

Overweight and Obesity in Michigan: Surveillance Update 2016



Table of Contents

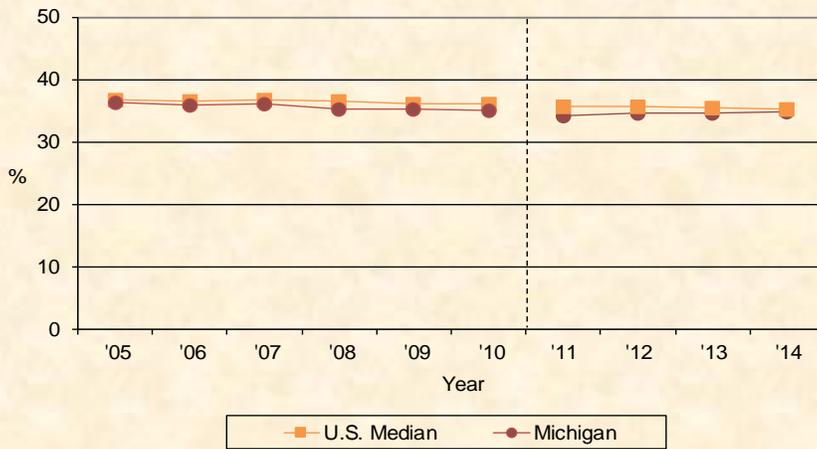
Overweight and Obesity Facts in Michigan Adults (2005-2014)	1
Fruit and Vegetable Consumption among Michigan Adults (2011 and 2013)	7
Physical Activity among Michigan Adults (2011 and 2013)	9
Overweight and Obesity Facts among MI Youth in 9th-12th Grades (1999-2013)	12
Fruit and Vegetable Consumption among Michigan Youth in 9th-12th Grades (2013)	15
Physical Activity among Michigan Youth in 9th-12th Grades (2013)	19

OVERWEIGHT AND OBESITY FACTS ABOUT MICHIGAN ADULTS (2005-2014)

Background

- Obesity is defined as a Body Mass Index (BMI) of 30.0 kg/m² or higher; while a BMI between 25.0 kg/m² and 29.9 kg/m² is considered overweight.¹
- In 2011, the Centers for Disease Control and Prevention made changes to the Behavioral Risk Factor Surveillance System (BRFSS) methodology. Consequently, BRFSS overweight and obesity prevalence estimates for 2011 and beyond cannot be compared to BRFSS prevalence estimates from 2010 and prior.² This resulted in a break in the trends of overweight and obesity between 2010 and 2011 as indicated by the dotted line in the trend charts presented.^{2,3}
- The charts provide obesity and overweight prevalence estimates among Michigan adults (18 years and older) from 2005 to 2014 and determine statistically significant changes in estimates from 2011 to 2014. Additionally, chronic disease prevalence estimates by weight status are presented.

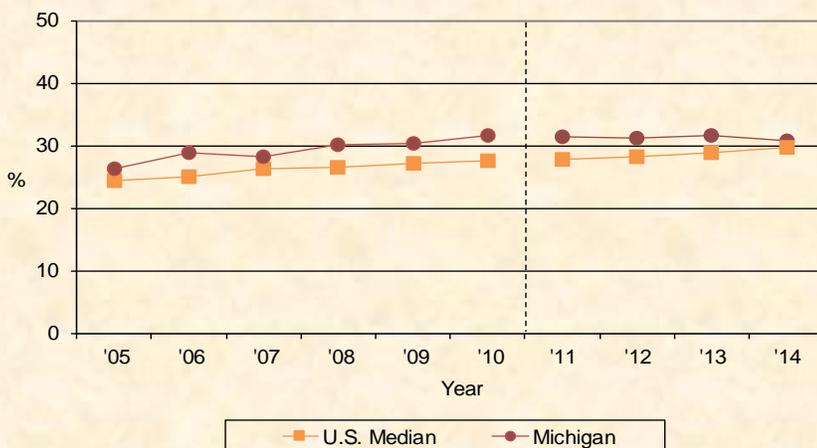
Overweight
Adults, Michigan and United States, 2005-2014



- In Michigan, the overweight prevalence estimate among adults was 34.7% in 2013 and 34.9% in 2014.
- There was no statistical evidence of a significant increase or decrease in estimates between 2011 and 2014 (34.2% to 34.9%).
- In the United States, the median overweight prevalence was 35.4% in 2013 and 35.3% in 2014.

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

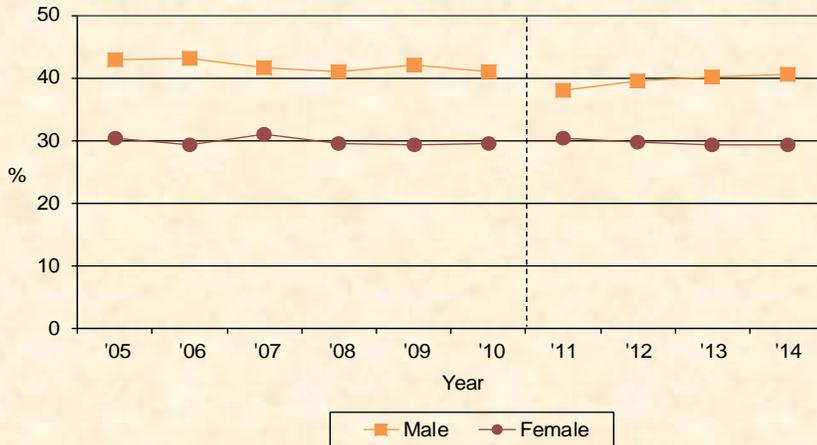
Obesity
Adults, Michigan and United States, 2005-2014



- The obesity prevalence estimate among Michigan adults was 31.5% in 2013 and 30.7% in 2014.
- The obesity prevalence was stable over the past four years. There was no evidence of a statistically significant change in the estimates between 2011 and 2014 (31.3% to 30.7%).
- In the United States, the median obesity prevalence was 28.9% in 2013 and 29.6% in 2014.

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

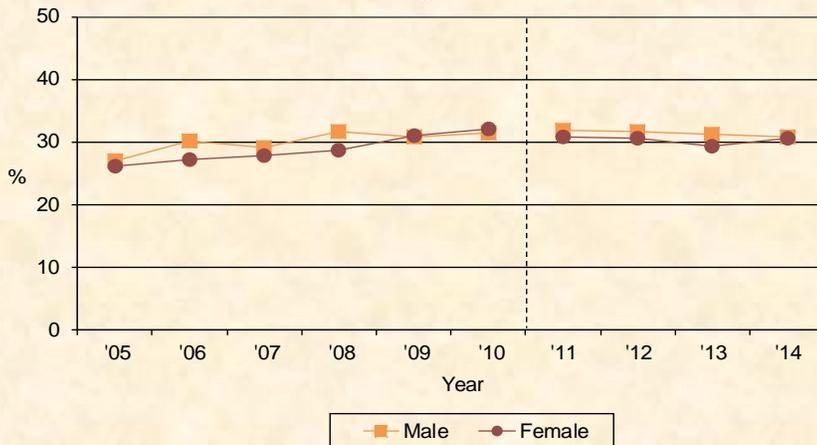
Overweight by Gender



- In 2013, the overweight prevalence estimate was significantly higher among adult males compared to adult females (40.1% and 29.3%, respectively).
- In 2014, the percentage of males who were classified as overweight was also significantly higher than that of females (40.5% and 29.2%, respectively).
- The overweight prevalences among males were comparable for 2011 through 2014 (38.0% to 40.5%). This was the same for females (30.3% to 29.2%).

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

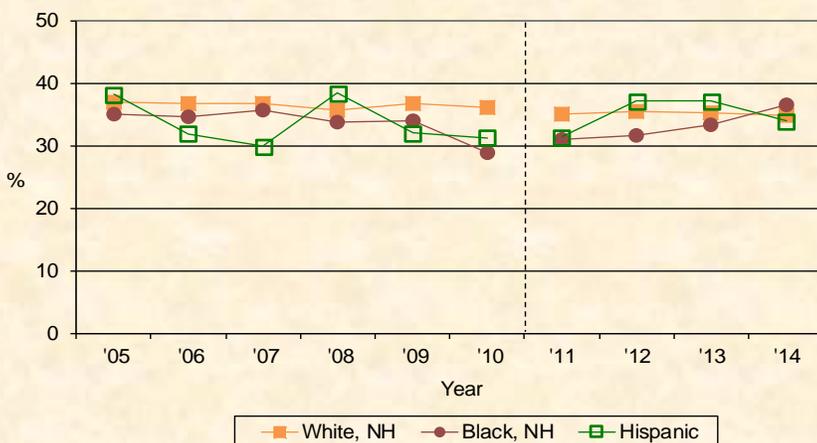
Obesity by Gender Adults, Michigan, 2005-2014



- In 2013, the obesity prevalence estimate among adult males was comparable to that of females (31.1% and 29.3%, respectively).
- In 2014, the percentage of males who were classified as obese was also comparable to that of females (30.8% and 30.6%, respectively).
- The obesity prevalences were similar between genders and within gender during the past four years. The estimates among males were 31.9% in 2011 and 30.8% in 2014. For females, the estimates were 30.7% in 2011 and 30.6% in 2014.

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

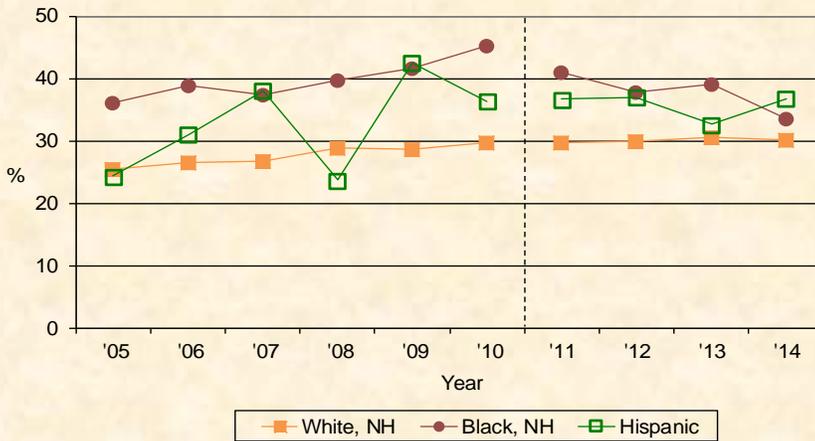
Overweight by Race/Ethnicity



- In 2013, there was no evidence of a statistically significant difference among non-Hispanic White (White, NH), non-Hispanic Black (Black, NH), and Hispanic adults classified as overweight (35.2%, 33.4%, and 37.1%, respectively).
- In 2014, the percentage of adults classified as overweight was comparable among White, NH, Black, NH, and Hispanic adults (34.8%, 36.6%, and 33.9%, respectively).
- The overweight prevalences were similar among and within racial/ethnic groups between 2011 to 2014.

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

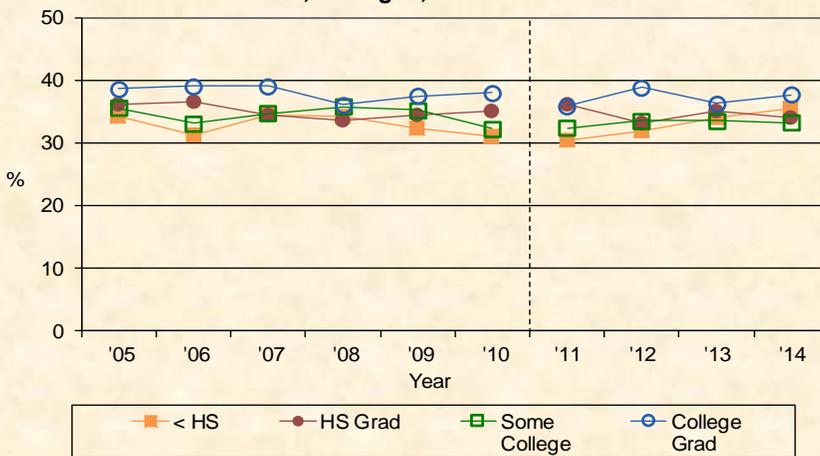
Obesity by Race/Ethnicity



- In 2013, the obesity prevalence estimates were statistically different between Black, NH and White, NH adults (39.2% and 30.6%, respectively), but similar in 2014 (33.6% and 30.2%, respectively). The estimated prevalence among Black, NH decreased in magnitude adults between 2013 and 2014, but there was no evidence of a statistically significant difference.
- There was not evidence of a statistical difference in estimates among Hispanic adults in 2013 and 2014 (32.7% and 36.8%, respectively).
- Between 2011 and 2014, there was no evidence of a statistical change in estimates within racial/ethnic groups.

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

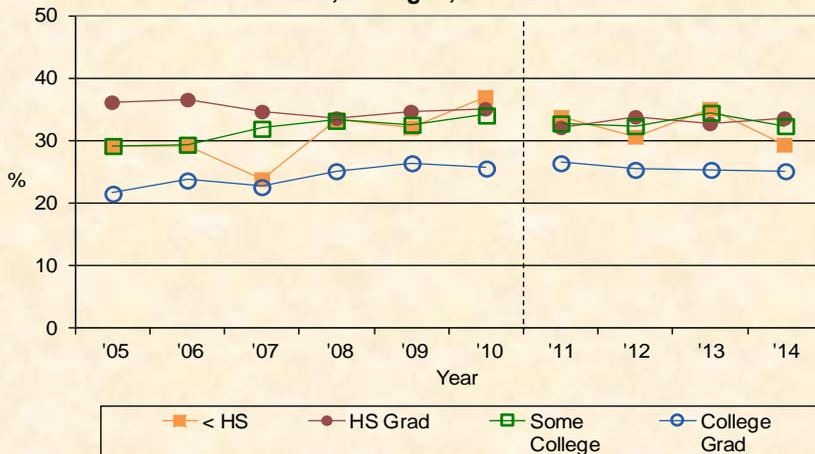
Overweight by Education Adults, Michigan, 2005-2014



- In 2013, overweight prevalence estimates were comparable by education level: 34.2% for less than high school graduate, 35.1% for high school graduate, 33.6% for some college, and 36.4% for college graduate.
- The 2014 estimates were similar to the 2013 estimates: 35.5% for less than high school graduate, 34.2% for high school graduate, 33.3% for some college, and 37.8% for college graduate.
- There was no evidence of a statistically significant change in overweight prevalence estimates from 2011 to 2014 within any education level.

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

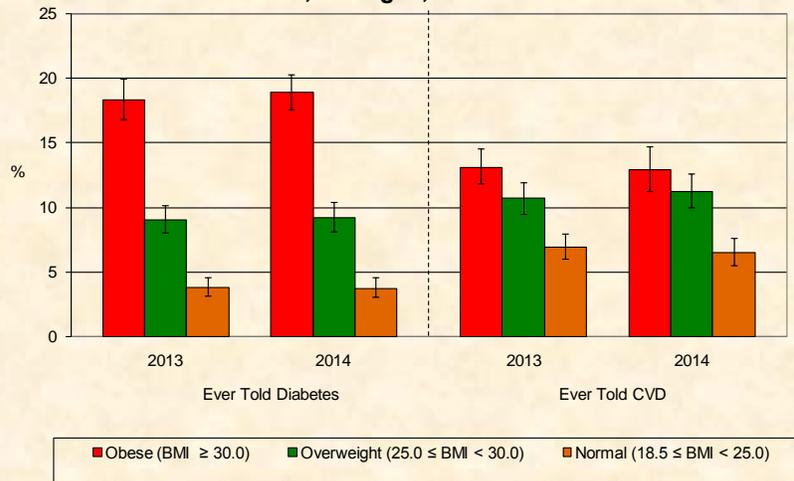
Obesity by Education Adults, Michigan, 2005-2014



- In 2013, obesity prevalence estimates were 35.1% for less than high school graduate, 32.7% for high school graduate, 34.5% for some college, and 25.4% for college graduate.
- The 2014 estimates were similar to the 2013 estimates: 29.4% for less than high school graduate, 33.6% for high school graduate, 32.4% for some college, and 25.2% for college graduate. There was no evidence of statistical difference among or within education levels for the two years.
- There was no evidence of a statistical change in obesity prevalence estimates from 2011 to 2014 within any education level.

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

**Diabetes and Cardiovascular Disease (CVD) by Weight Status
Adults, Michigan, 2013 and 2014**



Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

- The diabetes prevalence estimate increased significantly with increasing weight status for both 2013 and 2014.
- In 2013 and 2014, cardiovascular disease (CVD) prevalence estimates were significantly higher among adults classified as obese compared to normal BMI.
- Among those who were obese, the percentage of adults with diabetes was significantly higher than the percentage of adults with CVD.
- However, the percentage of adults with diabetes classified as normal BMI was significantly lower than the percentage of adults with CVD classified as normal BMI.

Note: A series of chi-square analyses were conducted to determine whether there were statistically significant differences in overweight or obesity by year based on gender, race/ethnicity, and education.

References:

1. Centers for Disease Control and Prevention. Available online at: www.cdc.gov/obesity/defining.html. Accessed on April 15, 2014.
2. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System—Improving Survey Methodology. 2011.
3. Fussman C, Lyon-Callo S. The Impact of BRFSS Methodology Changes on Michigan BRFSS Health Estimates. *Michigan BRFSS Surveillance Brief*. Vol. 6, No. 4. Lansing, MI: Michigan Department of Community Health, Lifecourse Epidemiology and Genomics Division, Surveillance and Program Evaluation Section, Chronic Disease Epidemiology Unit, September 2012.

Suggested citation: Byrd HCM, Fussman C, Wahl R, Lyon-Callo S, Imes G. Overweight and Obesity Facts about Michigan Adults (2005-2014). Nutrition, Physical Activity and Obesity Program Surveillance Brief. Michigan Department of Health and Human Services, Lifecourse Epidemiology and Genomics Division. July 2016

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Division of Nutrition, Physical Activity & Obesity

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FRUITS AND VEGETABLE CONSUMPTION AMONG MICHIGAN ADULTS (2011 and 2013)

- In 2011, the CDC updated the Behavioral Risk Factor Survey (BRFS) fruit and vegetable dietary intake module to be more reflective of the 2010 Dietary Guidelines for Americans.¹ In addition, four new indicators were introduced replacing the adequate fruits and vegetable consumption indicator.
- Fruits and vegetables are no longer combined in one measure. Median daily fruit and vegetable intakes will serve as proxies for food access. The median is a statistic in which 50% of the measurements are above and 50% are below the value. Consumption of less than one time per day will be used to track poor fruit and vegetable intake over time.
- The CDC set results from 2013 as the new baselines for the states. Below are comparisons of 2011 and 2013 results for Michigan.

- **Median daily intake of fruits among adults:** In Michigan, the median intake was 1.1 times per day in 2011 and 1.0 time per day in 2013.
- **Percentage of adults who reported consuming fruit less than one time per day:** Nearly 40% of Michigan adults consumed fruits less than one time per day both in 2011 and 2013 (37.3% and 37.7%, respectively). A higher percentage of females than males consumed fruits more than one time per day. Only half of Michigan adults with less than a high school education consumed fruit more than one time per day.

Table 1. Daily Fruit Intake, Michigan, Adults (2011 and 2013)

	Median Vegetable Intake Per Day		Vegetable (< 1 time / day)			
	2011	2013	2011		2013	
			%	95% CI	%	95% CI
Total	1.6	1.6	23.2	(21.8-24.3)	24.8	(23.6-25.9)
Gender						
Male	1.4	1.4	27.4	(25.4-29.5)	28.6	(26.9-30.4)
Female	1.7	1.7	18.9	(17.5-20.5)	21.1	(19.8-22.6)
Race/Ethnicity						
White, Non-Hispanic	1.6	1.6	21.3	(20.0-22.7)	22.6	(21.4-23.7)
Black, Non-Hispanic	1.3	1.4	32.4	(28.4-36.7)	36.5	(32.4-40.8)
Other, Non-Hispanic	1.7	1.6	24.4	(18.4-31.7)	26.2	(20.9-32.4)
Hispanic	1.5	1.4	28.3	(20.7-37.3)	29.5	(22.7-37.5)
Education						
Less than high school	1.3	1.2	32.9	(27.8-38.6)	38.7	(33.6-44.0)
High school graduate	1.4	1.4	28.2	(25.9-30.6)	28.4	(26.4-30.4)
Some college	1.6	1.6	20.2	(18.2-22.4)	23.6	(21.8-25.6)
College graduate	1.9	1.9	15.5	(13.9-17.1)	15.5	(14.1-17.0)
Household Income						
< \$20,000	1.4	1.3	31.8	(28.4-35.3)	34.3	(31.2-37.6)
\$20,000 - \$34,999	1.4	1.5	26.2	(23.4-29.2)	27.1	(24.6-29.7)
\$35,000 - \$49,999	1.6	1.5	18.9	(16.1-22.1)	23.7	(20.8-26.8)
\$50,000 - \$74,999	1.7	1.7	19.6	(16.6-22.9)	19.2	(16.8-21.8)
\$75,000 +	1.8	1.8	15.5	(13.5-17.9)	17.0	(15.2-19.0)

- **Median daily intake of vegetables among adults:** The median vegetable intake was 1.6 in 2011 and 2013.
- **Percentage of adults who reported consuming vegetables less than one time per day:** Nearly one quarter of Michigan adults consumed vegetables less than one time per day. The prevalence estimates among adult males and non-Hispanic Black adults were higher than the estimates among adult females and non-Hispanic White adults. The percentage of those who had vegetable intake less than once per day was lowest among those with at least a college degree compared to lower education.

Table 2. Daily Vegetable Intake, Michigan, Adults (2011 and 2013)

	Median Fruit Intake Per Day		Fruits (< 1 time / day)			
	2011	2013	2011		2013	
			%	95% CI	%	95% CI
Total	1.1	1.0	37.3	(35.9-38.7)	37.7	(36.5-38.9)
Gender						
Male	1.0	1.0	42.3	(40.2-44.5)	42.4	(40.6-44.3)
Female	1.1	1.1	32.5	(30.7-34.3)	33.4	(31.8-34.9)
Race/Ethnicity						
White, Non-Hispanic	1.1	1.0	36.9	(35.3-38.5)	37.4	(36.1-38.7)
Black, Non-Hispanic	1.1	1.1	37.1	(33.0-41.5)	37.7	(33.7-41.9)
Other, Non-Hispanic	1.1	1.0	38.7	(31.8-46.1)	41.5	(35.3-48.0)
Hispanic	1.0	1.0	46.8	(38.2-55.7)	39.9	(32.7-47.6)
Education						
Less than high school	0.9	1.0	48.7	(43.1-54.3)	48.2	(42.9-53.5)
High school graduate	1.0	1.0	43.1	(40.6-45.7)	40.1	(38.1-42.2)
Some college	1.1	1.1	34.0	(31.6-38.4)	38.1	(36.0-40.2)
College graduate	1.3	1.2	28.6	(26.6-30.7)	29.2	(27.4-31.0)
Household Income						
< \$20,000	1.0	1.0	45.2	(41.6-48.8)	41.8	(38.6-45.0)
\$20,000 - \$34,999	1.0	1.0	42.8	(39.6-46.0)	41.8	(39.1-44.6)
\$35,000 - \$49,999	1.1	1.1	32.6	(29.2-36.2)	36.4	(33.1-39.7)
\$50,000 - \$74,999	1.1	1.0	33.8	(30.4-37.4)	36.2	(33.3-39.3)
\$75,000 +	1.3	1.1	29.6	(26.9-32.4)	32.4	(30.1-34.7)

Source: Michigan Behavioral Risk Factor Survey System [www.michigan.gov/brfs]

Reference:

U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.

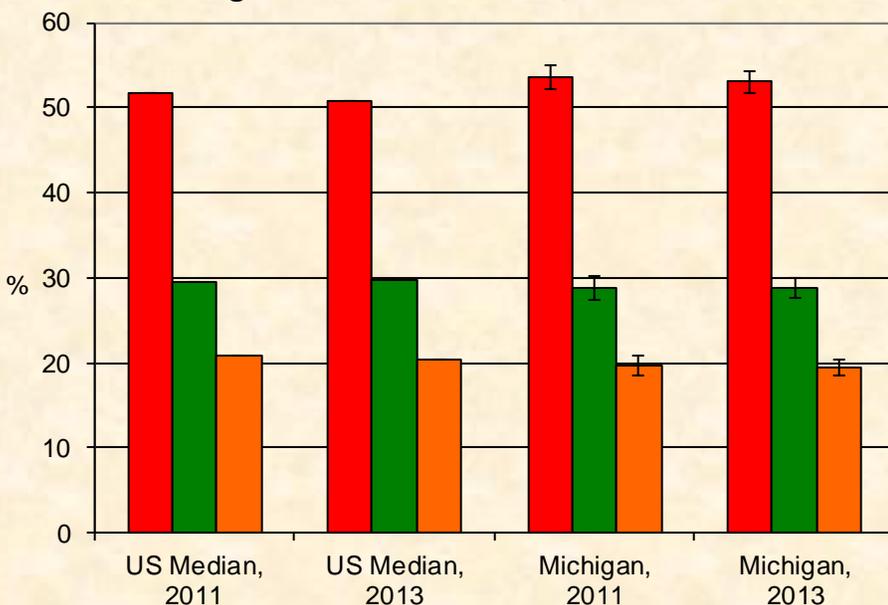
Suggested Citation: Byrd HCM, Fussman C, Wahl R, Lyon-Callo S, Imes G. Fruits and Vegetable Consumption Among Michigan Adults (2011 and 2103). Nutrition, Physical Activity and Obesity Program Surveillance Brief. Michigan Department of Health and Human Services, Lifecourse Epidemiology and Genomics Division. October 2014.

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- In 2011 and 2013, about one quarter of Michigan adults (18 years and older) reported that they did not perform any leisure-time physical activity (i.e., non-work physical activities or exercise) during the past month.
- Physical activity is one of the most important healthful behaviors that may reduce risk of complications due to chronic conditions such as diabetes, cardiovascular disease (CVD), high blood pressure, and obesity.¹ In 2013, 30% of Michigan adults with at least one of these chronic conditions reported no leisure-time physical activity in the past month, while about 20% of adults with no chronic conditions reported no leisure-time physical activity in the past month.
- The 2008 Physical Activity Guidelines for Americans recommend that adults participate in 1) adequate aerobic activity (defined as moderate physical activity for at least 150 minutes per week, vigorous physical activity for at least 75 minutes per week, or an equivalent combination of moderate and vigorous physical activity) and also participate in 2) adequate muscle strengthening (defined as muscle strengthening activities on two or more days per week).² Meeting both guidelines is defined as adequate physical activity.
- Increasing the proportion of adults who meet the physical activity guidelines is one of Healthy People 2020's Leading Health Indicators, which are selected specifically to communicate high-priority health issues for action.³
- This fact sheet compares the Michigan Behavioral Risk Factor Surveillance System physical activity results 2011 and 2013 for those who did participate in some form of physical activity based on the 2008 Physical Activity Guidelines.

**Physical Activity among Adults,
Michigan and United States, 2011 and 2013**

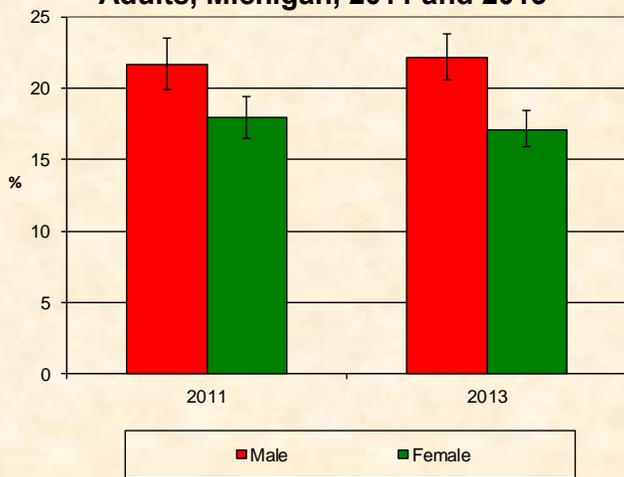


- More than half of the adults in Michigan, as well as the United States, reported meeting the aerobic component recommendation for 2011 and 2013.
- About 30% of adults in Michigan, as well as the United States, reported adequate muscle strengthening for both years.
- In 2011 and 2013, nearly one in five Michigan adults reported meeting the 2008 Guidelines for adequate physical activity (19.7% and 19.5%, respectively).

■ Adequate Aerobic Physical Activity
 ■ Adequate Muscle Strengthening
 ■ Adequate Physical Activity

Source: CDC Behavioral Risk Factor Survey System (BRFSS) [www.cdc.gov/brfss] and Michigan BRFSS [www.michigan.gov/brfs]

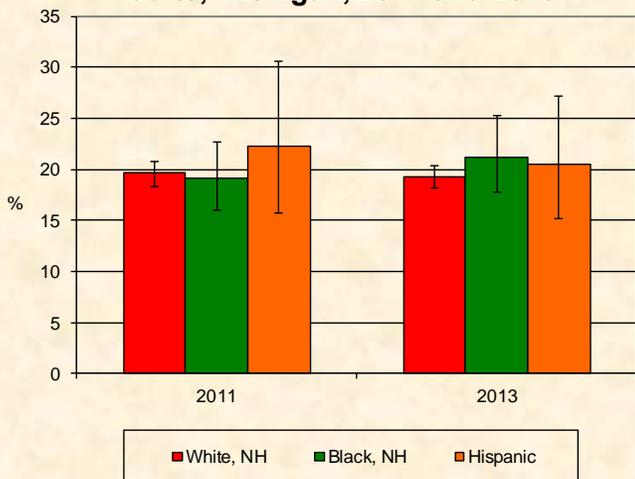
Adequate Physical Activity by Gender, Adults, Michigan, 2011 and 2013



Source: Michigan BRFSS [www.michigan.gov/brfs]

- A higher percentage of adult males compared to females reported meeting the 2008 Guidelines in 2011 (21.6% and 17.9%, respectively).
- The 2013 percentages of males and females who reported meeting the Guidelines were comparable to the 2011 estimates (22.1% and 17.1%, respectively).

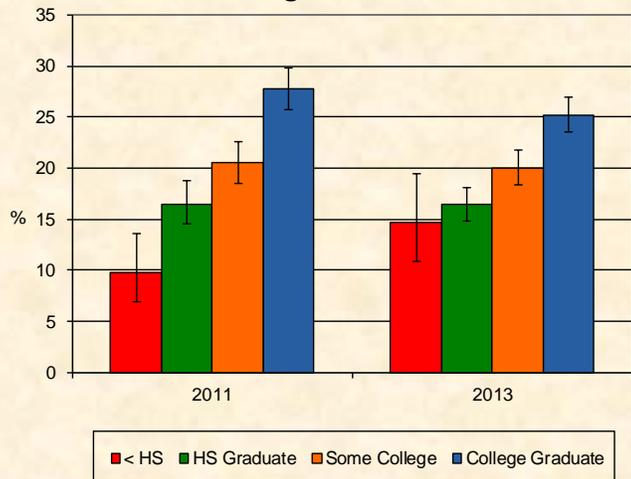
Adequate Physical Activity by Race/Ethnicity, Adults, Michigan, 2011 and 2013



Source: Michigan BRFSS [www.michigan.gov/brfs]

In 2011 and 2013, approximately one in five Michigan adults who were either non-Hispanic White or Black adults reported meeting the 2008 Guidelines.

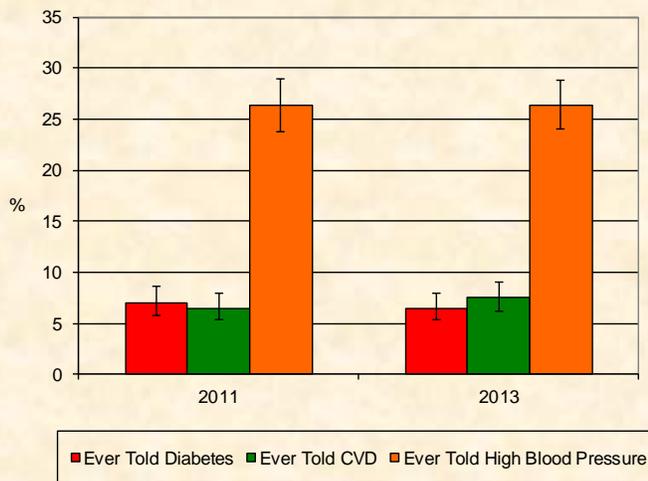
Adequate Physical Activity by Education, Adults, Michigan, 2011 and 2013



Source: Michigan BRFSS [www.michigan.gov/brfs]

- Adequate physical activity increased by increasing education level in both 2011 and 2013.
- The prevalence estimates were similar for corresponding educational levels: high school graduate, some college, and college graduate.

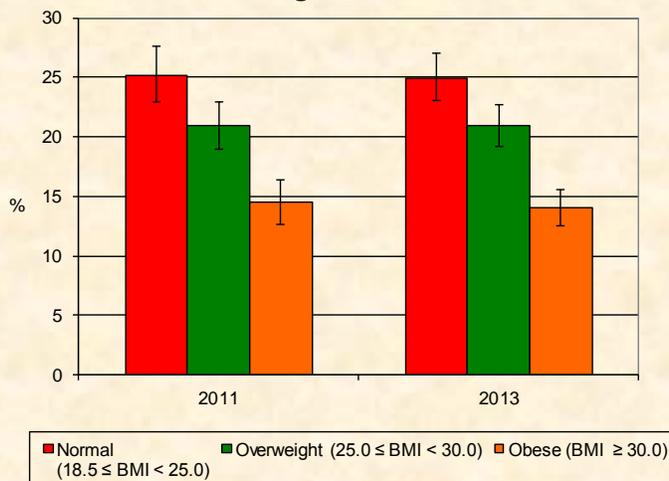
Chronic Disease Prevalence Estimates Among Those Who Met Guidelines, Adults, Michigan, 2011 and 2013



Source: Michigan BRFSS [www.michigan.gov/brfss]

- In 2013, diabetes, CVD, and high blood pressure prevalence estimates were lower among Michigan adults who reported meeting the Guidelines (6.5%, 7.5%, and 26.3%, respectively) than the corresponding prevalence estimates among those who did not meeting the Guidelines (11.1%, 10.7%, 36.6%, respectively, data not shown).
- Similar differences were observed in 2011.

Adequate Physical Activity by Weight Status, Adults, Michigan, 2011 and 2013



Source: Michigan BRFSS [www.michigan.gov/brfss]

- Adequate physical activity decreased with increasing weight status among Michigan adults in 2013. The prevalence of adequate physical activity was about 25% among adults classified as normal BMI, 20% among those classified as overweight, and 14% among those classified as obese.
- There was no evidence of changes in the estimates between the two years.

References:

1. Kruk J. Physical Activity in the Prevention of the Most Frequent Chronic Diseases: an Analysis of Recent Evidence. *Asian Pacific J of Cancer Prev.* 2007; 8:325-338.
2. US Department of Health and Human Services. 2008 physical activity guidelines for Americans. Hyattsville, MD: US Department of Health and Human Services; 2008. Available on-line at www.health.gov/paguidelines.
3. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2020. Washington, DC Physical Activity Available on-line at www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=33 Accessed October 2014.

Suggested citation: Byrd HCM, Fussman C, Wahl R, Lyon-Callo S, Imes G. Physical Activity Among Michigan Adults (2011 and 2013). Nutrition, Physical Activity and Obesity Program Surveillance Brief. Michigan Department of Health and Human Services, Lifecourse Epidemiology and Genomics Division. November 2014.

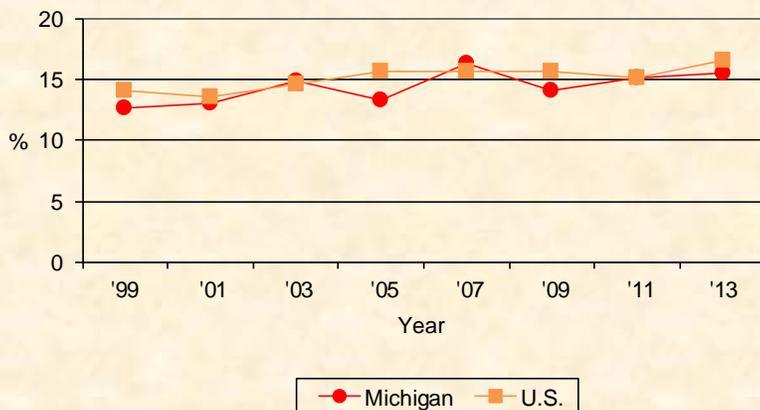
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OVERWEIGHT AND OBESITY FACTS AMONG MICHIGAN YOUTH in 9th-12th GRADES - 1999-2013

- Obesity and overweight in youth 2-20 years are based on the Centers for Disease Control and Prevention sex-specific Body Mass Index (BMI) for age growth charts. Obesity in youth is defined as a BMI specifically for age and sex at or above the 95th percentile, and a BMI for age and sex equal and greater than the 85th but less than 95th percentile is considered overweight.¹
- Obese youth are at risk for a number of chronic conditions such as type 2 diabetes, hypertension, asthma, and sleep issues.^{2,3}
- US Healthy People 2020 has several objectives emphasizing improved nutrition and appropriate weight management for children and adolescents.⁴
- The Michigan Youth Risk Behavior Surveillance System (MiYRBSS) and, for the US, the Youth Risk Behavior Surveillance System (YRBSS) are two sources of health and behaviors of youth (9th-12th grade or high school students).^{5,6}
- The graphics below provide obesity and overweight prevalence estimates for 2013 among Michigan high school students and whether there were statistically significant linear trends for 1999 to 2013 data, provided by Michigan Department of Education.⁷

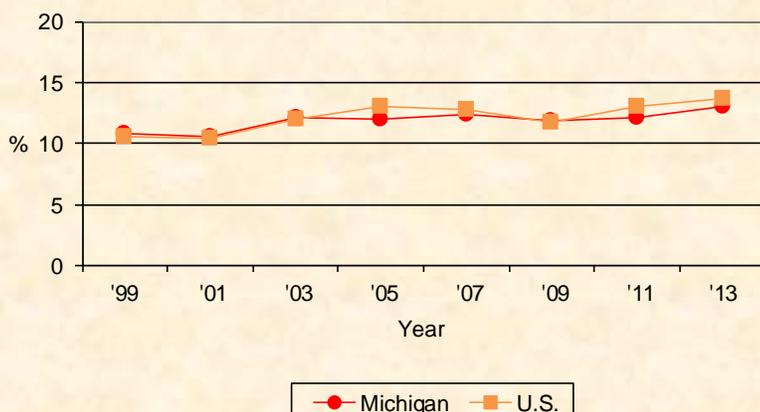
Overweight
Michigan and United States Youth, 9th-12th Grades,
1999-2013



- In 2013, the percentage of 9th-12th graders who were overweight in Michigan was 15.5% comparable to 16.6% among US 9th-12th graders.
- Over the past 15 years, overweight prevalence showed a statistically significant linear increase both in Michigan and the US (12.7% to 15.5% and 14.1% to 16.6%, respectively).

Sources:
CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

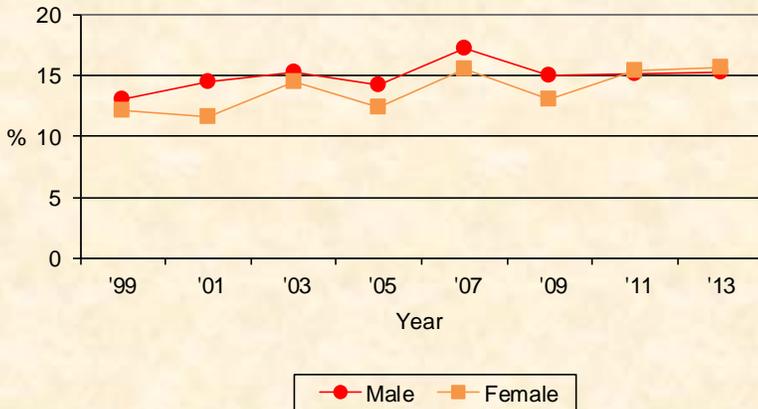
Obesity
Michigan and United States Youth, 9th - 12th Grades,
1999-2013



- In 2013, the obesity prevalence among Michigan high school students (9th-12th grade) was 13.1%, which was comparable to the obesity prevalence among high school students living in the US (13.7%).
- Over the past 15 years, there was no evidence of linear change in obesity prevalence for Michigan high school students (10.8% to 13.0%).
- However, a statistically significant linear increase occurred overall in the prevalence of obesity among US high school students (10.6% to 13.7%).

Sources:
CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

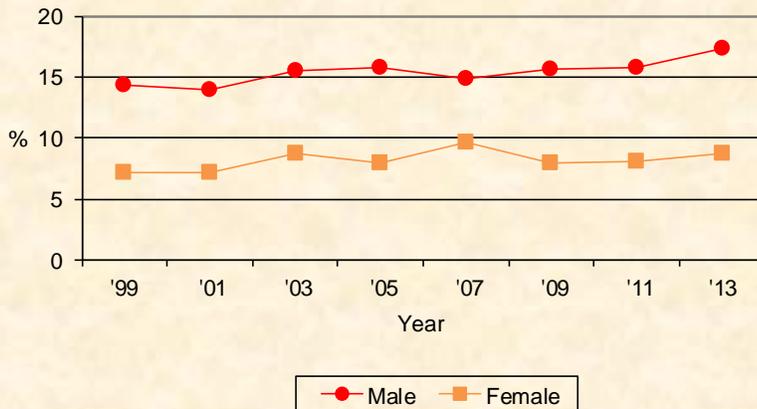
Overweight by Gender Michigan Youth, 9th-12th Grades, 1999-2013



Source: Michigan YRBSS [www.michigan.gov/yrbs]

- In 2013, the overweight prevalence estimate among Michigan high school females and males were similar (15.3% and 15.7%, respectively).
- There was no evidence of a linear change over time observed for males (13.0% to 15.7%), but a statistically significant linear increase was observed for females (12.2% to 15.3%).

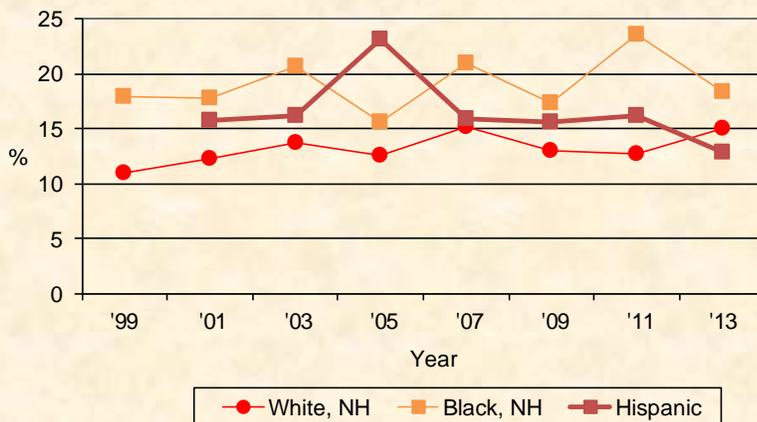
Obesity by Gender Michigan Youth, 9th-12th Grades, 1999-2013



Source: Michigan YRBSS [www.michigan.gov/yrbs]

- In contrast to overweight prevalence, the obesity prevalence among male high school students (17.4%) was twice that of high school female students (8.7%) in 2013.
- The prevalence of obesity was consistently higher for males when compared to females during the past 15 years.
- However, there was no evidence of a linear change in obesity prevalence over time for male (14.3% to 17.3%) or female (7.2% to 8.7%).

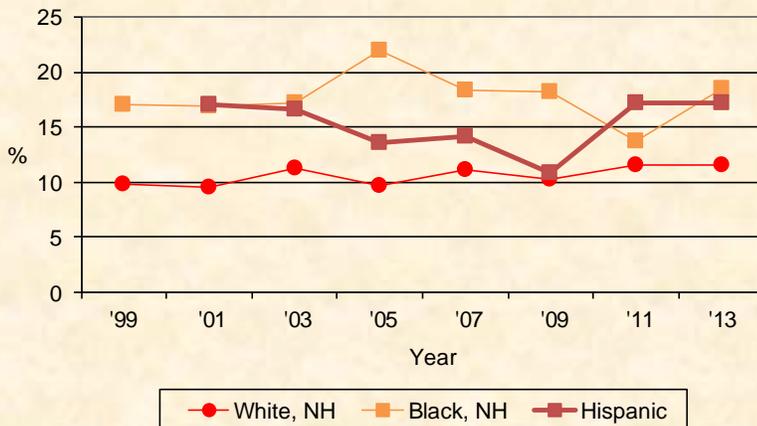
Overweight by Race/Ethnicity Michigan Youth, 9th-12th Grades, 1999-2013



Source: Michigan YRBSS [www.michigan.gov/yrbs]

- In 2013, the overweight prevalence estimate was 15.0% among non-Hispanic White, 18.3% among non-Hispanic Black, and 12.9% among Hispanic high school students.
- Over the past 15 years, the prevalence estimate among non-Hispanic White high school students showed a statistically significant linear increase (12.7% to 15.0%), but there was no evidence of a linear change for non-Hispanic Black students (17.9% to 18.3%).
- The percentage of Hispanic high school students who were overweight decreased between 2001 and 2013 (15.7% to 12.9%).

**Obesity by Race/Ethnicity
Michigan Youth, 9th-12th Grades, 1999-2013**



Source: Michigan YRBSS [www.michigan.gov/yrbs]

- In 2013, the obesity prevalence among non-Hispanic Black 9th-12th graders (18.5%) was nearly seven percentage points higher than the obesity prevalence among non-Hispanic White students (11.6%).
- From 1999 to 2013, there was no evidence of a linear change in obesity prevalence among non-Hispanic White (9.8% to 11.5%) or non-Hispanic Black (17.0% to 18.5%). This was the same for Hispanic high school students (17.0% to 17.1%) from 2001 to 2013.

- In 2013, nearly three in ten high school students (9th-12th grade) reported being either overweight or obese (28.6%).
- In 2013, one third of high school male students (33.1%) and one fourth of female high school students (24.0%) reported being either overweight or obese.
- In 2013, 26.6% of non-Hispanic White high school students, 36.8% of non-Hispanic Black students, and 30.0% of Hispanic students reported being either overweight or obese.

Annual statistics and test for temporal trends were conducted by Michigan Department of Education (www.michigan.gov/yrbs). The test for linear trend was based on analysis methods using a logistic regression model where the dependent variable was time controlling for sex, race/ethnicity, and grade where appropriate, $p < 0.05$.⁷

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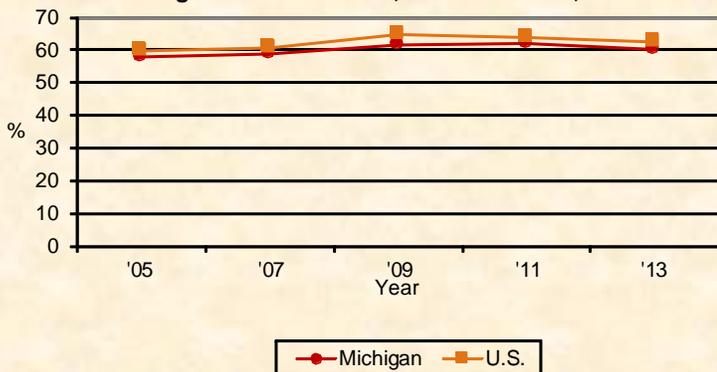
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FRUIT, VEGETABLE, AND SODA CONSUMPTION AMONG MICHIGAN YOUTH in 9th-12th GRADES - 2013

- In 2013, the percentage of 9th-12th graders who were overweight or obese was 28.6%.¹
- Eating more fruits and vegetables can replace high calorie foods, help achieve and maintain a healthy weight, and may reduce the risk of many chronic diseases.^{2,3}
- Research showed that sodas were the single leading food source of added sugars intake among children, adolescents, and adults.⁴
- Strong evidence showed that children and adolescents who consumed more sugar-sweetened beverages had a higher body weight, compared to those who drank less sugar-sweetened beverages.²
- Historically, fruit and/or vegetable intake at least five times daily was used by the Youth Risk Behavior Surveillance System (YRBSS) to indicate adequate fruit and vegetable consumption. As of 2013, fruits and vegetables were no longer combined in one measure. Currently, fruit intake less than one time per day and vegetable intake less than one time per day serve as proxies for poor fruit and vegetable intake.⁵
- This fact sheet presents Michigan YRBSS data and, for the U.S., YRBSS data for three nutrition indicators: fruit intake at least one time per day, vegetable intake at least one time per day, and soda intake at least one time per day.⁵

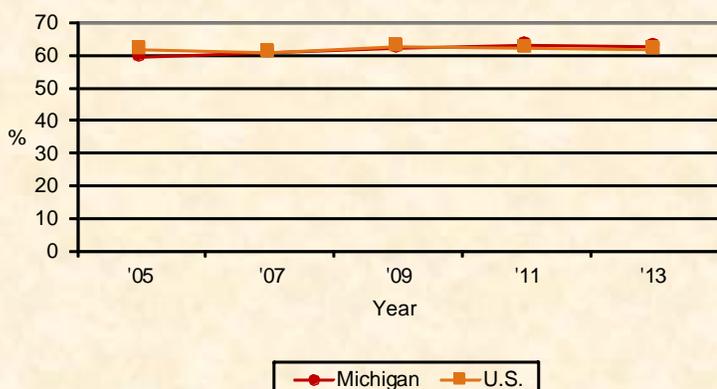
Fruit Consumption (at least one time per day), Michigan and U.S. Youth, 9th-12th Grades, 2005-2013



- In 2013, 60.3% of Michigan 9th-12th graders ate fruit or drank fruit juice at least once per day. This estimate was comparable to that among U.S. high school students (62.6%).
- Daily fruit intake was about 60% for high school students (9th-12th grade) in Michigan as well as the U.S. over the past nine years (2005 - 2013).

Sources: CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

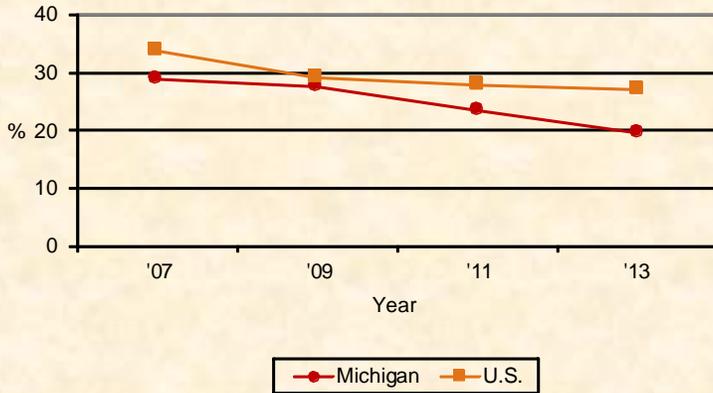
Vegetable Consumption (at least one time per day), Michigan and U.S. Youth, 9th-12th Grades, 2005-2013



- In 2013, 62.4% of Michigan high school students ate vegetables at least once per day. This estimate was similar to that among high school students in the U.S. (61.5%).
- Between 2005 and 2013, the prevalence of daily vegetable intake was comparable between Michigan high school students and for U.S. high school students.

Sources: CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

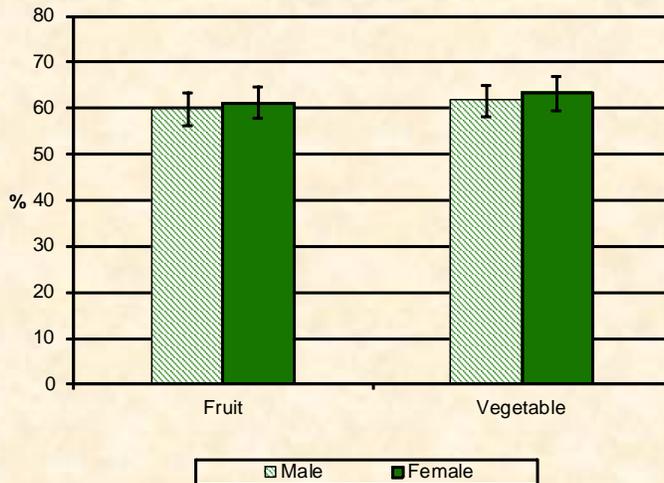
Soda Consumption (at least one time per day), Michigan and U.S. Youth, 9th-12th Grades, 2007-2013



- In 2013, 27.0% of U.S. 9th-12th graders consumed non-diet soda at least one time per day.
- About one in five Michigan high school students (19.6%) consumed soda at least one time daily, which was less than US high school students overall.
- Soda consumption showed a significant decrease between 2007 and 2013 for both Michigan and the U.S. (-9.3 and -6.8 percentage points, respectively).

Sources: CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

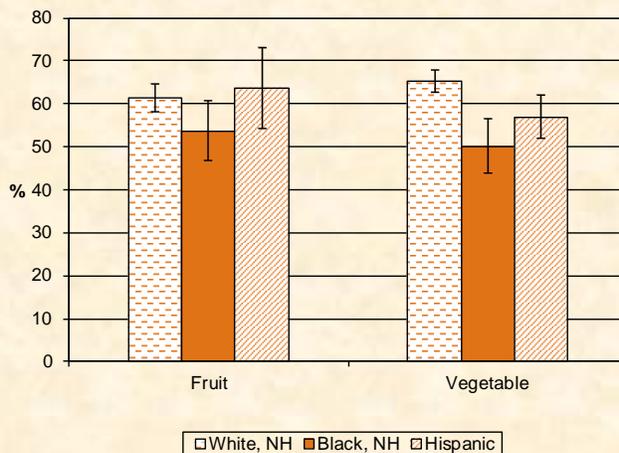
Fruit and Vegetable Consumption by Gender (each at least one time per day), Michigan Youth, 9th-12th Grades, 2013



- In 2013, the percentage of male 9th-12th graders who consumed fruit daily was comparable to female students (59.7% and 61.2%, respectively).
- The prevalence estimates for vegetable consumption were also similar among males and females (61.5% and 63.2%, respectively).

Sources: CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

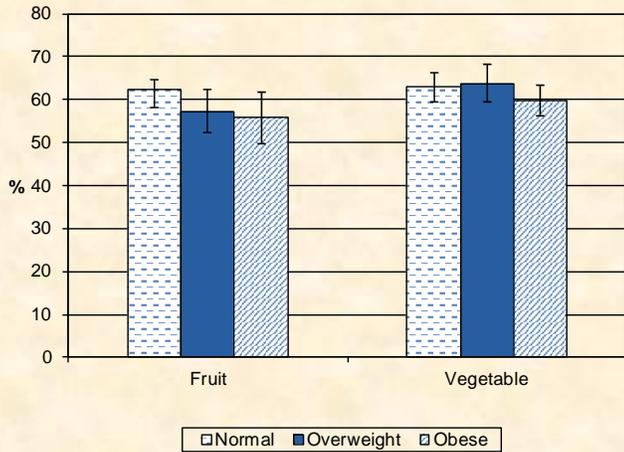
Fruit and Vegetable Consumption by Race/Ethnicity (each at least one time per day), Michigan Youth, 9th-12th Grades, 2013



- In 2013, there was no evidence of a statistical difference of daily fruit intake among non-Hispanic White, non-Hispanic Black, and Hispanic high school students (65.3%, 50.2%, and 56.9%, respectively).
- However, daily vegetable consumption was significantly lower for both non-Hispanic Black and Hispanic students compared to non-Hispanic White students (50.2%, 56.9%, and 65.3%, respectively).

Sources: CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

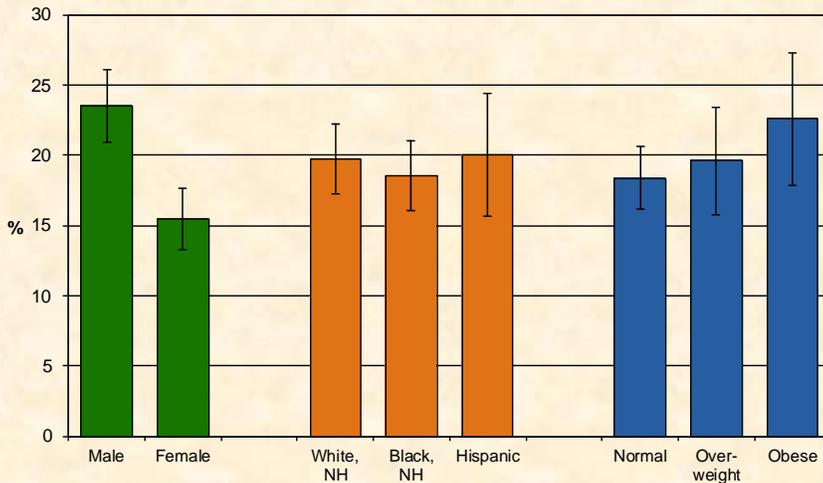
**Fruit and Vegetable Consumption by Weight Status
(each at least one time per day),
Michigan Youth, 9th -12th Grades, 2013**



- In 2013, the fruit intake prevalence among Michigan high school students was comparable by weight status: normal (62.3%), overweight (57.3%), and obese (55.8%).
- This was the same for vegetable intake: normal (63.0%), overweight (63.8%), and obese (57.7%).

Sources:
CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

**Soda Consumption (at least one time per day) by Gender,
Race/Ethnicity and Weight Status, Michigan Youth, 9th-12th Grades,
2013**



- In 2013, the percentage of Michigan high school males who consumed one or more sodas per day was significantly higher than females who consumed one or more sodas per day (23.5% versus 15.4%).
- The prevalence among high school youth who consumed one or more sodas per day was similar among non-Hispanic White, non-Hispanic Black, and Hispanic high school students (19.7%, 18.6%, and 20.0%, respectively).
- There was no evidence of a statistical difference by weight status: normal (18.4%), overweight (19.6%), and obese (22.6%).

Sources:
CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

Note:

Consumption of sugar-added beverages, such as sports and energy drinks, were not considered in the soda consumption question. All consumption questions referred to one week prior to the survey interview.

Definitions:

Obesity in youth 2 to 20 years old is defined as a body mass index (BMI) specifically for age and sex at or above the 95th percentile, overweight is defined as a BMI for age and sex equal or greater than the 85th but less than 95th percentile, and normal is defined as a BMI for age and sex equal or greater than the 5th but less than 85th percentile.⁵

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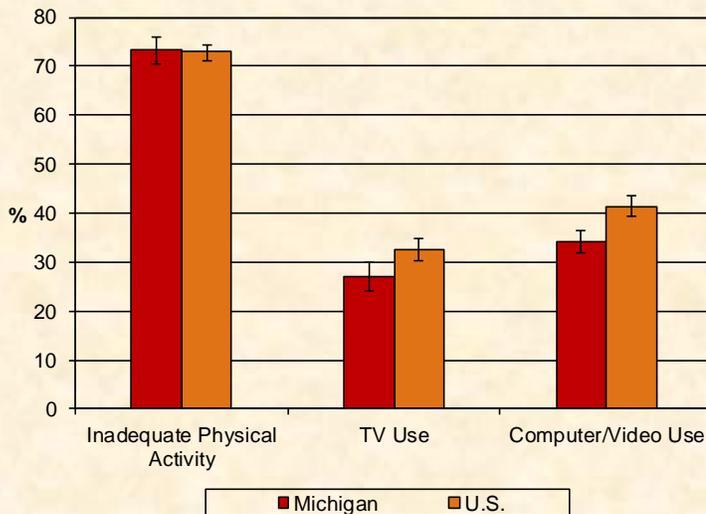
Suggested citation: Fruit, Vegetable, and Soda Consumption among Michigan Youth (9th-12th Grade) - 2013. Nutrition, Physical Activity and Obesity Program Surveillance Brief. Michigan Department of Health and Human Services, Lifecourse Epidemiology and Genomics Division, February 2016.

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- In 2013, the percentage of Michigan 9th-12th graders who were overweight or obese was 28.6%.¹
- Adequate physical activity assists in maintaining a healthy weight and overall good health.²
- Physical activity indicators were assessed using 2013 Michigan Youth Risk Behavior Surveillance System (MiYRBSS) data.
- In the 2013 State Indicator Report on Fruits and Vegetables, the CDC introduced a new indicator more in line with the 2008 Physical Activity Guidelines for Americans.² This new indicator is used here.
- The Guidelines recommend that children and adolescents participate in at least 60 minutes of physical activity daily and no more than two hours of screen time per day.³
- This fact sheet presents Michigan YRBSS data and, for the U.S., YRBSS data for three physical activity indicators: inadequate physical activity, TV use, and computer/video use.⁴

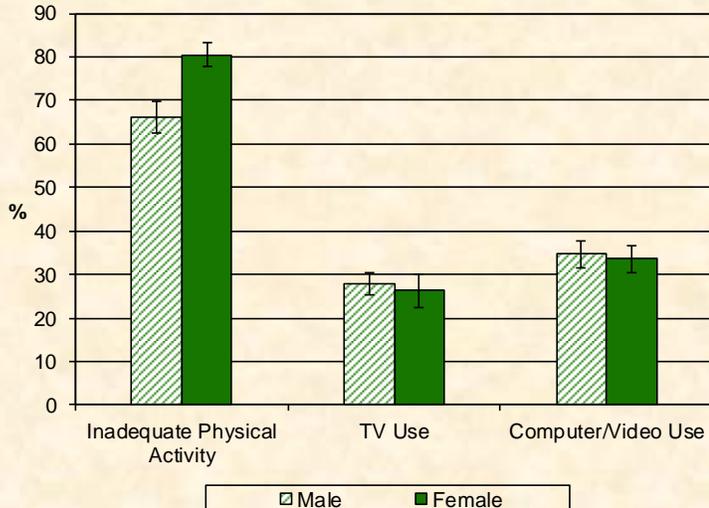
Physical Activity Indicators
Michigan and U.S. Youth, 9th-12th Grades, 2013



- In 2013, about 70% of 9th-12th graders reported inadequate physical activity. This was comparable to the U.S.
- TV use three or more hours a day on an average school day was significantly higher among 9th-12th graders in the U.S. compared to Michigan students (32.5% and 27.0%, respectively).
- This was also the case for computer/video use that was not related to school work on three or more hours a day on an average school night. U.S. high school students had a prevalence estimate of 41.3% compared to Michigan students with an estimate of 34.1%.

Sources: CDC Youth Risk Behavioral Survey System (YRBS) [www.cdc.gov/yrbss] and Michigan YRBSS [www.michigan.gov/yrbss]

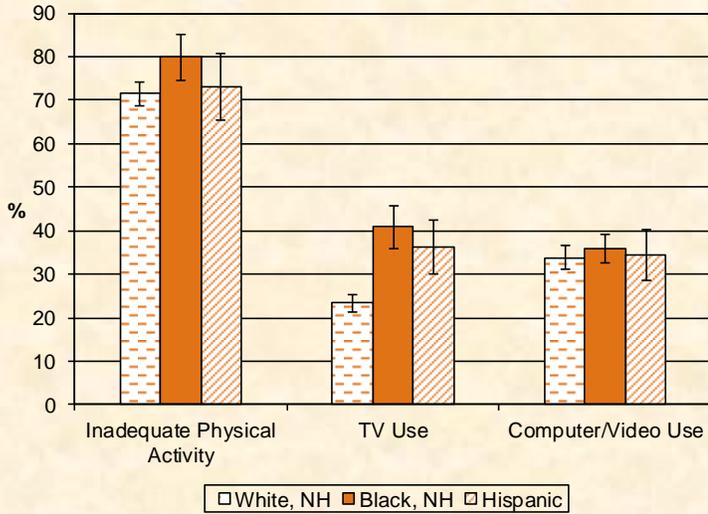
Physical Activity Indicators by Gender
Michigan Youth, 9th-12th Grades, 2013



Source: Michigan YRBSS [www.michigan.gov/yrbss]

- In 2013, four in five Michigan high school females reported inadequate physical activity (80.5%). Nearly, two thirds (66.2%) of high school males reported inadequate physical activity.
- TV use was comparable for females and males (26.2% and 27.7%, respectively).
- The prevalence of computer/video use was also comparable between females and males (35.5% and 34.6%, respectively).

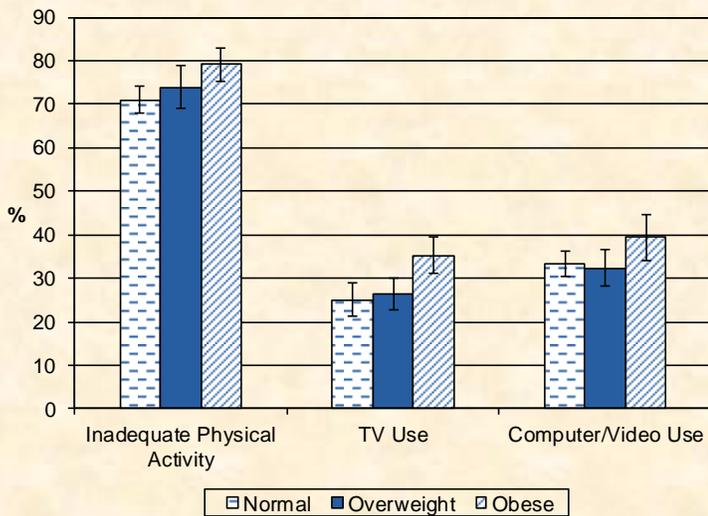
**Physical Activity Indicators by Race/Ethnicity
Michigan Youth, 9th-12th Grades, 2013**



Source: Michigan YRBSS [www.michigan.gov/yrbss]

- In 2013, the percentage of Michigan non-Hispanic Black high school students who reported inadequate physical activity was higher than that of non-Hispanic White students (79.9% and 71.4%, respectively).
- The percentages of 9th-12th graders who viewed TV three hours or more on an average school day were similar among non-Hispanic Black and Hispanic students (40.9% and 36.2%, respectively). There was significant disparity in TV use between these students and non-Hispanic White students (23.3%).
- Computer/video use was comparable by race/ethnicity (33.7%-35.9%).

**Physical Activity Indicators by Weight Status
Michigan Youth, 9th-12th Grades, 2013**



Source: Michigan YRBSS [www.michigan.gov/yrbss]

- In 2013, Michigan high school youth who were classified as obese tended to be less physically active (79.1%) than high school youth of normal weight status (71.0%).
- TV use was comparable between 9th-12th graders classified as normal and overweight (25.1% and 26.2%, respectively). However, the TV use prevalence estimate among those classified as obese (35.3%) was significantly higher than that of the lower weight status.
- There was no evidence of a statistical difference in computer/video use by weight status.

Definitions:

- Inadequate physical activity was defined as not physically active at least 60 minutes daily (i.e., any kind of physical activity that increases heart rate and makes breathing harder some of the time). TV use was defined as watching TV three or more hours per day on an average school day. Computer/video use was defined as playing video or computer games or using a computer three or more hours per day for something that was not related to school work on an average school day.⁴
- Obesity in youth 2 to 20 years old is defined as a body mass index (BMI) specifically for age and sex at or above the 95th percentile, overweight is defined as a BMI for age and sex equal or greater than the 85th but less than 95th percentile, and normal is defined as a BMI for age and sex equal or greater than the 5th but less than 85th percentile.⁵

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