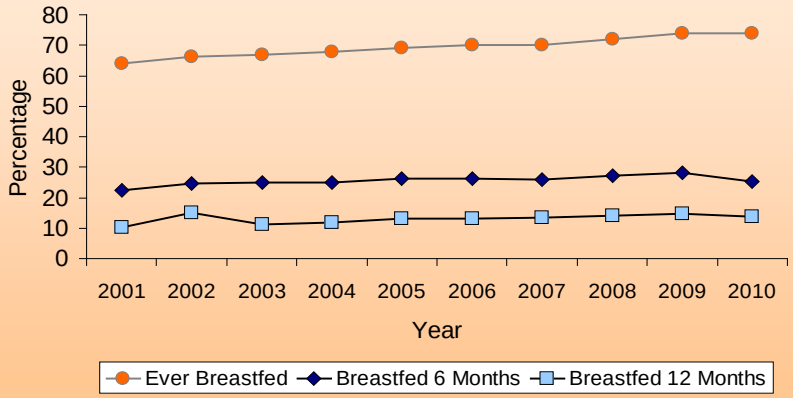
Trends in the Percentage of Infants Breastfed At Least 12 Months* by Race and Ethnicity



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

2010 MA PedNSS Table 19C

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%.

2010 MA PedNSS Table 13C

MASSACHUSETTS

Children Aged <5 Years

2010

Pediatric Nutrition
Surveillance System


CDC