

PRECONCEPTION HEALTH IN MICHIGAN

DOMAIN: NUTRITION & PHYSICAL ACTIVITY

SUB-DOMAIN: FRUIT & VEGETABLE CONSUMPTION

INDICATOR: PERCENTAGE OF WOMEN WHO CONSUME FRUITS & VEGETABLES AT LEAST 5 TIMES A DAY

SUMMARY

DATA SOURCE: BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS)

RELIABILITY: MODERATE¹

VALIDITY: MODERATE¹

HP 2020 OBJECTIVE: NWS-14-1 INCREASE THE CONTRIBUTION OF FRUITS TO THE DIETS OF THE POPULATION AGED 2 YEARS AND OLDER. NWS-15-1 INCREASE THE CONTRIBUTION OF VEGETABLES TO THE DIETS OF THE POPULATION AGED 2 YEARS AND OLDER

Maternal nutrition is an important determinant of placental and fetal growth.² The Select Panel on Preconception Care recommends that all women of reproductive age “achieve and maintain good nutritional status

Figure 1. Trend of self-reported **adequate fruit and vegetable consumption**^a among women 18-44: US average vs. Michigan, BRFSS 2005-2008

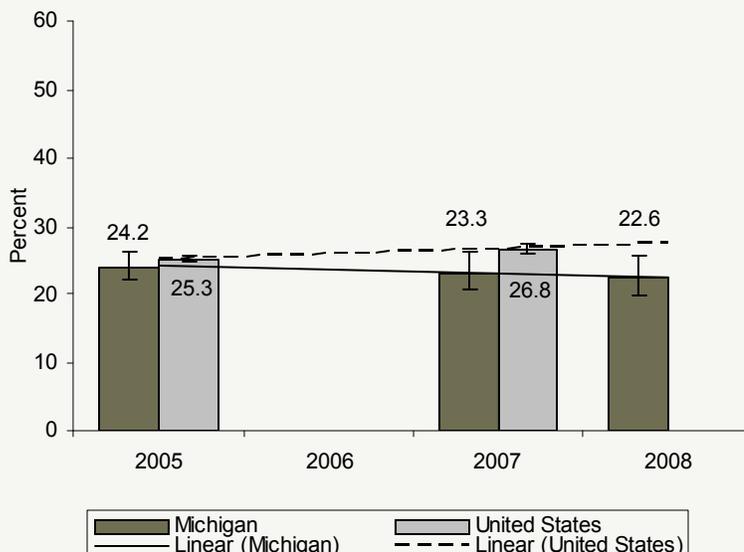


Table 1. Self-reported **adequate fruit and vegetable consumption**^a by age group and race, Michigan BRFSS 2008

Demographic Characteristics	Adequate Fruit and Vegetable Consumption	
	%	95% Confidence Interval
Total	22.6	(19.7-26.0)
Age		
18 - 24	17.4	(11.4-25.7)
25 - 34	23.4	(18.3-29.4)
35 - 44	25.5	(21.5-29.9)
Race		
White	21.4	(18.1-25.1)
Black	27.8	(19.6-38.0)
Other	26.4	(15.0-42.3)

prior to conception to help minimize health risks to both mothers and infants.”³ Furthermore, women should be counseled to consume a well-

balanced diet which includes fruits & vegetables, iron and calcium-rich foods, and protein-containing foods.³

In 2008, 22.6% of Michigan women of reproductive age reported adequate consumption of fruits and vegetables, which is a 7% decrease from 2005 and lower than the national rate (Figure 1).

- Disparities based on age, race, income, insurance status and presence of chronic disease were evident, but none were statistically significant (Table 1, Figures 2-3).

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DOMAIN: NUTRITION & PHYSICAL ACTIVITY

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Figure 2. Prevalence of self-reported **adequate fruit and vegetable consumption**^a among MI women by educational attainment or household income, Michigan BRFSS 2008

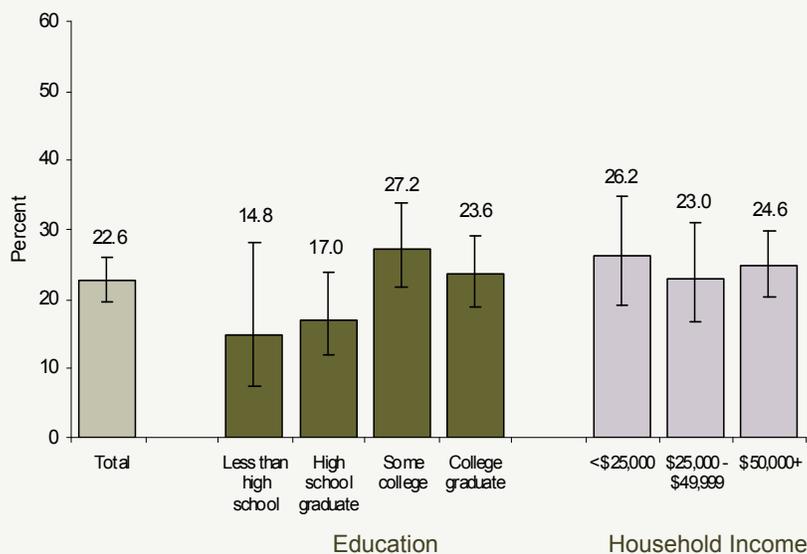
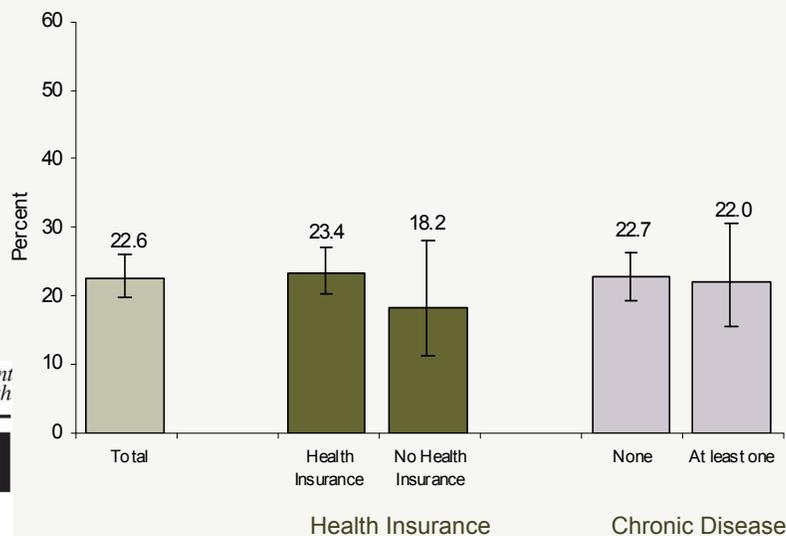


Figure 3. Prevalence of self-reported **adequate fruit and vegetable consumption**^a among MI women by health insurance coverage or at least one chronic disease^b, Michigan BRFSS 2008



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TABLE & FIGURE FOOTNOTES

^a Among adult women aged 18-44 years, the proportion whose total reported consumption of fruits (including juice) and vegetables was at least five times per day. Question not included in 2006 survey.

^b Women with at least one of the following: Ever told that they had diabetes, heart attack/myocardial infarction, angina/coronary heart disease, stroke or who currently had asthma.

REFERENCES

1. Nelson DE, Holtzman D, Bolen J, Stanwyck CAT & Mack KA (2001) Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). *Sozialund Praventivmedizin*, 46 (Suppl 1), S3-S42.
2. Wu G, Bazer FW, Cudd TA, Meininger CJ, Spencer TE. Maternal nutrition and fetal development. *J Nutr* 2004;134:2169-72.
3. Gardiner P, Nelson L, Shellhaas C, Dunlop A, Long R, Andrist S, Jack B. The clinical content of preconception care: Nutrition and dietary supplements. *Am J Obstet Gynecol*. 2008; 199(6 suppl B): S345-356.

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PRECONCEPTION HEALTH IN MICHIGAN

DOMAIN: NUTRITION & PHYSICAL ACTIVITY

SUB-DOMAIN: OBESITY & OVERWEIGHT

INDICATOR: PERCENTAGE OF WOMEN WHO ARE OVERWEIGHT OR OBESE BASED ON BODY MASS INDEX (BMI)

SUMMARY

DATA SOURCE: BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS)
 RELIABILITY: HIGH¹
 VALIDITY: HIGH¹
 HP 2020 OBJECTIVE: NWS-8 INCREASE THE PROPORTION OF ADULTS WHO ARE AT A HEALTHY WEIGHT (33.9%). NWS-9 REDUCE THE PROPORTION OF ADULTS WHO ARE OBESE (30.9%)

The prevalence of obesity in the United States remains high (> 30%), and was fairly constant for women from 1999 to 2008.² The association of obesity with health risks has been well-established; furthermore overweight is a predictor for

Table 1. Self-reported **overweight^a** and **obesity^b** by age group and race, Michigan BRFSS 2008

Demographic Characteristics	Overweight		Obese	
	%	95% Confidence Interval	%	95% Confidence Interval
Total	25.9	(16.1-21.1)	26.8	(24.1-30.0)
Age				
18 - 24	19.3	(13.7-26.5)	26.8	(14.7-27.5)
25 - 34	30.5	(25.6-35.8)	25.7	(20.7-31.3)
35 - 44	26.5	(23.1-30.2)	32.1	(28.4-36.1)
Race				
White	26.8	(23.8-30.2)	23.9	(21.0-27.0)
Black	26.8	(19.9-35.1)	41.7	(32.7-51.4)
Other	11.3	(5.6-21.4)	28.6	(18.1-42.0)

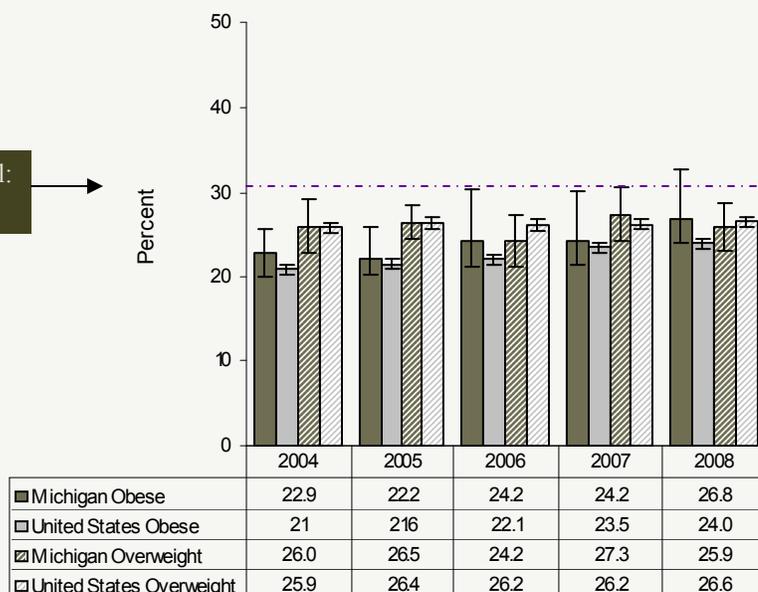
subsequent obesity. The Select Panel on Preconception Care recommends that all women have their BMI calculated annually.³ In 2008, 25.9% of Michigan women of reproductive age reported being overweight and 26.8% obese. The prevalence of obesity increased 17%

from 2004 while the prevalence of overweight remained constant during the same period (Figure 1). Disparities based on age, race, income, education and presence of chronic disease were evident (Table 1, Figures 2-3).

Obesity exceeded the HP 2020 goal among women who:

- Were 35-44 years of age;
- Were Black;
- Had some college education;
- Reported a household income less than \$25,000; and
- Had at least one chronic disease.

Figure 1. Trend of self-reported **overweight^a** and **obesity^b** among women 18-44: US average vs. Michigan, BRFSS 2004-2008



HP 2020 goal:
30.9%

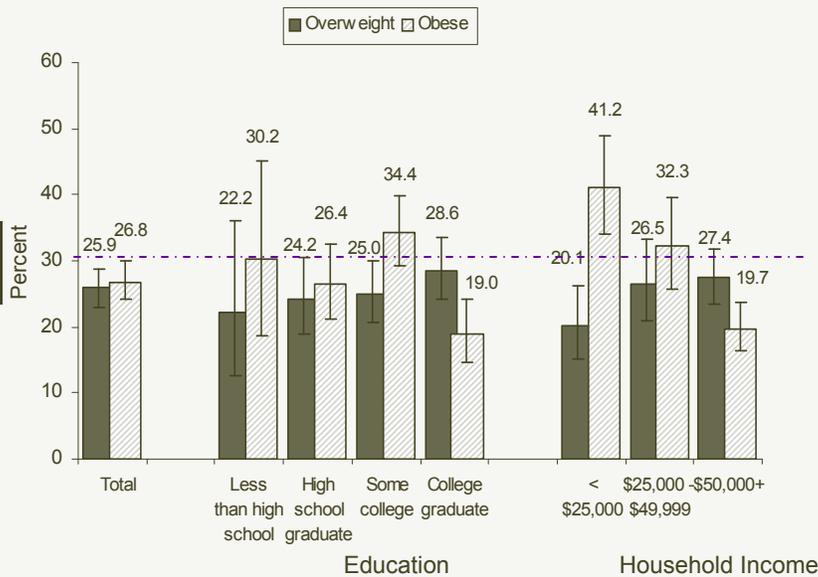
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DOMAIN: NUTRITION & PHYSICAL ACTIVITY

SUB-DOMAIN: OBESITY & OVERWEIGHT

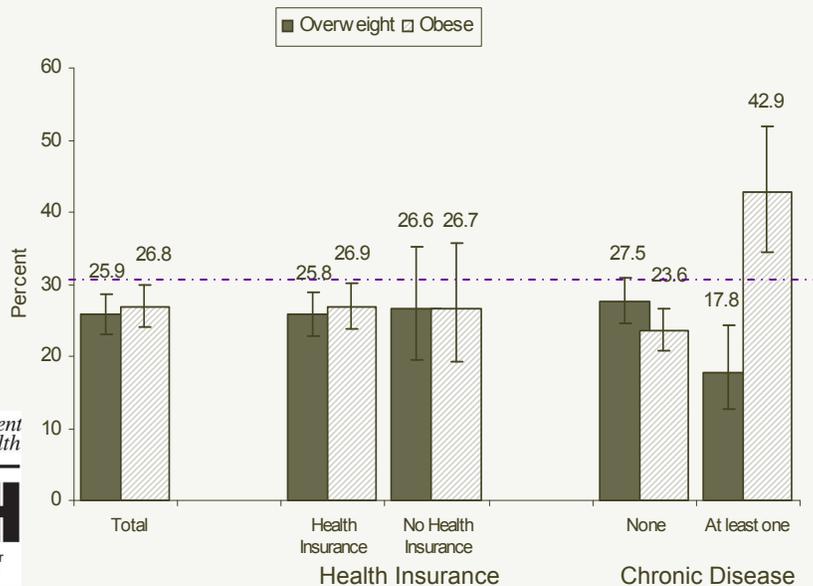
INDICATOR: PERCENTAGE OF WOMEN WHO ARE OVERWEIGHT OR OBESE BASED ON BODY MASS INDEX (BMI)

Figure 2. Prevalence of self-reported **overweight^a** and **obesity^b** among MI women by educational attainment or household income, Michigan BRFSS 2008



HP 2020 goal:
30.9%

Figure 3. Prevalence of self-reported **overweight^a** and **obesity^b** among MI women by health insurance coverage or at least one chronic disease^c, Michigan BRFSS 2008



HP 2020 goal:
30.9%

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TABLE & FIGURE FOOTNOTES

Note: BMI, body mass index, is defined as weight (in kilograms) divided by height (in meters) squared [weight in kg/(height in meters)²]. Weight and height were self-reported. Pregnant women were excluded.

^a Among adult women aged 18-44 years, the proportion of whose BMI was greater than or equal to 25.0, but less than 30.0.

^b Among adult women aged 18-44 years, the proportion of whose BMI was greater than 30.0.

^c Women with at least one of the following: Ever told that they had diabetes, heart attack/myocardial infarction, angina/coronary heart disease, stroke or who currently had asthma.

REFERENCES

1. Nelson DE, Holtzman D, Bolen J, Stanwyck CAT & Mack KA (2001) Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). *Sozialund Praventivmedizin*, 46 (Suppl 1), S3-S42.
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3. Johnson K, Posner S, Biermann J, Cordero, JF (2006) Recommendations to improve preconception health and health care in the United States. *MMWR* 55 (RR06); 1-23.

PRECONCEPTION HEALTH IN MICHIGAN

DOMAIN: NUTRITION & PHYSICAL ACTIVITY

SUB-DOMAIN: OBESITY & OVERWEIGHT

INDICATOR: PERCENTAGE OF WOMEN HAVING A LIVE BIRTH WHO WERE OVERWEIGHT OR OBESE BASED ON BMI AT THE TIME THEY BECAME PREGNANT

SUMMARY

DATA SOURCE: PREGNANCY RISK ASSESSMENT MONITORING SYSTEM (PRAMS)

RELIABILITY: INTERMEDIATE^{1,2}

VALIDITY: INTERMEDIATE^{1,2}

HP 2020 OBJECTIVE: NWS-8 INCREASE THE PROPORTION OF ADULTS WHO ARE AT A HEALTHY WEIGHT (33.9%). NWS-9 REDUCE THE PROPORTION OF ADULTS WHO ARE OBESE (30.9%)

Adverse perinatal outcomes associated with maternal obesity include neural tube defects, preterm delivery, diabetes, cesarean section, and hypertensive and thromboembolic disease.² These risks may be reduced by losing weight prior to preg-

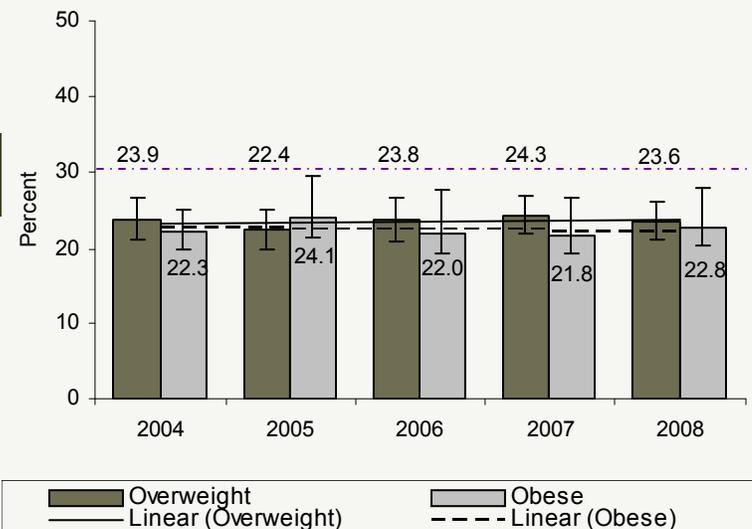
Table 1. Self-reported **overweight^a** and **obesity^b** by age group and race, Michigan PRAMS 2008

Demographic Characteristics	Overweight		Obese	
	%	95% Confidence Interval	%	95% Confidence Interval
Total	23.6	(21.3-26.2)	22.8	(20.5-25.4)
Age				
18 - 24	25.1	(21.0-29.7)	19.9	(16.2-24.2)
25 - 34	22.3	(19.1-25.7)	23.7	(20.5-27.3)
35 - 44	25.2	(19.3-31.3)	26.2	(20.1-33.5)
Race				
White	23.8	(20.9-26.9)	21.2	(18.4-24.2)
Black	27.1	(23.3-31.3)	29.8	(25.8-34.1)

nancy, as weight loss during pregnancy isn't recommended.³

In 2008, 23.6% of Michigan women who had a live birth reported being overweight and 21.3% were obese. The prevalence of obesity increased 2.2% from 2004 while the prevalence of overweight decreased 1.7% for the same period (Figure 1).

Figure 1. Trend of **overweight^a** and **obesity^b** among women 18-44: Michigan PRAMS 2004-2008



HP 2020 goal:
30.9%

In addition, variation was evident in the demographic characteristics of obesity and of overweight. (Table 1, Figures 2-3). The prevalence of obesity was highest among women enrolled in Medicaid and lowest among college graduates. In contrast, overweight was most prevalent among Black women and lowest among women with less than a high school diploma or GED.

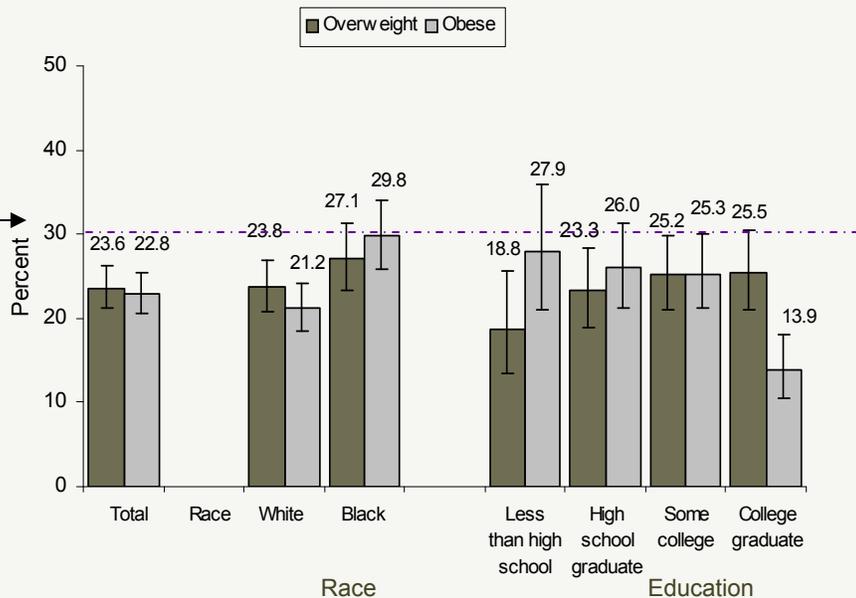
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DOMAIN: NUTRITION & PHYSICAL ACTIVITY

SUB-DOMAIN: OBESITY & OVERWEIGHT

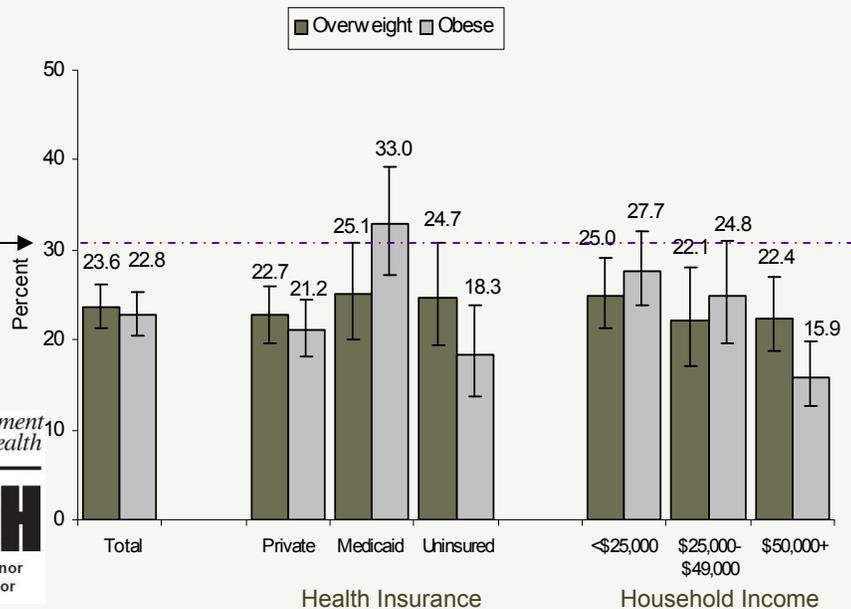
INDICATOR: PERCENTAGE OF WOMEN HAVING A LIVE BIRTH WHO WERE OVERWEIGHT OR OBESE BASED ON BMI AT THE TIME THEY BECAME PREGNANT

Figure 2. Prevalence of **overweight^a** and **obesity^b** among MI women by race or educational attainment, Michigan PRAMS 2008



HP 2020 goal:
30.9%

Figure 3. Prevalence of **overweight^a** and **obesity^b** among MI women by insurance status or household income, Michigan PRAMS 2008



HP 2020 goal:
30.9%

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TABLE & FIGURE FOOTNOTES

Note: BMI, body mass index, is defined as weight (in kilograms) divided by height (in meters) squared [weight in kg/(height in meters)²]. Weight and height were self-reported

^a Among adult women aged 18-44 years, the proportion of whose BMI was greater than or equal to 25.0, but less than 30.0.

^b Among adult women aged 18-44 years, the proportion of whose BMI was greater than 30.0.

REFERENCES

1. Core State Preconception Health Indicators: a voluntary, multi-state selection process November 2009.
2. Larder, C MI PRAMS Epidemiologist/Coordinator, Personal communication.
3. Johnson K, Posner S, Biermann J, Cordero, JF (2006) Recommendations to improve preconception health and health care in the United States. *MMWR* 55 (RR06); 1-23.
4. Gardiner P, Nelson L, Shellhaas C, Dunlop A, Long R, Andrist S, Jack B. The clinical content of preconception care: Nutrition and dietary supplements. *Am J Obstet Gynecol*. 2008; 199(6 suppl B): S345-356.

PRECONCEPTION HEALTH IN MICHIGAN

DOMAIN: NUTRITION & PHYSICAL ACTIVITY

SUB-DOMAIN: FOLIC ACID SUPPLEMENTATION

INDICATOR: PERCENTAGE OF WOMEN HAVING A LIVE BIRTH WHO TOOK A MULTIVITAMIN, PRENATAL VITAMIN OR A FOLIC ACID SUPPLEMENT EVERYDAY OF THE MONTH PRIOR TO PREGNANCY

SUMMARY

DATA SOURCE: PREGNANCY RISK ASSESSMENT MONITORING SYSTEM (PRAMS)

RELIABILITY: STRONG^{1,2}

VALIDITY: STRONG^{1,2}

HP 2020 OBJECTIVE: MICH-14 INCREASE THE PROPORTION OF WOMEN OF CHILD-BEARING POTENTIAL WITH INTAKE OF AT LEAST 400 µG FOLIC ACID FROM FOODS OR DIETARY SUPPLEMENTS (26.2%)

Folic acid supplementation before and during pregnancy can prevent up to 70% of neural tube defects (NTDS), birth defects that affect the infant's spine and brain.³ The Select Panel on Preconception Care and other organizations recommend that all women of reproductive age take a folic acid containing multivita-

Table 1. **Prepregnancy vitamin consumption^a** by age group and race, Michigan PRAMS 2008

Demographic Characteristics	Prepregnancy, daily consumption of multivitamin/prenatal vitamin	
	%	95% Confidence Interval
Total	27.7	(25.2-30.4)
Age		
18 - 24	13.4	(10.4-17.1)
25 - 34	33.0	(29.3-36.9)
35 - 44	41.0	(33.8-48.5)
Race		
White	29.9	(26.8-33.2)
Black	17.4	(14.3-21.0)
Other	40.8	(23.8-60.2)

min (400 µg), this is especially important as many pregnancies are unplanned.⁴

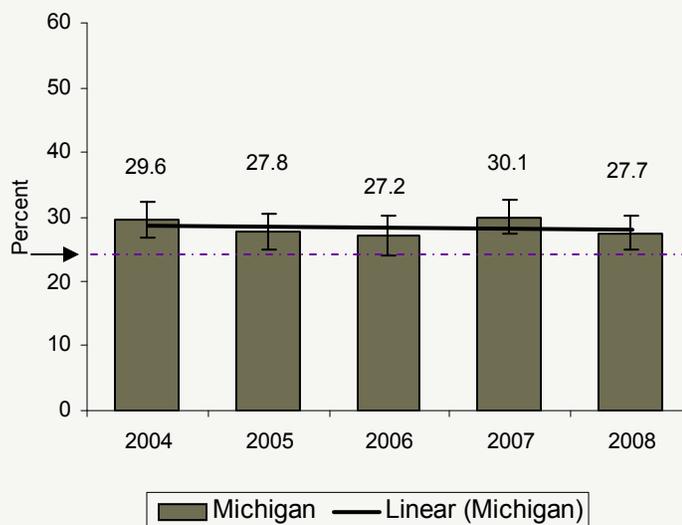
In 2008, 27.7% of Michigan women of reproductive age reported taking a multivitamin or prenatal

vitamin prior to pregnancy a 6% decrease, but higher than the HP2020 goal for pregnant women (Figure 1). Significant disparities were evident (Table 1, Figures 2-3).

The prevalence of prepregnancy vitamin consumption was significantly lower among women who:

- Were Black;
- Had lower educational attainment;
- Reported lower household income; and
- Were enrolled in Medicaid or uninsured.

Figure 1. Trend of **prepregnancy vitamin consumption^a** among women 18-44: Michigan, PRAMS 2004-2008



HP 2020 goal:
26.2%

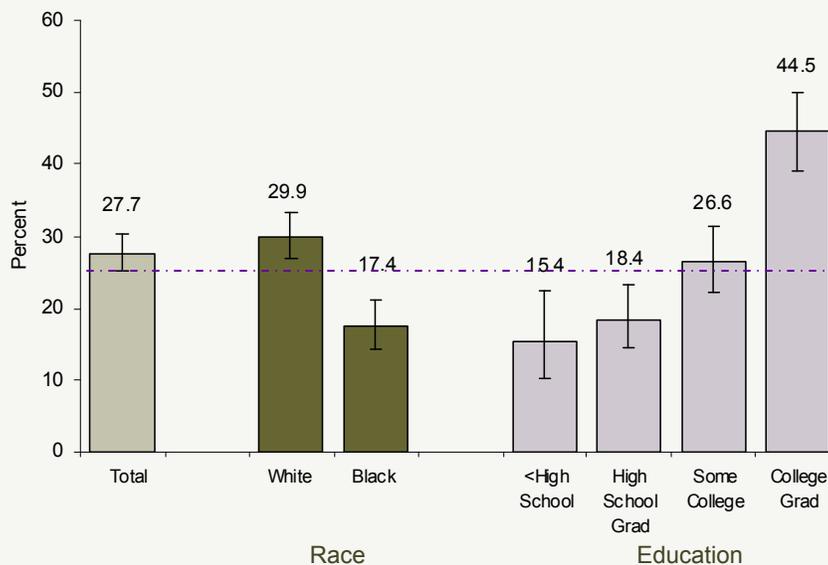
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SUB-DOMAIN: FOLIC ACID SUPPLEMENTATION

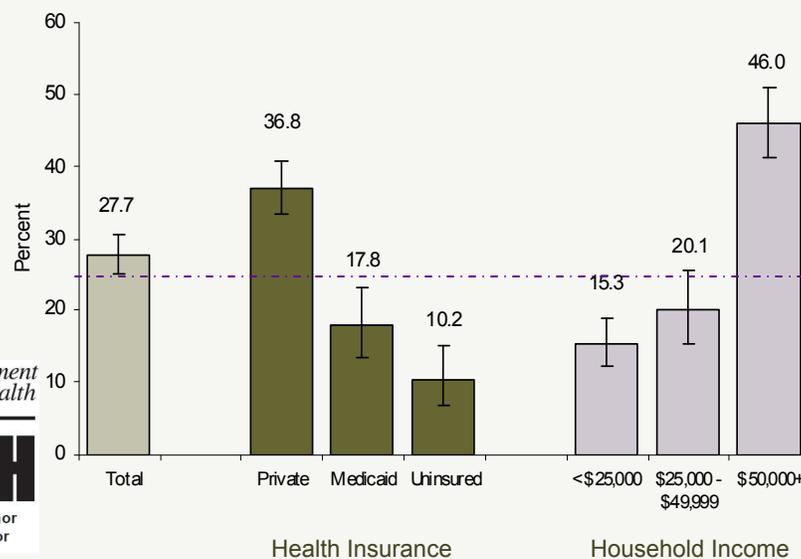
INDICATOR: PERCENTAGE OF WOMEN HAVING A LIVE BIRTH WHO TOOK A MULTIVITAMIN, PRENATAL VITAMIN OR A FOLIC ACID SUPPLEMENT EVERYDAY OF THE MONTH PRIOR TO PREGNANCY

Figure 2. Prevalence of **prepregnancy vitamin consumption**^a among MI women by race or educational attainment, Michigan PRAMS 2008



HP 2020 goal:
26.2%

Figure 3. Prevalence of **prepregnancy vitamin consumption**^a among MI women by insurance status or household income, Michigan PRAMS 2008



HP 2020 goal:
26.2%

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TABLE & FIGURE FOOTNOTES

^a. Among women aged 18-44 years, who had a live birth in 2008, the proportion who reported taking a multivitamin or prenatal vitamin daily during the month before conception. This measure is a proxy for prepregnancy folic acid consumption.

REFERENCES

1. Core State Preconception Health Indicators: a voluntary, multi-state selection process. November 2009.
2. Larder, C MI PRAMS Epidemiologist/Coordinator, Personal communication.
3. CDC (2011) Folic Acid: Facts about folic acid. Accessed on April 4, 2011 at <http://www.cdc.gov/ncbddd/folicacid/about.html>
4. Gardiner P, Nelson L, Shellhaas C, Dunlop A, Long R, Andrist S, Jack B. The clinical content of preconception care: Nutrition and dietary supplements. Am J Obstet Gynecol. 2008; 199 (6 suppl B): S345-S356.

PRECONCEPTION HEALTH IN MICHIGAN

DOMAIN: NUTRITION & PHYSICAL ACTIVITY

SUB-DOMAIN: EXERCISE/PHYSICAL ACTIVITY

INDICATOR: PERCENTAGE OF WOMEN WHO PARTICIPATED IN ENOUGH MODERATE AND/OR VIGOROUS ACTIVITY IN A USUAL WEEK TO MEET THE RECOMMENDED LEVELS OF PHYSICAL ACTIVITY

SUMMARY

DATA SOURCE: BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS)
RELIABILITY: MODERATE¹
VALIDITY: MODERATE¹
HP 2020 OBJECTIVE: PA 2.1 INCREASE THE PROPORTION OF ADULTS WHO ENGAGE IN AEROBIC PHYSICAL ACTIVITY OF AT LEAST MODERATE INTENSITY FOR AT LEAST 150 MINUTES/WEEK OR 75 MINUTES/WEEK OF VIGOROUS INTENSITY, OR AN EQUIVALENT COMBINATION (47.9%)

Regular physical activity is important in achieving and maintaining a healthy weight, as well as reducing the risk of hypertension, Type II diabetes, heart attack and stroke.²

Figure 1. Trend of self-reported **adequate physical activity**^a among women 18-44: US average vs. Michigan, BRFSS 2005-2008

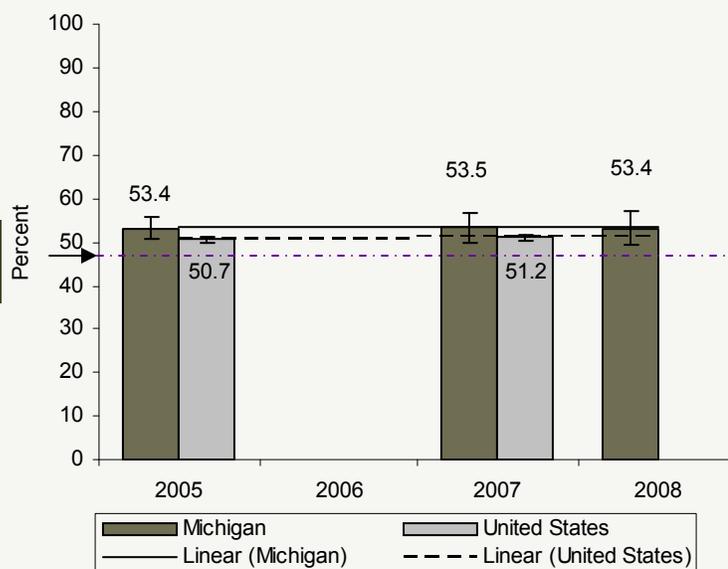


Table 1. Self-reported **adequate physical activity**^a by age group and race, Michigan BRFSS 2008

Demographic Characteristics	Adequate Physical Activity	
	%	95% Confidence Interval
Total	53.4	(49.3-57.3)
Age		
18 - 24	51.5	(41.8-61.1)
25 - 34	54.4	(47.5-61.1)
35 - 44	53.9	(49.0-58.7)
Race		
White	53.3	(48.9-57.6)
Black	52.0	(40.5-63.3)

The Select Panel on Preconception Care recommends that all women be assessed with regard to weight-bearing and aerobic exercise and offered

appropriate recommendations for participating in appropriate physical activities given their physical abilities.³

In 2008, 53.4% of Michigan women of reproductive age reported participating in adequate physical activity; this was above the HP2020 goal (Figure 1).

The rate remained constant since 2005 and was higher than the national rate for the same period.

No significant disparities based on age, race, income, education and presence of chronic disease were evident (Table 1, Figures 2-3).

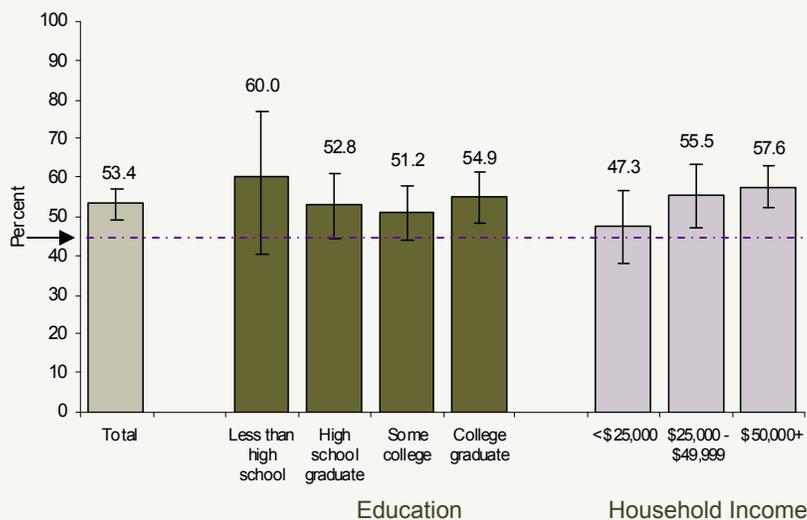
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SUB-DOMAIN: EXERCISE/PHYSICAL ACTIVITY

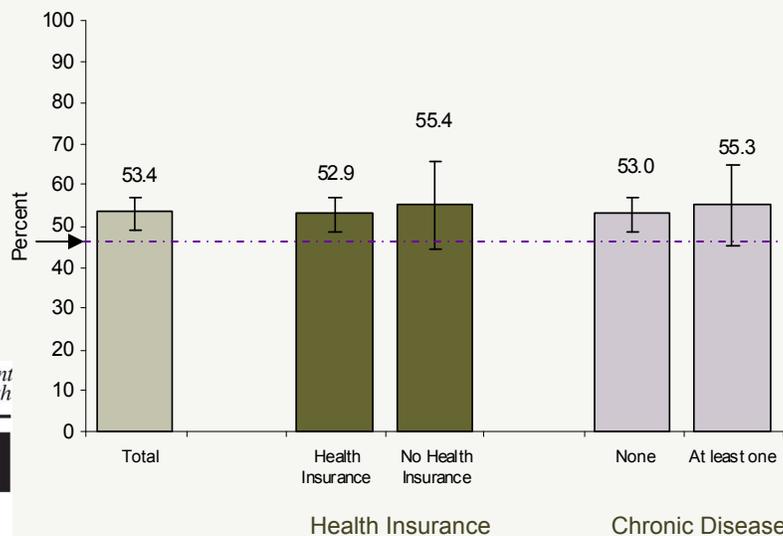
INDICATOR: PERCENTAGE OF WOMEN WHO PARTICIPATED IN ENOUGH MODERATE AND/OR VIGOROUS ACTIVITY IN A USUAL WEEK TO MEET THE RECOMMENDED LEVELS OF PHYSICAL ACTIVITY

Figure 2. Prevalence of self-reported **adequate physical activity**^a among MI women by educational attainment or household income, Michigan BRFSS 2008



HP 2020 goal:
47.9%

Figure 3. Prevalence of self-reported **adequate physical activity**^a among MI women by health insurance coverage or at least one chronic disease^b, Michigan BRFSS 2008



HP 2020 goal:
47.9%

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TABLE & FIGURE FOOTNOTES

^a Among adult women aged 18-44 years, the proportion who reported that they usually do moderate physical activities for a total of at least 30 minutes on five or more days per week or vigorous physical activities for a total of at least 20 minutes on three or more days per week while not at work. Question was not on the 2006 survey.

^b Women with at least one of the following: Ever told that they had diabetes, heart attack/myocardial infarction, angina/coronary heart disease, stroke or who currently had asthma.

REFERENCES

1. Nelson DE, Holtzman D, Bolen J, Stanwyck CAT & Mack KA (2001) Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). *Sozialund Praventivmedizin*, 46 (Suppl 1), S3-S42.
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3. Moos MK, Dunlop A, Jack B, et al Healthier women, healthier reproductive outcomes: recommendations for the routine care of all women of reproductive age. *Am J Obstet Gynecol* 2008; 199 (6 Suppl B): S280-S289.